National Park Service
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Natural Resource Stewardship and Science

Channel Islands National Park
Kelp Forest Monitoring Program

Annual Report 2010

Natural Resource Data Series NPS/CHIS/NRDS—2012/334



ON THE COVER
The newly established invasive alga, *Sargassum horneri* at Anacapa Island
Photograph by: Kelp Forest Monitoring Program

Channel Islands National Park
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Annual Report 2010

Natural Resource Data Series NPS/CHIS/NRDS—2012/334

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The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado publishes a range of reports that address natural resource topics of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Data Series is intended for the timely release of basic data sets and data summaries. Care has been taken to assure accuracy of raw data values, but a thorough analysis and interpretation of the data has not been completed. Consequently, the initial analyses of data in this report are provisional and subject to change.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

Data in this report were collected and analyzed using methods based on established, peer-reviewed protocols and were presented and interpreted within the guidelines of the protocols.

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Executive Summary

Channel Islands National Park (CINP) has conducted long-term ecological monitoring of the kelp forests around San Miguel, Santa Rosa, Santa Cruz, Anacapa and Santa Barbara Islands since 1982. The original permanent transects were established at 16 sites between 1981 and 1986 with the first sampling beginning in 1982. An additional site, Miracle Mile, was established at San Miguel Island in 2001 by a commercial fisherman with assistance from the park and has been at least partially monitored since. In 2005, an additional 16 permanent sites were established to collect base line data from inside and adjacent to four marine reserves that were established in 2003. Sampling results from all 33 sites as mentioned above are included in this report. Kelp forests are considered a "Vital Sign" of ecosystem health for CINP (Davis and Halvorson 1988) and monitoring is supported largely through the NPS Inventory and Monitoring Program.

The 2010 monitoring efforts utilized 53 days of vessel time to conduct 1,040 dives for a total of 998 hours of bottom time. Population dynamics of 71 taxa or categories of algae, fish and invertebrates were measured at the 33 permanent sites in 2010. Survey techniques follow CINP's Kelp Forest Monitoring Protocol Handbook Volume 1 (Davis et al. 1997). The techniques utilize SCUBA and surface-supplied-air to perform 1 m^2 quadrats, 5 m^2 quadrats, band transects, random point contacts, fish transects, roving diver fish counts, video transects, size frequency measurements, and artificial recruitment modules. Temperature data were collected using remote temperature loggers at 32 sites, the exception being Miracle Mile where there is no temperature logger installed. This annual report contains a brief description of each site, a summary of methods used and monitoring results for 2010. All of the data collected during 2010 can be found summarized in the Appendices A-M in this report.

All 33 permanent sites were established in areas that are historically known to have had or presently have kelp forests. In 2010, 14 of the 33 sites monitored were characterized as kelp forests. In addition one site was half mature kelp forest with the other half dominated by *Strongylocentrotus* spp., and three other sites were in a state of transition presumably toward kelp forest. The remaining 15 sites were mostly dominated by echinoderms. Of these 15, four were dominated by *S. purpuratus* and *S. franciscanus*, one by *S. franciscanus*, four by *S. purpuratus*, three by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*, two by *O. spiculata* and one was an open area with a moderately high density of *S. franciscanus*. Overall, the number of sites characterized by kelp forests was similar to last year. The number of sites characterized as being dominated by echinoderms decreased due to several sites being categorized as being in a state of transition. This year's site status in comparison with 2009 is summarized in Table 4.

The status of kelp forests was notably different among the five Islands. Many Santa Barbara Island sites continued to be dominated by echinoderms. However, there was a large recruitment of macroalgae at four sites. Two of these sites appeared to be in a state of transition. This is the greatest change seen at any of the Santa Barbara Island sites since the 1980s. Kelp forests could return to some areas around Santa Barbara Island in the following years. One site remained half dominated by sea urchins and half kelp forest, and was the only Santa Barbara Island site that had mature *Macrocystis pyrifera* plants present. *Ophiothrix spiculata* continued to be abundant at the Island and were abundant at three of the monitoring sites. Overall, *Strongylocentrotus*

purpuratus densities decreased, with a decrease at one site and similar densities at the remaining five sites. Overall, there has been a continuing decrease in *S. franciscanus* density for the past several years at this island. The trend continues, though the decreases in density at each site were small. The permanent monitoring sites here appear to represent the conditions of this island well.

Many Anacapa Island sites continued to be dominated by echinoderms. The two sites (Landing Cove and Cathedral Cove) in the Anacapa State Ecological Reserve that was established in 1978 continued to be kelp forests, while the five remaining sites continued to be mostly dominated by echinoderms. However, two of these echinoderm-dominated sites (Keyhole and Black Sea Bass Reef) had noticeably more algae than in recent years. These two sites are within the marine reserve established in 2003. Several sites at Anacapa Island have had increasing *S. purpuratus* densities for the last three years, though the increases have been gradual. Of the seven Anacapa Island sites, *Strongylocentrotus purpuratus* densities increased at two sites and remained about the same at the other five sites. *Strongylocentrotus franciscanus* densities changed little from last year at all seven sites. *Ophiothrix spiculata* cover, where present, remained similar at two sites and increased at one site. The site with the most notable change was Black Sea Bass Reef, which appeared to be gradually transitioning towards a kelp forest. There was a notable increase in algal cover at the east end of the site and areas adjacent to the transect. The permanent monitoring sites here appear to represent the conditions of this island well.

Overall, there was a decrease in *Strongylocentrotus* spp. and an increase in macroalgae across several Santa Cruz Island sites. Cavern Point, which appeared to be in a state of transition, experienced the greatest change of all Santa Cruz Island sites this year. Macroalgae were more abundant and diverse than had previously been recorded at this site. In addition, *Strongylocentrotus purpuratus* density remained low compared to previous years. Potato Pasture also experienced an increase in macroalgae, though not as dramatic as Cavern Point. Pelican Bay remained a developing kelp forest, a recent change that started last year. The kelp forest at the western end of the Scorpion Anchorage site continued to persist, and had several large, mature *M. pyrifera* plants. But the rest of the site remained dominated by *S. purpuratus.* Aside from a large influx of sand, Scorpion Anchorage remained similar to previous years. *Strongylocentrotus* spp. continued to dominate five of the 10 sites at this island. *Strongylocentrotus purpuratus* densities increased at one site, decreased at one site, and remained similar at eight. *Strongylocentrotus franciscanus* densities remained similar at this island. Though the Kelp Forest Monitoring (KFM) sites as a group appropriately represent the status of kelp forests at most of the Island, the sites do under-represent the western third of the Island since there are no monitoring sites west of Gull Island. Conditions at that portion of the Island are biogeographically different from the eastern portion.

Kelp forests continued to be abundant around Santa Rosa and San Miguel Islands. Mature kelp forests were present at eight of the 10 sites at these two islands and *Strongylocentrotus franciscanus* was moderately abundant to abundant at the remaining two sites. Though densities of *S. purpuratus* remain low on Santa Rosa Island, they increased at most of the sites on the south side of the Island, similar to last year. The permanent monitoring sites here appear to represent the conditions of these islands well.

Acknowledgments

Funding for the kelp forest monitoring program was provided by the U.S. National Park Service Inventory and Monitoring Program. In addition, supplemental funding was provided by the Montrose Settlements Restoration Program to continue monitoring the sites associated with the marine reserve evaluation. The monitoring program is conducted in cooperation with the California Department of Fish and Game (CDFG) and the U.S. Department of Commerce, National Oceanographic and Atmospheric Administration (NOAA), Marine Sanctuary Program.

We are deeply indebted to the many divers who have participated in this project in 2010 (Table 5). All of our volunteer divers are trained and/or certified with other agencies such as NOAA, CDFG, Aquariums and Universities. Without this volunteer base of well-trained and qualified divers it would be impossible to conduct this program at its current funding level. We also greatly appreciate the efforts of our Captain Keith Duran and our Diving Safety Officer, Dave Stoltz, for ensuring that all of our operations run safely and successfully.

Information Requests

The kelp forest monitoring handbooks and annual reports are available in PDF format on the web at: http://www.nps.gov/chis/rm/Index.htm and at: http://www.mednscience.org/kelp_forests.

To obtain raw data collected by the Kelp Forest Monitoring Program, please write to the address below:

Superintendent
Channel Islands National Park
1901 Spinnaker Drive
Ventura, CA 93001

List of Acronyms

ARM…….. Artificial Recruitment Module

CDFG…….. California Department of Fish and Game

CINP…….. Channel Islands National Park

CINMS…… Channel Islands National Marine Sanctuary

KFM…… Kelp Forest Monitoring

KGB…… Kelp/Gopher/Copper/Black and Yellow Rockfish Complex young of the year

NOAA……. National Oceanic and Atmospheric Administration

NPS……. National Park Service

NRPP…….. Natural Resources Preservation Program

PISCO……. Partnership for Interdisciplinary Studies of Coastal Oceans

RPC……. Random Point Contact

UCSB…….. University of California, Santa Barbara

Introduction

The waters of Channel Islands National Park (CINP) and Channel Islands National Marine Sanctuary (CINMS) contain one-third of southern California's kelp forests (Davies, 1968). Giant kelp, *Macrocystis pyrifera*, is the primary constituent of the southern California kelp forest, and over 1,000 species of macro flora and fauna live in this community (Woodhouse 1981, Engle pers. comm.). The kelp forest serves as food, shelter, substrate, and nursery to resident and migratory species. Many species, while not residents of the kelp forest, also depend upon their existence and productivity, as detrital flux from kelp forests provides an important source of nutrients to nearby rocky shore, sandy beach and estuary communities. Additionally, kelp forests are essential to California's commercial and sport fisheries as well as its recreation and tourism industries.

The CINP consists of five of the eight California Channel Islands (San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara) and the submerged lands and waters within one nautical mile of each of the islands. The CINMS overlaps the subtidal portions of the park, and its boundary extends six miles seaward from the park islands. The CINP also bears the designation of International Biosphere Reserve and that of the State of California Area of Special Biological Significance. The State of California maintains jurisdiction over the living marine resources within the park and manages them through CDFG.

The KFM Program is part of the long-term ecological monitoring conducted by the Mediterranean Coast Network of the NPS Inventory and Monitoring Program (I&M), which is designed to measure the health of the Park's ecosystems (Davis and Halvorson 1988; Cameron 2006). The objectives of the KFM Program are as follows:

- Identify trends in ecosystem health
- Determine limits of variability
- Diagnose abnormal conditions
- Suggest potential remedial treatments

Following a five-year design study that began in 1982, the KFM Program was fully implemented in 1987 by the park's resource management division using the protocol established during this phase (Davis and Halvorson, 1988). Preliminary results and specific design considerations can be found in reports written by Davis (1985, 1986). Richards et al. (1997) describes monitoring efforts and results for 1982-1989. Richards et al. (1993a), Richards et al. (1993b), Richards and Kushner (1994), Kushner et. al. (1995a), Kushner et al., (1995b), Kushner et al. (1997a), Kushner et al. (1997b), Kushner et al. (1998), Kushner et al. (2000), Kushner et al. (2001a), Kushner et al. (2001b), Kushner et al. (2004), Kushner et al. (2007a), Kushner et al. (2007b), Kushner et al. (2007c), Kushner et al. (In progress), Kushner et al. (In progress), Moore et al. (In progress), Sprague et al. (In progress), and Kushner et al. (In progress) describe the 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009 monitoring efforts and results respectively. A review of the KFMP was conducted in 1995 (Davis et al., 1996).

Though the KFM Program was fully implemented as an Inventory & Monitoring Program prototype "vital sign" in 1987 (Davis and Halvorson 1988), monitoring began at 14 sites in 1982 and two additional sites in 1986. An additional site, Miracle Mile, was established at San Miguel Island in 2001 by a commercial fisherman with assistance from the park and has been at least partially monitored since. In 2005, an additional 16 permanent sites were established to collect base line data from inside and adjacent to four marine reserves that were established in 2003. Sampling results from all 33 sites are included in this report.

The 16 sites established in 2005 were located inside or adjacent to the following four State Marine Reserves: Santa Barbara Island Marine Reserve, Anacapa Island Marine Reserve and Marine Conservation Area, Scorpion Anchorage Marine Reserve at Santa Cruz Island, and the South Point Marine Reserve at Santa Rosa Island. Only four of the 11 existing Marine Reserves were selected because of limited funding and the logistics of conducting this type of monitoring. Such logistical criteria included site accessibility, consideration of the KFM Program's existing base line data, and the degree of fishing impact.

This report summarizes the monitoring efforts and results from 2010, our 29th year of monitoring. It is anticipated that these reports will provide some insight into kelp forest dynamics and stimulate further research into the long-term trends and changes in this near-shore ecosystem. We have highlighted some of the most important observations, and tried to provide a characterization for each site. Organisms are referred to by genus and species, except when non-indicator species are mentioned, then both scientific and common names are used. Common names for the indicator species are cross-referenced to their scientific names in Table 1. Since the design of the KFM Program, several genera and species names have been changed, these new names are cross referenced in Table 2.

Table 1. Regularly monitored species and associated monitoring technique(s).

Taxa/Common Name	Scientific Name	Technique
ALGAE		
Miscellaneous green algae		R
Miscellaneous red algae		R
Articulated coralline algae		R
Encrusting coralline algae		R
Agar weed	*Gelidium* spp.	R
Sea tongue	*Gigartina* spp.	R
Miscellaneous brown algae		R
Acid weed	*Desmarestia* spp.	R
Oar weed	*Laminaria farlowii*	R,Q
Bladder chain kelp	*Cystoseira* spp.	R
Giant kelp	*Macrocystis pyrifera*	R,Q,M
California sea palm	*Pterygophora californica*	R,Q
Southern sea palm	*Eisenia arborea*	R,Q
Sargassum	*Sargassum horneri*	R,Q,M,B
Miscellaneous plants		R
INVERTEBRATES		
Miscellaneous sponges		R
Orange puffball sponge	*Tethya aurantia*	B,S
Southern staghorn bryozoan	*Diaperoecia californica*	R
Miscellaneous bryozoans		R
California hydrocoral	*Stylaster californica*	B,S
White-spotted rose anemone	*Tealia lofotensis*	B
Red gorgonian	*Lophogorgia chilensis*	B,S
Brown gorgonian	*Muricea fruticosa*	B,S
Californian golden gorgonian	*Muricea californica*	B,S
Strawberry anemone	*Corynactis californica*	R
Orange cup coral	*Balanophyllia elegans*	R
Cup coral	*Astrangia lajollaensis*	R
Ornate tube worm	*Diopatra ornata*	R
Colonial sand-tube worm	*Phragmatopoma californica*	R
Scaled-tube snail	*Serpulorbis squamigerus*	R
Chestnut cowrie	*Cypraea spadicea*	Q
Wavy turban snail	*Megastraea undosa*	Q,S
Red turban snail	*Astraea gibberosa*	Q,S
Bat star	*Patiria miniata*	Q,S
Giant-spined sea star	*Pisaster giganteus*	Q,S,M
Sunflower star	*Pycnopodia helianthoides*	B,S
White sea urchin	*Lytechinus anamesus*	B,S
Red sea urchin	*Strongylocentrotus franciscanus*	Q,S
Purple sea urchin	*Strongylocentrotus purpuratus*	Q,S
Warty sea cucumber	*Parastichopus parvimensis*	Q
Aggregated red sea cucumber	*Pachythyone rubra*	R
Red abalone	*Haliotis rufescens*	B,S
Pink abalone	*Haliotis corrugata*	B,S
Green abalone	*Haliotis fulgens*	B,S
Kellett's whelk	*Kelletia kelletii*	B,S
Giant keyhole limpet	*Megathura crenulata*	B,S
California brown sea hare	*Aplysia californica*	B
Rock scallop	*Crassedoma giganteum*	B,S
California spiny lobster	*Panulirus interruptus*	B
Tunicates		R
Stalked tunicate	*Styela montereyensis*	Q
Miscellaneous invertebrates		R

Table 1. Regularly monitored species and associated monitoring technique(s), continued.

Taxa/Common Name	Scientific Name	Technique
FISH		
Bluebanded goby	*Lythrypnus dalli*	Q, F
Blackeye goby	*Coryphopterus nicholsii*	Q, F
Island kelpfish	*Alloclinus holderi*	Q, F
Blacksmith	*Chromis punctipinnis*	V, F
Señorita	*Oxyjulis californica*	V, F
Blue rockfish	*Sebastes mystinus*	V, F
Olive rockfish	*Sebastes serranoides*	V, F
Kelp rockfish	*Sebastes atrovirens*	V, F
Kelp bass	*Paralabrax clathratus*	V, F
California sheephead	*Semicossyphus pulcher*	V, F
Black surfperch	*Embiotoca jacksoni*	V, F
Striped surfperch	*Embiotoca lateralis*	V, F
Pile perch	*Damalichthys vacca*	V, F
Garibaldi	*Hypsypops rubicundus*	V, F
Opaleye	*Girella nigricans*	F
Rock Wrasse	*Halichoeres semicinctus*	V, F
SUBSTRATE		
Bare substrate		R
Substrate types: Rock		R
Cobble		R
Sand		R

*Technique codes: Q= 1 m Quadrats, M= 5 m Quadrats, B= Band Transects, R= Random Point Contacts, S= Size Frequency Measurements, F= Roving Diver Fish Count, V= Visual Fish Transect.
**Not an indicator species, but observed so frequently that we include this species on our datasheets.

Table 2. Changes in scientific nomenclature.

Current Name	Former Name
Patiria miniata	*Asterina miniata*
Megastraea undosa	*Lithopoma undosum / Astraea undosa*
Lithopoma gibberosa	*Astraea gibberosa*
Crassedoma giganteum	*Hinnites giganteum*
Stylaster californica	*Allopora californica*
Telia lofotensis	*Urticina lofotensis*
Coryphopterus nicholsii	*Rhinogobiops nicholsii*
Rhacochilus vacca	*Damalychthys vacca*

Methods

Abundances, and in some cases size structure, of 70 taxa or categories of algae, fish, and invertebrates (Table 1) were measured at 33 permanent sites (Table 3) around the five park islands (Figure 1). Site and species selection criteria, and the sampling protocol are described in the Kelp Forest Monitoring Handbook Volume I (Davis et al., 1997) available online at http://www.nature.nps.gov/im/units/chis/Reports_PDF/Marine/KFM-HandbookVol1.pdf. Sites were monitored between May 17th and October 22nd 2010 using the NPS vessel "Sea Ranger". Data management and entry procedures are described in the Kelp Forest Monitoring Handbook Volume II (Kushner et al., 1997) available online at http://www.nature.nps.gov/im/units/chis/Reports_PDF/Marine/KFM-HandbookVol2.pdf.

Table 3. Site information.

Island	Site Location	Site Abbreviation	Depth Meters	Year Sampling Began
San Miguel	Wyckoff Ledge	SMWL	13-15	1982
San Miguel	Hare Rock	SMHR	6-9	1982
San Miguel	Miracle Mile	SMMM	7-10	2001
Santa Rosa	Johnson's Lee North	SRJLNO	9-11	1982
Santa Rosa	Johnson's Lee South	SRJLSO	14-16	1982
Santa Rosa	Rodes Reef	SRRR	13-15	1983
Santa Rosa	Cluster Point	SRCP	12-15	2005
Santa Rosa	Trancion Canyon	SRTC	9-15	2005
Santa Rosa	Chickasaw	SRCSAW	10-13	2005
Santa Rosa	South Point	SRSP	11-13	2005
Santa Cruz	Gull Island South	SCGI	14-16	1982
Santa Cruz	Fry's Harbor	SCFH	12-13	1982
Santa Cruz	Pelican Bay	SCPB	6-8	1982
Santa Cruz	Scorpion Anchorage	SCSA	5-6	1982
Santa Cruz	Yellowbanks	SCYB	14-15	1986
Santa Cruz	Devil's Peak Member	SCDPM	10-13	2005
Santa Cruz	Potato Pasture	SCPP	9-12	2005
Santa Cruz	Cavern Point	SCCVP	12-13	2005
Santa Cruz	Little Scorpion	SCLS	9-14	2005
Santa Cruz	Pedro Reef	SCPRF	7-10	2005
Anacapa	Admiral's Reef	ANAR	13-15	1982
Anacapa	Cathedral Cove	ANCC	6-11	1982
Anacapa	Landing Cove	ANLC	5-12	1982
Anacapa	Keyhole	ANKH	7-10	2005
Anacapa	East Fish Camp	ANEFC	9-14	2005
Anacapa	Black Sea Bass Reef	ANBSBR	15-16	2005
Anacapa	Lighthouse	ANLH	7-9	2005
Santa Barbara	Southeast Sea Lion Rookery	SBSESL	12-14	1982
Santa Barbara	Arch Point	SBAR	7-8	1982
Santa Barbara	Cat Canyon	SBCAT	7-9	1986
Santa Barbara	Webster's Arch	SBWA	14-16	2005
Santa Barbara	Graveyard Canyon	SBGC	10-12	2005
Santa Barbara	Southeast Reef	SBSER	10-15	2005



Figure 1. Kelp Forest Monitoring locations at Channel Islands National Park.

Each site is marked by a 100 m long transect line permanently affixed to the seabed. The sampling techniques employed to gather patterns of abundance and age structure are summarized in Table 4. At each site, the following methods were performed to determine densities and distribution of discrete benthic organisms: 24 paired 1 m x 1 m quadrats systematically arranged along the transect with a random start, 40 continuous 1 m x 5 m quadrats directly along the transect, and 24 paired 3 m x 10 m band transects systematically arranged along the transect with a random start. To determine percent cover of encrusting invertebrates, algae, and substrate composition, 600 random non-adjacent points (random point contacts - RPCs) were performed. To determine fish density, four 2 m x 3 m x 50 m fixed transects were performed. To determine fish abundance and diversity, roving diver fish counts with a time component were performed. To estimate fish population size structure, size frequencies of all fish observed within 10 m of the transect were measured, excluding schooling baitfish and cryptic species. Videotaped transects were performed to document site appearance. Size frequency measurements were collected to determine age structure and recruitment cohorts (Table 5). All animals measured for the natural habitat size frequency distributions were located using a band transect type search method. A general species list was established for each site, noting presence/absence and relative abundance for all indicator species. Artificial recruitment modules (ARMs) were in place at 11 of the sites to measure recruitment and population structure of indicator species within the ARMs.

A description of the monitoring protocols, including schematics, can be found in Davis et. al. (1997). However, this version of the handbook does not include the fish size frequency protocol, which was added to the sampling methods performed at all sites beginning in 2007. In addition, this version does not include the 16 new KFM sites that were installed in 2005. An updated handbook is currently in development and will be available in the near future.

Table 4. Summary of sampling techniques.

Technique	Area or Time Sampled	# of Replicates (per site)
1 m Quadrat	1 m x 2 m	12
5 m Quadrat	1 m x 5 m	40
Band Transect	3 m x 20 m	12
Random Point Contact	40 points (0.5 x 3)	15
Visual Fish Transect	2 m(w) x 3 m(h) x 50 m (l)	4
Fish Size Frequency	30 minutes	1 (minimum)
Roving Diver Fish Count	30 minutes	4-8
Video Transect	100 m, 5 minutes	2
Video Plot	360º pan of bolt, 360º pan of water column	3 (0 m, 50 m, and 100 m marks)
Natural Habitat Size Frequency	individual	30-200 per species
Artificial Recruitment Module	module, time variable	7-20
Species Checklist	30-90 minutes	1
Temperature	hourly	all sites

Table 5. Size frequency measurement dimensions.

Scientific Name	Sample Size	Measurement
Macrocystis pyrifera	100	Stipe count (1 m above bottom), max. holdfast diameter, mm
Tethya aurantia	60	Max. diameter, mm
*Stylaster (*Allo*pora) californica*	60	Max. height and width, mm
Lophogorgia chilensis	60	Max. height and width, mm
Muricea californica	60	Max. height and width, mm
Megathura crenulata	60	Max. shell length, mm
Haliotis spp.	60	Max. shell length, mm
Megastraea (Lithopoma/Astraea) spp.	60	Max. shell diameter, mm
Kelletia kelletia	60	Max. shell length, mm
Crassedoma (Hinnites) giganteum	60	Max. shell length, mm
Tegula regina	60	Max. shell length, mm
Strongylocentrotus spp.	200	Max. shell diameter, mm
Lytechinus anamesus	200	Max. shell diameter, mm
Pycnopodia helianthoides	60	Length of longest ray, mm
Asterina (Patiria) miniata	60	Length of longest ray, mm
Pisaster giganteus	60	Length of longest ray, mm

Remote temperature loggers, TIDBIT®, made by Onset Computer Corporation, were deployed at each site. Loggers were encased in underwater housings and attached to stainless steel thread rods cemented to the bottom at each site. At most sites, two temperature loggers were placed in each underwater housing. At sites where two loggers were used, a comparison of temperatures from both loggers was made to see if the loggers were recording within their specifications (± 0.2 ^{o}C).

In past years, and this year, we attempted to complete all of the abundance estimate techniques (1 m quadrats, 5 m quadrats, band transects, random point contacts, roving diver fish counts, fish transects and fish size frequencies) during the same visit. During the second and/or the remaining sampling visits we will often conduct size frequency sampling, transect line repair and fish protocol for a second time if time allows. On rare occasions the abundance techniques are not completed during our first visit and are completed at subsequent visits as soon as possible. If this happens, it is documented under the site information in the results section below. If there appears to be large changes in abundance between visits within a sampling season, an additional sampling may be conducted to document these changes. Differences are reported in the results section below. In the text we report numbers to two significant digits.

Results

Sampling was completed at all 33 monitoring sites in 2010 and a summary of the status at each site is presented in Table 6. Twenty-one divers (Table 7) collected data on nine five-day cruises and two four-day cruises between May and October (Table 8). The divers logged 1040 dives with over 998 hours of bottom time. All prescribed monitoring data were collected in 2010.

Table 6. 2010 Kelp forest monitoring site status with 2009 status for comparison.

Island/Site	2010 Status	2009 Status
San Miguel Island		
Wyckoff Ledge	Mature kelp forest	Mature kelp forest
Hare Rock	Dominated by S. franciscanus	Dominated by S. franciscanus
Miracle Mile	Mature kelp forest	Mature kelp forest
Santa Rosa Island		
Johnson's Lee North	Mature kelp forest	Mature kelp forest
Johnson's Lee South	Mature kelp forest	Mature kelp forest
Rodes Reef	Open area with a moderately high density of *S. franciscanus*	Open area with a moderately high density of *S. franciscanus*
Cluster Point	Mature kelp forest	Mature kelp forest
Trancion Canyon	Mature kelp forest	Mature kelp forest
Chickasaw	Mature kelp forest	Mature kelp forest
South Point	Mature kelp forest	Mature kelp forest
Santa Cruz Island		
Gull Island South	Mature kelp forest	Mature kelp forest
Fry's Harbor	Mature kelp forest	Mature kelp forest
Pelican Bay	Kelp forest	Kelp forest
Scorpion Anchorage	Dominated by *S. purpuratus*	Dominated by *S. purpuratus*
Yellow banks	Mature kelp forest	Kelp forest
Devil's Peak Member	Dominated by *S. purpuratus*	Dominated by *S. purpuratus*
Potato Pasture	Dominated by *S. purpuratus*	Dominated by *S. purpuratus* and *S. franciscanus*
Cavern Point	State of transition	State of transition
Little Scorpion	Dominated by *S. purpuratus* and *S. franciscanus*	Dominated by *S. purpuratus* and *S. franciscanus*
Pedro Reef	Dominated by *S. purpuratus* and *S. franciscanus*	Dominated by *S. purpuratus* and *S. franciscanus*
Anacapa Island:		
Admiral's Reef	Dominated by *O. spiculata*	Dominated by *O. spiculata*
Cathedral Cove	Mature kelp forest	Mature kelp forest
Landing Cove	Mature kelp forest	Mature kelp forest
Keyhole	Dominated by *S. purpuratus*	Dominated by *S. purpuratus*
East Fish Camp	Dominated by *S. purpuratus*, *S. franciscanus* and *O. spiculata*	Dominated by *S. purpuratus*, *S. franciscanus* and *O. spiculata*
Black Sea Bass Reef	Dominated by *O. spiculata*	Dominated by *O. spiculata*
Lighthouse	Dominated by S. purpuratus and S. franciscanus	Dominated by S. purpuratus and S. franciscanus
Santa Barbara Island		
Southeast Sea Lion Rookery	Dominated by *S. purpuratus* and *O. spiculata*	Dominated by *S. purpuratus*, *S. franciscanus* and *O. spiculata*
Arch Point	Dominated by *S. purpuratus* and *S. franciscanus*	Dominated by *S. purpuratus* and *S. franciscanus*
Cat Canyon	State of transition	Dominated by *S. purpuratus* and *S. franciscanus*
Webster's Arch	Dominated by *S. purpuratus*, *S. franciscanus* and *O. spiculata*	Dominated by *S. purpuratus*, *S. franciscanus* and *O. spiculata*
Graveyard Canyon	State of transition	Dominated by *O. spiculata* and *S. purpuratus*
Southeast Reef	Half mature kelp forest and half dominated by *Strongylocentrotus* spp.	Half mature kelp forest and half dominated by *Strongylocentrotus* spp.

Table 7. 2010 Kelp Forest Monitoring participant list.

Participants	Affiliation	Cruises Participated
Bailey, Dawn	VIP	8
Billups, Brianne	VIP	2
Canestro, Don	VIP	10
Davis, Katie	UCSB	1
Duran, Keith	CHIS	All Cruises
Edgar, Graham	U. of Tazmania	7, 9
Grunden, James	SCA	1, 2, 3, 4, 5, 6, 7
Guardino, Michael	Monterey Bay High School	3
Huang, David	UCSB	9
Ibarra, Sonia	CHIS	All Cruises
Kushner, David	CHIS	All Cruises
Mooney, Eric	CHIS	1, 2, 3, 5, 6, 7, 8, 9, 10, 11
Moore, Kelly	CHIS	1, 2, 3, 4, 7, 9, 10, 11
Nazarian, Narineh	VIP	5
Ormonde, Larissa	SCA	4, 6
Osorio, Dave	CDFG	10
Scheer, Gabe	SCA	1, 3, 4, 5, 6, 7, 8, 9, 10, 11
Sprague, Joshua	CHIS	1, 2, 4, 5, 6, 8, 9, 10, 11
Taniguchi, Ian	CDFG	6
Whitaker, Stephen	CHIS	2, 8
Witting, Dave	NOAA	7

Table 8. 2010 Kelp Forest Monitoring cruise list.

Cruise #	Cruise Dates	KFM Sites Visited
Cruise #1	05/17 - 05/20	SBAP, SBCAT, SBWA, ANLH
Cruise #2	06/01 - 06/04	SBGC, SBSESL, SBSER, ANLC
Cruise #3	06/14 - 06/18	ANCC, ANAR, SCFH, SCDPM, SCLS
Cruise #4	06/28 - 07/02	SRRR, SRTC, SRCP, SRJLSO, ANCC
Cruise #5	07/12 - 07/16	SCCVP, SCPRF, SCSA, SCYB, ANBSBR, ANLC, ANEFC
Cruise #6	07/26 - 07/30	SCLS, SCGI, SMMM, SMWL
Cruise #7	08/16 - 08/20	SCSA, SRSP, SRCSAW, SRJLNO
Cruise #8	08/30 - 09/03	ANBSBR, ANKH, SCPB, SCFH, ANEFC
Cruise #9	09/13 - 09/17	SCPP, SMHR, SRJLSO
Cruise #10	10/04 - 10/08	ANAR, SRJLNO, SRCP, SCGI, SCYB
Cruise #11	10/18 - 10/22	Surveys conducted near sites, but no data were collected using KFM protocols at KFM sites.

A summary of each site is included with the site results (Appendix A). These site summaries contain a description of site conditions, including abundances of indicator species and any important or unusual observations. This section was previously labeled “station results” and was found in the results section of annual reports prior to this year.

Complete data summaries from the sampling protocol are listed in the appendices. Mean densities for quadrats are in Appendix B and represent average counts obtained from 24 paired 1 m X 1 m quadrats or otherwise described as 12-2 m^2 quadrats. Mean densities for 5m-quadrats in Appendix C represent average counts obtained from 40 continuous and adjacent 1 m x 5 m

quadrats. Note that when adult, subadult, and juvenile densities for *Macrocystis pyrifera* are listed in the station descriptions, the adult and subadult densities are derived from the 5 m quadrats, and the juvenile densities from the 1m quadrats unless otherwise noted. Mean densities for band transects in Appendix D represent average counts obtained from 24 paired 3 m X 10 m transects or otherwise described as 12 3 m X 20 m transects. Mean percent cover for random point contacts in Appendix E represent average percent cover for a given organism, group of taxa, or substrate for the 600 points systematically taken along the transect. Percent cover for all categories combined may total more than 100% due to layering (Davis et al., 1997).

Mean densities for fish transects in Appendix F represent the average of four adjacent and continuous 2 m X 3 m X 50 m transects along the transect line.

The Roving Diver Fish Count (RDFC) data are presented in Appendix G. The first page of this Appendix contains the number of observers that sampled for each site, the date that the fish count was conducted, and the total number of species observed. The following pages in Appendix F contain the average timed Score, the average Abundance score and an average Count for each sampling date and site. The score field is the average score of all observers. Score fields range between 5 and 10 for all observed fish species, but non-present indicator species receive a score of zero. As a result, it is possible for indicator species to have an average score of less than 5, but not possible for non-indicator (write-in) species. The Abundance field is the number assigned to the abundance categories: single (1 fish), few (2-10 fish), common (11-100 fish), or many (>100 fish). This field is summarized numerically where 1 = single, 2 = few, 3 = common and 4 = many. The Count field is the average number of fish counted by an observer during the 30 minute Roving Diver Fish Count and is presented as the average count for all observers for each species listed. All fish transects and Roving Diver Fish Counts were conducted between 0900 and 1500 hours unless otherwise noted.

Beginning in 2003 we began using whole counts in the site descriptions below to describe the abundance of fish since it is a more consistent and accurate method of describing fish abundance than descriptive words like common or rare, as we did prior to 2003. However, different observers count different numbers of the same species at a site for a number of reasons. We list fish counts with the highest number of fish observed at a site in the RDFC tables and figures. The table includes counts of both adult and juveniles fish separately, as well as male and female if applicable. The figure includes total number of fish counted per species to show relative abundance of fish assemblages. Only experienced observer data are included in the tables. These tables are presented in Appendix H.

Natural habitat size frequency distributions for invertebrates other than gorgonians and *Stylaster (Allopora) californica* are in Appendix I. *Macrocystis pyrifera* size frequency distributions are in Appendix J. Gorgonian and *Stylaster (Allopora) californica* size frequency distributions are in Appendix K. Size frequency measurements taken from the Artificial Recruitment Modules were kept separate from the natural habitat measurements and their distributions are in Appendix L. Video transects were completed for all locations, and the videotapes are stored at the park's headquarters in Ventura.

Temperature data were collected using TIDBIT® temperature loggers. The temperature loggers are retrieved and deployed during our regular sampling season of May - October. To expedite

report writing we will present 12 months of temperature data from June 1st 2009 – May 31st 2010 (Appendix M). In 2010, temperature data were collected from all 32 sites where loggers were installed. For explanations of any missing data, please see the site results appendix and/or Appendix O.

Discussion

The purpose of the discussion below is to summarize and condense our general observations at the monitoring sites for this year. We would like to emphasize that we present only general trends and observations and these are not the results of statistical analyses. Trend reports are planned for in the future.

All 33 permanent monitoring sites were monitored in 2010. All proposed data collection was completed this year except annual species list surveys. Though the NPS no longer has a Cooperative Agreement with the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) at the University of California, they continued to monitor fish at many of our sites. This monitoring began in 2005.

In 2010, 14 sites were kelp forests, one site was half a mature kelp forest and the other half dominated by *Strongylocentrotus* spp., and three sites were in a state of transition. The remaining 15 sites were mostly dominated by echinoderms. Of these 15, four were dominated by *S. purpuratus* and *S. franciscanus*, one by *S. franciscanus*, four by *S. purpuratus*, three by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*, two by *O. spiculata* and one was an open area with a moderately high density of *S. franciscanus*. Overall, the number of sites characterized by kelp forests was similar to last year. The number of sites characterized as being dominated by echinoderms decreased due to several sites being categorized as being in a state of transition. This year's site status in comparison with 2009 is summarized in Table 6.

Algae

The status of kelp forests is notably different among the five Islands. Many Santa Barbara Island sites continue to be dominated by echinoderms. However, there was a large recruitment of macroalgae at four sites. Two of these sites appear to be in a state of transition. This is the greatest change seen at any of the Santa Barbara Island sites since the 1980s. Kelp forests could return to some areas around Santa Barbara Island in the following years. One site remains half dominated by sea urchins and half kelp forest, and is the only Santa Barbara Island site that has mature *Macrocystis pyrifera* plants present. *Ophiothrix spiculata* continues to be abundant at the Island and were abundant at three of the monitoring sites. Overall, *Strongylocentrotus purpuratus* densities decreased, with a decrease at one site and similar densities at the remaining five sites. Overall, there has been a continuing decrease in *S. franciscanus* density for the past several years at this island. The trend continues, though the decreases in density at each site were small. The permanent monitoring sites here appear to represent the conditions of this island well.

Many Anacapa Island sites continue to be dominated by echinoderms. The two sites (Landing Cove and Cathedral Cove) in the Anacapa State Ecological Reserve that was established in 1978 continue to be kelp forests, while the five remaining sites continue to be mostly dominated by echinoderms. However, two of these echinoderm dominated sites (Keyhole and Black Sea Bass Reef) have noticeably more algae than in recent years. These two sites are within the marine reserve established in 2003. Several sites at Anacapa Island have had increasing *S. purpuratus* densities for the last three years, though the increases have been gradual. Of the seven Anacapa Island sites, *Strongylocentrotus purpuratus* densities increased at two sites and remained about the same at the other five sites. *Strongylocentrotus franciscanus* densities changed little from last year at all seven sites. *Ophiothrix spiculata* cover, where present, remained similar at two sites

and increased at one site. The site with the most notable change was Black Sea Bass Reef, which appears to be gradually transitioning towards a kelp forest. There was a notable increase in algal cover at the east end of the site and areas adjacent to the transect. The permanent monitoring sites here appear to represent the conditions of this island well.

Overall, there was a decrease in *Strongylocentrotus* spp. and an increase in macroalgae across several Santa Cruz Island sites. Cavern Point, which appears to be in a state of transition, experienced the greatest change of all Santa Cruz Island sites this year. Macroalgae was more abundant and diverse than has been recorded at this site. In addition, *Strongylocentrotus purpuratus* density remains low compared to previous years. Potato Pasture also experienced an increase in macroalgae, though not as dramatic as Cavern Point. Pelican Bay remains a developing kelp forest, a recent change that started last year. The kelp forest at the western end of the Scorpion Anchorage site continues to persist, and has several large, mature *M. pyrifera* plants. But the rest of the site remains dominated by *S. purpuratus.* Aside from a large influx of sand, Scorpion Anchorage remains similar to previous years. *Strongylocentrotus* spp. continues to dominate five of the 10 sites at this island. *Strongylocentrotus purpuratus* densities increased at one site, decreased at one site, and remained similar at eight. *Strongylocentrotus franciscanus* densities remained similar at this island. Though the KFM sites as a group appropriately represent the status of kelp forests at most of the Island, the sites do under-represent the western third of the Island since there are no monitoring sites west of Gull Island. Conditions at that portion of the Island are biogeographically different from the eastern portion.

Kelp forests continued to be abundant around Santa Rosa and San Miguel Islands. Mature kelp forests were present at eight of the 10 sites at these two islands and *Strongylocentrotus franciscanus* was moderately abundant to abundant at the remaining two sites. Though densities of *S. purpuratus* remain low on Santa Rosa Island, they increased at most of the sites on the south side of the Island, similar to last year. The permanent monitoring sites here appear to represent the conditions of these islands well.

Invertebrates

There was little change in *Strongylocentrotus franciscanus* abundance, with an increase at one site, a decrease at one site, and the remaining sites with little change. *Strongylocentrotus purpuratus* densities increased at five sites, decreased at two sites and changed little at the remaining 26 sites. *Lytechinus anamesus* densities remained low at all the sites. However, there were increases at one site on Anacapa Island and three sites on Santa Cruz Island, and decreases at three sites on Anacapa Island and one site on Santa Barbara Island. *Centrostephanus coronatus* continue to be common at Santa Barbara, Anacapa and the eastern half of Santa Cruz Islands. Similar the past several years, we have observed little change in abundance of this species.

Overall, *Strongylocentrotus* spp. recruitment remained low, and was similar to recent years. Though we observed high *Strongylocentrotus purpuratus* recruitment at some of the monitoring sites, there were no general patterns other than recruitment was more common at Anacapa and Santa Barbara Islands, similar to past years. At the 11 sites where we have ARMs, *S. purpuratus* recruitment (<16 mm) increased at two sites, decreased at three sites and remained about the same at six sites. *Strongylocentrotus franciscanus* recruitment remained low similar to recent years and was more common at Anacapa and Santa Barbara Islands. At the sites with ARMs *S.*

franciscanus recruitment (<16 mm) increased at three sites, decreased at two sites and remained about the same at five sites.

Lytechinus anamesus densities remained low at the monitoring sites with no trends to report since last year. *Centrostephanus coronatus* recruitment remained low at all sites.

We continue to observe sea urchin wasting disease (Lafferty and Kushner, 1999, and Richards and Kushner, 1992) at a few sites (Table 9). In addition, at the sites where it was present, its prevalence was lower than in recent years. Wasting disease was observed at five sites, compared to 12 in 2009. No *Lytechinus anamesus* were observed with wasting disease. Diseased *Strongylocentrotus franciscanus* were observed at eight sites (Rode's Reef, Scorpion Anchorage, Admiral's Reef, Little Scorpion, and Graveyard Canyon). Diseased *Strongylocentrotus purpuratus* were observed at three sites (Rode's Reef, Scorpion Anchorage, and Admiral's Reef). In most cases, the prevalence of the disease was less than 1% in *Strongylocentrotus* spp. Rodes Reef had the highest abundance of infected Strongylocentrotus spp. at approximately 5%.

Table 9. 2010 Echinoderm wasting disease observations.

Island/Site	Sea Star Wasting Disease		Sea Urchin Wasting Disease	
	Species Observed	Date(s) of Observation	Species Observed	Date(s) of Observation
San Miguel Island				
Wyckoff Ledge	None		None	
Hare Rock	None		None	
Miracle Mile	None		None	
Santa Rosa Island				
Johnson's Lee North	None		None	
Johnson's Lee South	None		None	
Rodes Reef	None		2, 6	06/28
Cluster Point	None		None	
Trancion Canyon	None		None	
Chickasaw	None		None	
South Point	None		None	
Santa Cruz Island				
Gull Island South	None		None	
Fry's Harbor	None		None	
Pelican Bay	None		None	
Scorpion Anchorage	None		2, 6	07/14, 08/16
Yellow banks	None		None	
Devil's Peak Member	None		None	
Potato Pasture	None		None	
Cavern Point	None		None	
Little Scorpion	None		6	07/26
Pedro Reef	None		None	
Anacapa Island				
Admiral's Reef	None		2, 6	06/15, 10/04
Cathedral Cove	None		None	
Landing Cove	None		None	
Keyhole	None		None	
East Fish Camp	None		None	
Black Sea Bass Reef	None		None	
Lighthouse	None		None	
Santa Barbara Island				
SE Sea Lion Rookery	None		None	
Arch Point	None		None	
Cat Canyon	None		None	
Webster's Arch	None		None	
Graveyard Canyon	None		6	06/01
Southeast Reef	None		None	

None = Not observed at this site during our visits in 2010.
Date = Date(s) disease/syndrome was observed.
Note: Urchins appearing to have black spot disease were not included in table. Look in site write-up for these observations.

Species Legend

1 = *Patiria (Asterina) miniata*
2 = *Strongylocentrotus purpuratus*
3 = *Lytechinus anamesus*
4 = *Pisaster giganteus*
5 = *Astrometis sertulifera*
6 = *Strongylocentrotus franciscanus*
7 = *Parastichopus parvimensis*
8 = *Dermasterias imbricata*
9 = *Mediaster aequalis*
10 = *Pycnopodia helianthoides*
11 = *Pisaster ochraceus*

Overall, sea star densities remain relatively high and changed little from last year. *Pycnopodia helianthoides* are one of the most ecologically important invertebrate predators in the kelp forests at the Channel Islands, especially San Miguel, Santa Rosa and Santa Cruz Islands. Their densities were similar to last year with increases at two sites, decreases at four sites, and little to no change at the remaining 27 sites. *Patiria miniata* densities remained relatively high at most of the monitoring sites. This year we observed increases at three sites, decreases at two sites and little to no change at the remaining 28 sites. There was a noticeable recruitment of *Pisaster giganteus* (< 10 mm) in May/June. When we began sampling the ARMs later in the season, August/September) there were many *P. giganteus* recruits approximately 15-40 mm. They may be from the recruitment cohort in May/June. *Pisaster giganteus* densities appeared to have increased overall with increases at eight sites, decreases at three sites and little to no change at 22 sites. *Ophiothrix spiculata* remained relatively abundant at six sites, similar to last year, with little change in overall abundance. *Ophiothrix spiculata* continues to be most common at Anacapa and Santa Barbara Islands and covers large areas of the bottom.

Sea star wasting disease was not observed at any of the sites this year. This is in contrast with four sites last year. Sea temperatures have been below average, according to the temperature data collected at KFM sites, and is likely an important factor in the absence of diseased sea stars. Diseased sea stars become more common with warmer sea temperatures, such as during el nino events.

Parastichopus parvimensis densities changed little this year. Densities increased at three sites, and remained about the same at the remaining 30 sites. All three sites that experienced increases were located inside Marine Reserves. Overall, this species appears to be more abundant at the sites inside the Anacapa Island, Santa Barbara Island, and Scorpion Marine Reserves.

Overall, *Tethya aurantia* remain relatively abundant at many of the sites with densities remaining similar to last year. Four sites increased, and there was little change in density at the remaining 29 sites. The greatest increases occurred at southern Santa Rosa sites. Overall, sponge cover decreased from last.

Tunicate cover also remained relatively high. Overall, their cover increased with increases at five sites, decreases at three sites, and little change at the remaining sites. *Styela montereyensis* remains common at Santa Rosa and San Miguel Island sites. Densities increased at three sites and remained similar at the remaining sites. Several juveniles were observed at Santa Cruz Island sites, in addition to many Santa Rosa and San Miguel sites.

There was a notable increase in *Phragmatopoma californica* cover at three Santa Rosa Island sites, with all other sites remaining similar to previous years.

Overall, bryozoan cover was comparable to last year. In the miscellaneous bryozoans category, decreases were observed at six sites, increases at five sites, and the remaining 22 sites changed little. *Diaperoecia californica* abundance changed little with no noticeable trends since last year.

Corynactis californica cover was similar to last. Overall, there was little change at most of the monitoring sites. There was no notable change in abundance of *Urticina lofotensis*, similar to

recent years. *Balanophyllia elegans* cover was similar to recent years with no notable trends. The cover of this species has remained relatively low since 1996 compared to years prior. There was no notable change in *Astrangia lajollaensis* cover this year.

From our general observations, both the abundance and size of *Panulirus interruptus* are dramatically increasing inside of all of the marine reserves at Santa Barbara, Anacapa, Santa Cruz and Santa Rosa Islands. Nearly everyone who has recently dived inside and adjacent to these reserves will confirm this. Unfortunately, our monitoring program does not target *P. interruptus* populations sufficiently to infer any trends for two main reasons. First, they are nocturnal and all of our monitoring is conducted during daylight hours. Second, the monitoring sites were not established to include specific den habitat that *P. interruptus* prefer to utilize during daylight hours. As a result many of our sites do not give a good estimate of lobster abundance in those areas. However, because of the long time scale of the monitoring project, we can see general trends over time and have identified sites with higher or lower daytime abundances. In recent years we have observed what appears to be a trend toward increasing lobster abundance at the monitoring sites that are inside the marine reserves that were established in 2003. Even if our monitoring sites do not encompass very much prime *P. interruptus* den habitat, we expect to see more lobsters as dramatically increasing densities elsewhere are likely to spill over into the less optimal habitat found at many of the monitoring sites.

Aside from the dramatic increases seen within the marine reserves, at our monitoring sites, *Panulirus interruptus* densities have gradually increased in recent years. This year, *P. interruptus* densities have leveled off. There was an increase at one site, decrease at one site, and similar densities at the remaining 31 sites.

Megastraea undosa densities continued to decline. There were no sites with increases this year. Averaging all sites, densities were at their lowest level since we began monitoring in 1982. The pattern in density changes we have recently observed in *M. undosa* of increasing abundance post the 1997/1998 El Niño followed by a decline is similar to what was observed post the 1982/1983 El Niño (Zacharias and Kushner, 2006). We have not observed a widespread significant recruitment event since 1997/1998. However, there were juveniles observed at three sites that likely recruited during the 2009/2010 El Niño. There may be more *M. undosa* present next year as recruits emerge. One interesting observation of *M. undosa* this year was made just east of our KFM site at Gull Island on July 30, 2010. At 1045 hours, we observed about 15 large *M. undosa* spawning in small aggregations of two to five snails each. The water column was cloudy in the vicinity of the snails and it appeared as if the gametes were slightly negative and settling on the bottom. The spawning snails were an estimated 40-100 cm apart with some at even further distances away. It was also noticed that the presumably male gametes appeared to be white in color, creating cloudy white wisps of gametes as they entered the water column while the female eggs were dark brown in color. *Astraea gibberosa* continue to be common at only several of the monitoring sites and we have observed no recent trends in their abundance.

Overall, *Megathura crenulata* densities continue to be relatively abundant compared to the past 20 years, but remain notably lower than the early 1980s. Densities were similar to last year but seem to be decreasing, with 29 sites remaining about the same, decreases at three sites, and an increase at one site. *Crassedoma giganteus* densities have gradually decreased since 2005 at both the original KFM sites and the new sites established in 2005. The average density for the 16

original KFM sites it the lowest recorded since we began monitoring this species in 1983. There were decreases at eight sites and the remaining 25 sites remained similar to last year. *Kelletia kelletii* densities decreased overall with increases at one site, decreases at six sites, and the remaining 26 sites remaining the same. Overall, *Aplysia californica* were moderately abundant this year but were mostly small. Densities were on average higher than the past several years with increases at seven sites, decreases at four sites and little change at the remaining 22 sites.

At the sites where *Haliotis rufescens* have recently been present, densities were similar to last year and remained higher relative to the past 10-20 years. With the exception of one small *H. rufescens* at Santa Cruz Island, all other observations were at San Miguel and Santa Rosa Islands. The Miracle Mile site near Wyckoff Ledge that was initially installed in 2001specifically to monitor *H. rufescens* continued to have a high density. Though Wyckoff Ledge has lower densities relative to Miracle Mile, the density at this site remains relatively high since we began monitoring it in 1982. Densities of *H. rufescens* at Santa Rosa Island are notably lower than at San Miguel and overall remained similar to the past four years. Chickasaw had the greatest number of juveniles (80 mm), similar to last year. However the sites and areas around Johnson's Lee appear to continue to increase in *H. rufescens* abundance. See the ARMs section below for more information on *H. rufescens.*

Haliotis corrugata continue to be nonexistent or rare at all the monitoring sites. We observed *H. corrugata* during band transects at two sites this year, similar to last year.These sites were Landing Cove and Cathedral Cove. See the ARMs section for more information on the recruitment of *H. corrugata*. In addition to the live *H. corrugata* observed, we also found two small fresh juvenile *H. corrugata* shells at Cathedral Cove on Anacapa. These observations imply a low level of *H. corrugata* recruitment, similar to recent years.

No live *Haliotis fulgens, H. assimilis* or *H. sorenseni* were observed this year. It appears that the *H. assimilis* that recruited in 1999 and the early 2000's have all died off.

Since at least 1990, we conduct very thorough searches for abalone in an effort to find all that may be present at a site. This year, as with the past several years, we performed our search for abalone at the sites where they are common while conducting band transects. As part of the band transect protocol we search for abalone, but we also search between each band transect using the transect tape for reference, covering the entire length of the transect and out ten meters on either side. This thorough search allows us to locate all or nearly all abalone present at a site with a consistent search effort. *Haliotis rufescens* densities have gradually increased at several of the sites in recent years though they were similar to last year. This year, we measured a large number of abalone for size frequencies, second only to last year, though this number was similar to last. Because we are relatively consistent in our search effort, we believe that the sample size for size frequencies is an additional proxy of density for the sites.

Fish

Most of the comments below and in the site descriptions are based on observations made during the roving diver fish counts. The fish species averages per site were calculated using the maximum number observed per site divided by the total number of sites, unless otherwise noted. Density observations are based on data collected from 1 m quadrats for the following three fish

species we monitor with this protocol: *Coryphopterus nicholsii*, *Alloclinus holderi* and *Lythrypnus dalli*.

Coryphopterus nicholsii densities appeared to decrease overall. Their density, when averaged across all 33 sites, was the lowest since 1998. There were decreases in density at six sites while the remaining 27 sites were similar to last year. *Alloclinus holderi* densities remained relatively low and overall continued to decline in abundance this year. Averaging all sites, densities were at their lowest level since we began monitoring in 1982. *Lythrypnus dalli* declined in overall density from the previous year with decreases at seven sites and the remaining 26 sites were similar to last year. This is a warm water species and experiences increases in abundance during warm water events, such as an El Niño, which occurred in 2009. Proceeding El Niño events, their abundance typically tapers off over the next year or two.

Adult *Chromis punctipinnis* abundance and distribution changed little from last year with observations made at 31 sites. Juvenile *Chromis punctipinnis* were not observed during the RDFC or fish size frequencies at any sites this year, compared with observations at nine sites in 2009 and eight sites in 2008. It wasn't until October 22nd that juvenile *C. punctipinnis* were observed for the first time this season, which was after all KFM sampling had been completed. The observation was during a survey dive east of Cavern Point. The late recruitment may be due to the below average ocean temperatures experienced this season. The average count for male *Semicossyphus pulcher* was 2/site, same as last year. However, female abundance increased to 14/site from last year's 7/site average. This is likely due to the notably high number of juvenile *S. pulcher* that were observed last year developing female morphology. This year, we observed a decrease in both distribution and abundance of juvenile *S. pulcher.* We observed them at 11 sites versus 27 sites in 2009, and an average of <1/site was observed, dropping from 7/site last year. It is common to see a decrease in abundance following a year with high recruitment. Adult *Oxyjulis californica* counts remained similar to last year in distribution and abundance. They were observed at 28 sites with an average count of 109/site. Observations of juvenile *O. californica* decreased to six sites at an average of 3/site this year from 19 sites at an average of 22/site in 2009.

Male and female *Halichoeres semicinctus* abundances were similar to recent years and were observed at 16 sites and 17 sites, respectively. Juvenile *H. semicinctus* were not observed this year, unlike last year where they were observed at eight sites. *Hypsypops rubicundus* abundance was similar to past years. Juvenile *H. rubicundus* continue to be rare, with observations at two sites. Adult *H. rubicundus* abundances were similar to previous years and were observed at 23 sites. *Girella nigricans* were observed at 26 sites, similar to recent years. Juvenile *Paralabrax clathratus* were observed at one site this year compared to five sites in 2009. It should be noted that our fish counts are often completed at many sites before juvenile *P. clathratus* recruit. Adult *P. clathratus* were observed at 24 sites and overall their abundance was similar to last year. There were no large changes in overall abundance of *Embiotoca* spp. and other surfperch species this year. Adult *E. jacksoni* remained similar to recent years and were observed at 32 sites. Juvenile *E. jacksoni* were observed at more sites this year than last year, but abundances remained similar to 2009. Juveniles were observed at 21 sites compared with 13 sites last year. Adult and juvenile *Embiotoca lateralis* were observed at 13 sites and 12 sites, respectively, both similar to recent years. Little change was observed in adult and juvenile *Rhacochilus vacca* which were observed at 24 sites and six sites, respectively.

One of the most notable observations from the monitoring this year was the increase in juvenile rockfish abundance and distribution at our sites. Schools of *Sebastes mystinus* and *S. serranoides* recruits were observed at nearly all of our monitoring sites in 2010. Early in the season, we observed other juvenile rockfish species mixed into the schools of juvenile *S. mystinus* and *S. serranoides* that were challenging for the KFM staff to positively identify. If a positive identification could not be made, observations were recorded as "rockfish spp., juvenile" in the database. With help from rockfish expert Mary Nishimoto at UCSB, head and spine fin counts were conducted on a few collected specimens to assist with positive identification. Mary suggested the unknown juvenile rockfish we were observing were *S. entomelas,* widow rockfish. At the juvenile stage, *S. entomelas* look very similar to juvenile *S. mystinus* and the KFM staff made great efforts to observe all individuals in each school for positive identifications. The "rockfish spp., juvenile" category was observed at 14 sites spanning all islands, an increase from seven sites in 2009 and includes all the *S. entomelas* juveniles we observed this year. Juvenile *S. mystinus* were abundant and were observed at 32 sites compared with 21 in 2009. The average count for *S. mystinus* was 139/site, compared with four/site in 2009, the highest average count on record for this species. Juvenile *S. serranoides* were observed at 29 sites this year, an increase from nine sites last year. The average count for juvenile *S. serranoides* was 47/site, a record high*;* an average of 1/site was observed last year. Little change was observed in adult *S. mystinus* and *S. serranoides* abundance and distribution with observations made at 14 sites and 16 sites, respectively, similar to last year.

Other juvenile *Sebastes* spp. were observed at a greater number of sites and in higher abundances than in past years. Juvenile *S. paucispinis,* bocaccio, observations increased from last year with observations at 18 sites, up from seven sites in 2009. The average count for juvenile *S. paucispinis* was 27/site compared with 4/site in 2009. It is interesting to note that we observed juvenile *S. paucispinis* at all of our monitoring sites at Santa Barbara Island. There were notably more juvenile *S. paucispinis* at the Santa Barbara Island sites in May than have been observed there before. Juvenile *S. caurinus,* copper rockfish, were observed at 14 sites versus three sites in 2009, and the average count observed was 5/site increasing from <1/site in 2009. Adults of this species remained at similar abundance and distribution as last year. Adult *S. paucispinis* were not observed this year and adult *S. caurinus* were observed at eight sites, similar to past years.

Other rockfish species that remained similar to last year in abundance and distribution include adult and juvenile *Sebastes serriceps* which were observed at 26 and 22 sites, respectively. Adult and juvenile *S. miniatus,* vermillion rockfish, abundance also remained similar to last year with an adult average of <1/site and juvenile average of 1/site. Adult *S. chrysomelas,* black and yellow rockfish, abundance changed little and we observed them at 16 sites. Unlike last year, no juvenile *S. chrysomelas* were observed. Adult *S. carnatus,* gopher rockfish, were observed at 12 sites, similar to past years. Black and yellow/gopher rockfish juvenile were recorded during fish counts for the first time this year. This is due in part to the expert fish identification skills of this year's staff, whom in past years may have included these juveniles in the kelp/gopher/black & yellow/copper rockfish (KGB) juvenile complex category. These juveniles were observed at 11 sites with an average of 4/site. *Sebastes auriculatus*, brown rockfish, were observed at four sites, similar to last year. *Sebastes melanops*, black rockfish, were rare with observations at three sites. *Sebastes rastrelliger,* grass rockfish, were observed at six sites this year. *Sebastes semicinctus,* halfbanded rockfish, juveniles were observed at two sites, averaging 9/site where observed. This is the first time this species was observed during roving diver fish counts since this protocol

began in 1996. Another rare rockfish species recorded this year was *Sebastes pinniger,* canary rockfish. One juvenile of this species was observed, the first time since 1996 that this species was recorded on roving diver fish count.

Over the past several years we have observed a noticeable increase in abundance of *Sebastes atrovirens* at the Channel Islands; however, this year adult *S. atrovirens* abundance seemed to level off and juvenile abundance decreased. This is a typical pattern following recruitment pulses. One such recruitment pulse occurred in 2007. Adult *S. atrovirens* were present at 27 sites with an average of 11/site, similar to last year. Juvenile *S. atrovirens* were less abundant than last year with observations made at 10 sites for 1/site compared with 12/site in 2009. The kelp/gopher/black & yellow/copper rockfish (KGB) juvenile complex were less abundant this year an were observed at 30 sites with an average of 12/site. In 2009, we observed KGBs at 18 sites with an average of 29/site.

Ophiodon elongatus, lingcod, were observed at 11 sites, similar to recent years. *Scorpaenichthys marmoratus,* cabezon, were observed at 13 sites. *Stereolepis gigas,* giant black sea bass, were observed at two sites, similar to past years. However, we observed *S. gigas* at several other sites after the fish counts were conducted. No *Squatina californica*, Pacific angel shark, were observed this year during the fish counts, but we did observe over 23 individuals during one dive at Santa Barbara Island in the Landing Cove. This is a commercially important species and although it is uncommon to observe them during our fish counts, we do try to keep track of any observations.

Artificial Recruitment Modules (ARMs)

ARMs were monitored at all 11 sites where they are present. The ARMs were in good condition this year.

Haliotis spp. continue to be in low abundance in the ARMs. For the purpose of this report, we consider juvenile abalone less than 51 mm and adults > 50 mm. Juvenile *Haliotis rufescens* continue to be in low abundance with only eight observed. Seven were in the ARMs at Yellowbanks, and the other at Johnson's Lee South. This represents an increase in recruitment at Yellowbanks. This is the highest number of juvenile *H. rufescens* recorded in the Yellowbanks ARMs, as well as the highest number recorded in the ARMs at any site except Miracle Mile. Juveniles were not recorded at Miracle Mile for the second year in a row, even though this site is where we have observed most of the recruitment in the ARMs in recent years. At Miracle Mile, we observed four adult *H. rufescens* in the ARMs, a decrease from last year. At Johnson's Lee North, we observed one adult *H. rufescens. Haliotis corrugata* recruitment increased with nine juveniles observed at two sites. This is the highest number of juvenile *H. corrugata* observed in the ARMs since 2000. No adults were observed in the ARMs. No *Haliotis fulgens* were observed in the ARMs. No *H. sorenseni* or *H. assimilis* were observed in the ARMs this year, similar to recent years.

Cypraea spadicea abundance in the ARMs was similar to last year, but overall density decreased slightly. Their density increased at one site, decreased at four sites and remained about the same at six sites. Small, less than 51 mm, *Kelletia Kelletii* were less abundant in the ARMs this year with six found compared with 12 in 2009. *Megathura crenulata* density in the ARMs was similar to recent years and we continue to see regular recruitment of juveniles in them. Both the overall

density and juvenile density, less than 50 mm, of *Crassedoma giganteum* increased about 30% compared to last year.

Overall, *Patiria miniata* in the ARMs densities remained similar to last year. There was a substantial recruitment of *Pisaster giganteus* (15-40 mm) in the ARMs with increases at seven sites, and the remaining four sites remained similar to last year. Overall, there was little change in *Pycnopodia helianthoides* abundance in the ARMs. Overall there was an increase in *Strongylocentrotus franciscanus* densities in the ARMs with an increase at three sites, decrease at one site and little to no change at seven sites. Densities of *Strongylocentrotus purpuratus* in the ARMs on average increased with increases at four sites, decrease at one site and little change at seven sites. The site with the decreases in *Strongylocentrotus* spp. was the same, Scorpion Anchorage, and is likely due to the large amount of sand that was depositied on the site over the last winter, burying many of the ARMs. *Centrostephanus coronatus* remained in low abundance in the ARMs this year with five observed in all the ARMs combined. One was less than 15 mm indicating very little recent recruitment of this warmer water species.

Unusual Species / Non-Indicator Species

We again observed one large *Pteria sterna*, pearl oyster, at one of the monitoring sites. We believe this species recruited primarily during the 1997/1998 El Niño, have been senescing since, and now are very rare.

There was a noticeable recruitment of *Henricia leviuscula* at Santa Rosa Island, and possibly other locations as well.

In recent years, there has been an increase in *Pisaster ochraceus* observations at the KFM sites. This sea star is an intertidal species, which is why it is unusual to see it at the depths of the KFM sites. Observations of *P. ochraceus* were made at the following sites this year: SCSA, SCDPM, SCPP, SRCP, SCPRF, ANKH, ANEFC, ANLH (refer to Table 3 for site codes). At sites with relatively high numbers present, *P. ochraceus* density were recorded and can be found in the station results.

There was a high abundance of salps, jellies and pyrosomes observed in the water column around the KFM sites throughout the season.The water column appeared green, indicating nutrient rich waters. The water column typically appears green at the beginning of the KFM sampling season, in spring, and begins to clear in mid-summer. This year the green water conditions persisted through the length of the field season.

Two distinct recruitment events for banracles were observed at several KFM sites. The first event was noted in February during drift dives conducted from Little scorpion to San Pedro Point. Then in mid-summer there was another noticeable recruitment of barnacles at the following 15 KFM sites: SMHR, SRJLNO, SRJLSO, SCPB, ANAR, SBAP, SCDPM, SCPP, SCCVP, SCLS, SCPRF, ANKH, ANEFC, ANBSBR, ANLH (refer to Table 3 for site codes).

Invasive Species

In 2009, the first observation of the non-native invasive alga, *Sargassum horneri* in CINP was detected. *Sargassum horneri* is native to Asia (Japan, Korea, China and Viet Nam) was first observed in California at Long Beach Harbor in October 2003. It has rapidly spread in southern

California and in Baja, where it occupies rocky habitat from 3 - 18 m. At the California Channel Islands, it was first observed at Catalina Island in April of 2006, then San Clemente Island in May of 2007 (Jack Engle and Kathy Ann Miller, personal communication). In April of 2009, it was first observed within Channel Islands National Park at Anacapa Island. Small plants were observed around Rat Rock at the west end of Anacapa Island and by October, it was well established with a notably higher density of both small and large plants, some at or near maturity. We conducted additional surveys in October 2009 and *S. horneri* was observed at six out of nine survey locations at Anacapa Island (Kushner et. al, 2009). At that time, there appeared to be a higher prevalence and abundance on the north side of the Island which has fewer *Strongylocentrotus* spp. (sea urchins) than on the south side and this area is within the State Marine Reserve or Conservation Area that limits or prohibits the take of all or most marine algae, fish and invertebrates.

This year, aside from our observations at the kelp forest monitoring sites, we conducted survey dives. We conducted a two day survey trip specifically to look for *Sargassum horneri* and *Haliotis cracherodii* (black abalone) around Santa Cruz Island from February 9-10, 2010. In addition , much of our last monitoring cruz was spent surveying for subtidal species of abalone and *S. horneri*. A brief description including location information is included in Appendix N.

During a survey dive in February of 2010, *Sargassum horneri* were observed just west of Cavern Point. The plants were very healthy and were the most dominant algae species within a depth area of 10-60 feet. At the deeper depths, *S. horneri* were attached to cobble and ranged from 5-10 cm to two meters in height. In shallower depths between 18-30 ft, large adults were observed up to 2.5 meters tall and were present in dense patches. The *S. horneri* under moderate kelp canopy appeared to be smaller presumably due to low light conditions.

This year, the KFM Program added *Sargassum horneri* to our four core density sampling methods to begin collecting information on this new invasive algae. In the station results section of this report, we state the density data for 1 meter quadrats, 5 meter quadrats, band transects and random point contacts. It is still unclear which of these methods is the most effective for monitoring *S. horneri*, so we will likely continue to collect density data from all four methods during the 2011 sampling season.

Sargassum horneri was observed at a total of four KFM sites at the Channel Islands this year. Observations were made at Southeast Sea Lion and Graveyard Canyon at Santa Barbara, Keyhole at Anacapa and Cavern Point at Santa Cruz. Adult *S. horneri* were present at Southeast Sea Lion and Cavern Point, while all other sites only had juveniles present. For density data from these sites, please refer to the station results section.

This alga is an annual species. The algae appears to rapidly grow in October, when the KFM Program completes its monitoring, and continues to grow in Fall and Winter. This apparent rapid growth in fall with mature plants developing in winter and spring will mostly be missed by the monitoring program. In the summer, when most of the monitoring is conducted, the algae have already begun senescing.

Temperature

Two Tidbit® temperature loggers were deployed at every site except for Miracle Mile, which has no temperature logger stake. All temperature data were collected this year with the exception of data missing between April 13, 2010 and May 19, 2010 for Cat Canyon at Santa Barbara Island due to temperature logger failure for one of the UTBI tidbits and the battery running out early on the second tidbit logger. For more details, see the results section for that site. Overall, water temperature was below normal this year.

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Appendix A. Results by Individual Site.

Location: Wyckoff Ledge, San Miguel Island
Site #1, SMWL
Year sampling began: 1982
2010 sampling dates: 7/29
2010 status: Mature kelp forest

This site continued to be a mature kelp forest. Canopy cover was thicker than last year at an estimated 100%. This created low light conditions on the bottom, making it difficult to perform the sampling protocols. *Macrocystis pyrifera* adult and juvenile densities were similar to recent years at 0.24/m² and 0.38/m², respectively. Subadult density increased to 0.49/m². Cover of *M. pyrifera* was 25%. *Eisenia arborea* was common but none were observed on 1 m quadrats. Cover of *E. arborea* remained low at 0.83%. *Pterygophora californica* adults were moderately abundant in low lying areas at 1.1/m², and juveniles were common at 0.88/m². Cover of *P. californica* was 15%. No *Laminaria farlowii* were observed, similar to previous years**.** *Sargassum horneri* was not observed at the site. *Dictyoneuropsis reticulata* was moderately abundant. This species is not one of the program's indicator species, but data are collected when present. It was only counted by one of the two observers performing 1 m quadrats, therefore the data were not entered into the database. Based on the incomplete data *D. reticulata* had a density of 3.1/m^2. Miscellaneous brown algae cover was 11%, and much of the cover was *D. reticulata*. *Desmarestia* spp. were moderately abundant but decreased in cover from last year to 0.67%. *Cystoseira* spp. were common at 2.0% cover. Miscellaneous red algae were abundant and diverse with a cover of 45%, similar to previous years. This category included mostly *Callophycus* spp. *Gelidium* spp. were not observed at the site. *Gigartina* spp. were common at 0.17% cover. Green algae were not observed. Articulated coralline algae cover was 14%, similar to recent years. Encrusting coralline algae cover decreased to 10%. Bare substrate cover was 42%, the highest recorded at this site.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover increased to a high of 22% and consisted mostly of *Balanus* spp. There was an obvious recent recruitment of *Balanus* spp. to the site as most were very small. Tunicates were common with a cover of 0.83%, and consisted mostly of *Pycnoclavella stanleyi*. *Styela montereyensis* was common at 0.13/m², similar to last year, with many different sizes present. Sponges were common with cover of 1.2%. *Tethya aurantia* was moderately abundant at 0.16/m², similar to previous years. *Phragmatopoma californica* was common, but not observed on RPCs. *Diopatra ornata* was common at 9.0% cover. Miscellaneous bryozoans were common with a cover of 20%, similar to recent years. *Diaperoecia californica* was not observed on RPCs, though it was present. *Urticina lofotensis* density was 0.25/m², similar to past years. *Corynactis californica* cover was 0.17%. *Balanophyllia elegans* was common at 0.50% cover. *Astrangia lajollaensis* was rare with a density of 0.33%. No gorgonians were observed at the site, similar to past years.

Strongylocentrotus franciscanus was moderately abundant in the crevice habitat at 0.25/m² and juveniles were rare in the spine canopy. Mean size of *S. franciscanus* was 88 mm, similar to recent years. *Strongylocentrotus purpuratus* adults and juveniles were rare with a density of 0.46/m², similar to recent years. Mean size for *S. purpuratus* was 25 mm, also similar to recent years. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed, similar to past years. No sea urchin wasting disease was observed.

Pisaster giganteus was common and counted on 1 m quadrats and 5 m quadrats with densities of 0.042/m² and 0.030/m², respectively. All were small with a mean of 96 mm. *Patiria miniata* was abundant with a density of 2.3/m², similar to past years. *Pycnopodia helianthoides* was rare with a density of 0.0083/m^2. Most *P. helianthoides* were small, with an average size of 89 mm. *Ophiothrix spiculata* was not observed at the site. *Parastichopus parvimensis* was common, with a density of 0.13/m², similar to previous years. No sea star wasting disease was observed.

Haliotis rufescens remained relatively abundant with a density of 0.043/m². A total of 143 *H. rufescens* were located for size frequency measurements with mean size increasing to 189 mm, the largest average size recorded at this site. Similar to past years since at least 1990, we conducted a very thorough search of the entire transect, extending ten meters on both sides, for abalone. Similar to past years, we conducted this search while conducting the band transects and searched for abalone between the band transects. This was one of the largest number of abalone we have measured for size frequencies, though similar to last year. Because we are relatively consistent in our search effort, we believe that the sample size for size frequencies is an additional proxy of density for the site. *Cypraea spadicea* was common though not observed on 1 m quadrats. *Astraea gibberosa* was moderately abundant with a density of 0.17/m^2, similar to past years. No *Megastraea undosa* or *Tegula regina* were observed at the site. *Kelletia kelletii* continued to be abundant with a density of 0.21/m^2. *Megathura crenulata* was rare with a density of 0.0014/m^2. *Crassedoma giganteum* was rare and not observed on band transects. *Aplysia californica* was not observed at the site. *Cryptochiton stelleri*, was not observed on band transects. This is not one of our indicator species, but we have been trying to remember to count them on band transects. Approximately 2-3 were observed at the site. *Panulirus interruptus* was not observed.

Conditions were poor for counting fish due to low light and few fish being out in the open during the count. Notably more adult fish were observed later in the day, especially *Sebastes atrovirens* and *Sebastes caurinus*. *Coryphopterus nicholsii* density was low at 0.042/m^2. Roving diver fish counts were conducted on July 29th by four divers observing 29 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all data were successfully downloaded.

Location: Hare Rock, Santa Cruz Island
Site # 2, SMHR
Year sampling began: 1982
2010 sampling dates: 09/14
2010 status: Dominated by *Strongylocentrotus franciscanus*.

This site continues to be dominated by *Strongylocentrotus franciscanus* and is almost entirely devoid of macroalgae. Adult, subadult, and juvenile *Macrocystis pyrifera* all had densities of 0.0/m², similar to recent years, and a cover of 0.0%. No *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii,* or *Cystoseira* spp. were observed at the site. *Sargassum horneri* was not observed at the site. *Desmarestia* spp. were rare, scattered around the site in several small patches, but were not observed on RPCs. Miscellaneous red algae were rare with a cover of 2.2%. This category was mostly comprised of *Laurencia pacifica*, similar to past years. *Gelidium* spp. and *Gigartina* spp. were not observed during sampling, but were rare at the site. Green algae were rare, and were not observed on RPCs. Articulated coralline algae cover was 0.17%.

Encrusting coralline algae were abundant and similar to last year with a cover of 71%. Bare substrate cover was similar to last year at 19%.

Overall, this site had few encrusting invertebrates. Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 15%, and consisted mostly of barnacles. Tunicates were rare with 0.0% cover. *Styela montereyensis* was not observed at the site. Sponges were rare with a cover of 0.0%. *Tethya aurantia* was common at 0.054/m², similar to past years. *Phragmatopoma californica* was rare with none observed on RPCs. *Diopatra ornata* was rare with a cover of 0.33%, similar to recent years. Miscellaneous bryozoans were rare at 0.17% cover. *Diaperoecia californica* cover was 0.0%, similar to past years. *Urticina lofotensis* was common at 0.018/m². *Corynactis californica, Balanophyllia elegans* and *Astrangia lajollaensis* were moderately abundant with covers of 3.5%, 2.3%, and 0.83%, respectively.

Overall, there was little change in *Strongylocentrotus* spp. from recent years. *Strongylocentrotus franciscanus* remained abundant, and was evenly distributed and out in the open over most of the transect. Density of *S. franciscanus* remained high at 8.3/m^2. Most were large with juveniles being rare. *Strongylocentrotus purpuratus* remained rare with a density of 0.0/m².The *S. purpuratus* observed along the transect were mostly from a patch at the zero/east end. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed. No sea urchin wasting disease was observed.

Patiria miniata remained very abundant at 5.5/m² and most were large. *Pisaster giganteus* densities on 1 m and 5 m quadrats were 0.042/m² and 0.23/m², respectively, an increase from last year. The mean size of *P. giganteus* increased to 114 mm from 70 mm last year. *Pycnopodia helianthoides* was moderately abundant, with all size classes present. Mean size of *P. helianthoides* was 145 mm and density was 0.093/m². *Ophiothrix spiculata* was rare and not observed during RPCs. *Parastichopus parvimensis* was rare with a density of 0.0/m². No sea star wasting disease was observed.

Haliotis rufescens was noticeably absent throughout the site. However, several fresh shells less than 50 mm were found. *Cypraea spadicea* was moderately abundant at a density of 0.21/m². *Astraea gibberosa* was moderately abundant at 0.63/m². *Megastraea undosa* was not observed at the site. *Kelletia kelletii* and *Megathura crenulata* were both rare with densities of 0.0042/m² and 0.0/m², respectively. *Crassedoma giganteum* was common at a density of 0.011/m², similar to previous years. *Aplysia californica* was not observed at the site.

Fish abundance and diversity were moderate, similar to recent years. *Coryphopterus nicholsii* was moderately abundant with a density of 0.75/m. No *Lythrypnus dalli* or *Alloclinus holderi* were observed. Roving diver fish counts were conducted on September 14th by four divers observing 23 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all data were successfully downloaded.

Location: Johnson's Lee North, Santa Rosa Island
Site #3, SRJLNO
Year sampling began: 1982
2010 sampling dates: 8/19, 10/4
2010 status: Mature kelp forest

This site continued to be a mature kelp forest. Canopy cover was estimated at 85%. *Macrocystis pyrifera* was abundant. Adult densities measured on 1 m quadrats and 5 m quadrats were similar to recent years at 0.71/m^2, and 0.50/m^2, respectively. Subadult and juvenile densities were 0.015/m^2, and 0.17/m^2, respectively. Total *M. pyrifera* cover was 39%, similar to past years. *Eisenia arborea* was rare at a density of 0.042/m^2. Adult *Pterygophora californica* was common at 0.33/m^2, similar to past years. Juvenile density was 0.083/m^2. Cover of *P. californica* was 6.2%. Adult *Laminaria farlowii* density was 0.67/m^2 while juvenile *L. farlowii* density was 0.083/m^2. Cover was 5.5%, similar to last year. *Cystoseira* spp. were common at 0.67% cover. *Desmarestia* spp. were not observed at the site. *Sargassum horneri* was not observed at the site. Miscellaneous red algae were moderately abundant with cover of 42%, a decrease from last year. *Gigartina* spp. were common with 5.5% cover, a decrease from last year's high. *Gelidium* spp. were not observed at the site. Miscellaneous green algae were common, and brown algae were rare, but neither were observed on RPCs. Articulated coralline algae cover was similar to last year at 5.5%, and encrusting coralline algae cover was 11%, a decrease from last year. Bare substrate cover was 5.5%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover remained at 17%. The most dominant taxa in this category were hydroids. Tunicates were moderately abundant and diverse with 20% cover. *Styela montereyensis* remained abundant at 5.1/m^2, an increase from last year. Juveniles were moderately abundant indicating a recruitment event, similar to other sites. Sponges were abundant with a cover of 6.5%, similar to last year. *Tethya aurantia* was moderately abundant at 0.16/m^2, similar to previous years. *Phragmatopoma californica* cover notably increased to 14%, the highest cover recorded since 1985. This was one of the more noticeable changes observed here, and was similar to what was observed at South Point. *Diopatra ornata* cover was 1.7 %, similar to recent years. *Serpulorbis squamigerus* was rare at 0.17% cover. Miscellaneous bryozoans were moderately abundant with a cover of 37% and *Diaperoecia californica* cover was 0.33%. *Urticina lofotensis* density was 0.026/m^2, an increase from last year. *Corynactis californica* cover was 1.5%, similar to recent years. *Balanophyllia elegans* and *Astrangia lajollaensis* were present with covers of 2.0% and 0.67%, respectively. *Lophogorgia chilensis, Muricea californica* and *Muricea fruticosa* were not observed at the site.

Adult *Strongylocentrotus* spp. were common while juveniles were rare, similar to recent years. *Strongylocentrotus purpuratus* density was 1.2/m^2. *Strongylocentrotus franciscanus* density was 2.5/m^2. However, the reef located 15 m offshore had noticeably more urchins. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed at the site, similar to past years. No sea urchin wasting disease was observed.

Pisaster giganteus was moderately abundant and recorded on both 1 m quadrats and 5 m quadrats at 0.33/m^2 and 0.14/m^2, respectively. *Patiria miniata* was moderately abundant, with all sizes present, at 2.2/m^2, the highest density recorded at this site since 1982. *Pycnopodia helianthoides* was moderately abundant at 0.11/m^2. Most *P. helianthoides* were small to medium in size, with very few large individuals present. *Parastichopus parvimensis* was common and

observed at 0.042/m^2. *Ophiothrix spiculata* was not observed at the site. No sea star wasting disease was observed.

Haliotis rufescens was observed scattered over much of the transect in crevice habitat. Thirty six *H. rufescens* were measured during size frequencies for a mean size of 185 mm. Additionally, there has been a gradual increase in mean size since 2002. *Haliotis rufescens* density was 0.019/m². *Cypraea spadicea* density was 0.29/m². *Megastraea undosa* was rare and none were observed on 1 m quadrats. *Astraea gibberosa* was notably absent at the site. *Kelletia kelletii* was rare with a density of 0.0014/m², similar to previous years. *Megathura crenulata* was common with densities of 0.013/m², a slight increase from recent years. *Crassedoma giganteum* was common at 0.028/m² and were notably small with a mean size of 55 mm. *Aplysia californica* was not observed at the site.

Fish were abundant and diverse, similar to past years. *Coryphopterus nicholsii* density was 0.042/m². *Alloclinus holderi* was observed in 1 m quadrats for the first time since at 0.042/m^2. Figures summarizing RDFC data can be found in Appendix H.

All nine artificial recruitment modules (ARMs) were monitored for all indicator species. One *Haliotis rufescens* was observed for a density of 0.11/ARM. No other *Haliotis* spp. were observed in the ARMs. *Cypraea spadicea* remained relatively abundant at 6.3/ARM, similar to last year. No *Astraea/Megastraea* spp. or *Kelletia kelletii* were observed. *Megathura crenulata* was present at 0.11/ARM. *Crassedoma giganteum* density was 1.1/ARM and a mean of 70 mm was observed, similar to last year. *Patiria miniata* density was 3.6/ARM. Mean size was 42 mm, similar to recent years. *Pisaster giganteus* density increased to 3.1/ARM and had a mean of 40 mm. *Pycnopodia helianthoides* density was 0.89/ARM and a mean of 94 mm was observed, similar to recent years. *Strongylocentrotus franciscanus* density remained relatively high for this site at 39/ARM with a mean of 57 mm. *Strongylocentrotus purpuratus* density was 13/ARM and a mean of 30 mm was observed, similar to recent years. *Parastichopus parvimensis* <10 cm were present at 0.11/ARM and *P. parvimensis* >10 cm were present at 0.33/ARM. Seven *Octopus* spp. one *Urticina lofotensis,* one small *Styela montereyensis,* and one male heart crab measuring 40mm were also observed in the ARMs.

The temperature loggers were retrieved and deployed, and all data were successfully downloaded.

Location: Johnson's Lee South, Santa Rosa Island
Site #4, SRJLSO
Year sampling began: 1982
2010 sampling dates: 07/01, 9/15
2010 status: Mature kelp forest

Overall, this site continued to be a mature kelp forest with large, widely spaced *Macrocystis pyrifera* plants as well as patches of smaller plants. Unlike last year when canopy cover was estimated at 0%, this year's canopy cover estimate was 100% during our first visit and 85% during our second visit. Understory algae were abundant and diverse, with almost all indicator species present. Overall cover of *M. pyrifera* decreased from last year to 5.3% and adult density was 0.26/m², similar to last year. Subadult and juvenile *M. pyrifera* densities both decreased to 0.030/m² and 0.25/m², respectively. Adult *Eisenia arborea* were common over much of the

transect, with mostly large plants present. Adult and juvenile densities were 0.042/m² and 0.083/m², respectively. Juvenile *E. arborea* were rare. Cover of *E. arborea* was 1.3%. *Pterygophora californica* was common but not observed during quadrats. Adult and juvenile *Laminaria farlowii* densities were 0.29/m² and 0.54/m^2, respectively, and cover was 4.8%. *Desmarestia* spp. and *Cystoseira* spp. were not observed on RPCs. *Sargassum horneri* was not observed at the site. Miscellaneous brown algae cover was 0.5%, similar to recent years, and consisted mainly of *Dictyoneuropsis* spp. *Gigartina* spp. were common with 5.3% cover, a decrease from last year but similar to recent years. *Gelidium* spp. were not observed. Miscellaneous red algae remained moderately abundant at 45% cover. There were notably more red algae during our first visit in July than in September. Other green algae were not observed during RPCs. Articulated coralline algae cover was 8.3%, similar to last year. Encrusting coralline algae cover was 18%, a decrease from last year. Bare substrate cover was 9.8%, relatively low for this site and similar to last year.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 21%. This category mainly consisted of hydroids and barnacles. Tunicates were moderately abundant with a cover of 16%, the highest cover on record for this site. The abundance of *Styela montereyensis* recruits was higher than we have ever observed at this site, although similar recruitment has been observed at other KFM sites this year. The density of *S. montereyensis* was 3.7/m², the highest density on record for this site. Sponge cover was moderately abundant at 1.8%. *Tethya aurantia* was abundant at a density of 0.43/m², similar to recent years. *Diopatra ornata* was moderately abundant with a cover of 14%, similar to last year. *Phragmatopoma californica* was rare at 0.67%. Miscellaneous bryozoans were moderately abundant with a cover of 38%. This category included the following species: *Bugula* spp., *Membranipora* spp., *Hippodiplosia* spp. and *Thalamoporella* spp. *Diaperoecia californica* was moderately abundant although not observed on RPCs. *Corynactis californica* cover was 4.0%, similar to last year. *Urticina lofotensis* density was 0.16/m². *Astrangia lajollaensis* cover was 1.2%. *Balanophyllia elegans* was present in patches with a cover of 1.3%. *Lophogorgia chilensis* was common at 0.056/m², similar to recent years. *Muricea californica* was rare with a density of 0.0014/m². No *Muricea fruticosa* were observed.

Strongylocentrotus spp. distribution was patchy. Most were confined to crevice habitat, with much of that available habitat being full of sea urchins. *Strongylocentrotus franciscanus* and *S. purpuratus* were both moderately abundant with densities of 0.63/m² and 4.3/m², respectively, and similar to recent years. The mean size of *S. franciscanus* and *S. purpuratus* were 51 mm and 35 mm, respectively, similar to recent years. Juvenile *Strongylocentrotus* spp. were rare. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed. No sea urchin wasting disease was observed.

Pisaster giganteus was moderately abundant and increased in density on both 1 m and 5 m quadrats to 0.25/m² and 0.11/m², respectively. Mean size for *P. giganteus* was 106 mm, the highest on record for this site. *Patiria miniata* was abundant, similar to recent years, at 4.7/m². *Pycnopodia helianthoides* was abundant with a density of 0.18/ m² and mean size of 137 mm, similar to years past. *Ophiothrix spiculata* was not observed on RPCs but was common to the site. *Parastichopus parvimensis* was common at the site, although not observed during sampling. *Dermasterias imbricata* was moderately abundant, similar to recent years. No sea star wasting disease was observed.

Haliotis rufescens remained common with a density of 0.0069/m², similar to last year. The entire site was thoroughly searched for *H. rufescens*. A total of 12 were measured for a mean size of 169 mm. Two fresh shells measuring 208 mm and 200 mm were found. The very large (237 mm) *H. rufescens* very close to the transect line at meter 90 was present again this year. This abalone has been at or near the same exact spot on the transect for many years. *Cypraea spadicea* was moderately abundant at 0.67/m². *Kelletia kelletii* was common at 0.028/m², similar to last year. Both large and small sizes were present. *Megathura crenulata* was rare at 0.0069/m². *Crassedoma giganteum* had a density of 0.022/m². *Aplysia californica* was not observed at the site.

Fish were abundant and diverse, similar to past years. *Coryphopterus nicholsii* was relatively abundant with a density of 1.1/m². Roving diver fish counts were performed on July 1st by four divers observing 22 species of fish. Figures summarizing RDFC data can be found in Appendix H.

All seven ARMs were monitored for all indicator species. We continued to observe *Phyllolithodes papillosus*, heart crabs, in the ARMs at this site, which is a range extension for this northern species. This year, 11 *P. papillosus* were recorded during sampling and four of them had eggs. We have observed this species consistently in the ARMs since 1997. One *Brosmophycis marginata*, red brotula, was observed in an ARM.

One *Haliotis rufescens* was observed in the ARMs this year for a density of 0.14/ARM and it measured 37 mm. *Cypraea spadicea* density was 2.6/ARM. Five *Megathura crenulata* were observed in the ARMs for a density of 0.71/ARM and a mean size of 54 mm was observed. *Crassedoma giganteus* density was 1.43/ARM, an increase from last year. No *Kelletia kelletii* were observed. *Patiria miniata* density was 7.1/ARM, similar to recent years, with a mean size of 41 mm. *Pisaster giganteus* density was 1.4/ARM, and had a mean size of 62 mm, the largest mean since 1997. *Pycnopodia helianthoides* density was 1.9/ARM, with a mean size of 89 mm, similar to recent years. *Strongylocentrotus franciscanus* density was 40/ARM, with a mean size of 54 mm, similar to recent years. *Strongylocentrotus purpuratus* density was 16/ARM, with a mean size of 43 mm, similar to recent years. No *Parastichopus parvimensis* <10 cm and six *P. parvimensis* >10 cm were observed in the ARMs for densities of 0.0/ARM and 0.86/ARM, respectively.

The temperature loggers were retrieved and deployed, and all data were successfully downloaded. One new temperature logger bolt was installed directly along the line at 3 m. Nothing is attached to this as of 9/15/2010.

Location: Rodes Reef, Santa Rosa Island
Site #5, SRRR
Year sampling began: 1983
2010 sampling dates: 6/28
2010 status: Open area with a moderately high density of *Strongylocentrotus franciscanus*.

Macrocystis pyrifera abundance remained low at this site. No adult and few subadult *M. pyrifera* were present. Juveniles were common in several small patches around the site. Most other macroalgae (with the exception of *Desmarestia* spp.) were observed at low levels during

sampling. *Macrocystis pyrifera* adult and juvenile densities both remained at 0.0/m^2, while subadult density was 0.0050/m^2. Percent cover of *M. pyrifera* remained at 0.0%. *Desmarestia* spp. were moderately abundant around the site, but few plants were observed on the reef. *Desmarestia* spp. cover was 1.7%. Similar to last year, no *Eisenia arborea, Pterygophora californica,* or *Cystoseira* spp. were observed at the site. *Laminaria farlowii* juveniles were rare, and not observed on quadrats. *Sargassum horneri* was not observed at the site. No adults were observed. No miscellaneous brown or green algae were observed on RPCs. Similar to recent years, miscellaneous red algae cover remained low, but increased slightly from last year to 12%. *Gigartina* spp. and *Gelidium* spp. were not observed. Articulated coralline algae were not observed on RPCs. Encrusting coralline algae cover remained high at 58%, similar to last year. Bare substrate cover remained at 10%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover increased from last year to a cover comparable to earlier years at 14%. In this category, *Balanus* spp. comprised the largest percentage of the total with high cover in the low lying areas and on smaller rocks. This notable increase in recruitment completely covered areas of rock with a ½ inch layer of *Balanus* spp. Large *Balanus nubilus* were also common to the site, similar to past years. Tunicates were common with a cover of 0.17%. However, this is the lowest density observed since monitoring began. *Styela montereyensis* was rare and had a density of 0.13/m^2. Small *S. montereyensis* were present, indicative of recent recruitment. Sponges were rare with a cover of 0.83%, the lowest recorded since 2002. *Tethya aurantia* was moderately abundant at 0.22/m^2, similar to recent years. One very notable change to this site was the decrease in cover of *Diopatra ornata*. Percent cover of *D. ornata* was very low at 0.83%, the lowest observed since 2003. *Phragmatopoma californica* was not observed. Miscellaneous bryozoan cover decreased to 1.0%, notably less than the past several years, and the lowest cover recorded since 1987. *Diaperoecia californica* was not observed on RPCs; notably less abundant than in recent years. *Urticina lofotensis* was common with a density of 0.058/m^2. *Corynactis californica* was observed on the tops of rocks, but not observed on RPCs. *Balanophyllia elegans* was common with a cover of 1.2%. *Astrangia lajollaensis* was moderately abundant at 7.5% cover. *Lophogorgia chilensis* was rare with none observed on band transects. Neither *Muricea californica* nor *M. fruticosa* were observed at the site.

Strongylocentrotus franciscanus were moderately abundant but less so than in previous years at 5.9/m^2. *Strongylocentrotus purpuratus* were rare with a density of 0.083/m^2. Only ten were found for size frequencies. Juvenile *Strongylocentrotus* spp. were rare overall. *Lytechinus anamesus* and *Centrostephanus coronatus* were not observed at the site. In a significant increase from last year's single case of wasting disease, approximately 5% of *Strongylocentrotus* spp. exhibited signs of wasting disease. Various stages were observed, from some balding to completely bald and bearing barnacles. Additionally, several intact urchin tests were observed that were likely from wasting disease and not predation.

Pisaster giganteus was moderately abundant on 1 m and 5 m quadrats, mostly in rocky areas, at a density of 0.25/m^2 and 0.15/m^2, respectively. Several *Pisaster brevispinus* and *Dermasterias imbricata* were observed at the site. Similar to last year, *Patiria miniata* was abundant at 6.5/m^2. *Pycnopodia helianthoides* remained moderately abundant at 0.10/m^2. Most were relatively small with only a few large individuals present. No *Ophiothrix spiculata* were observed. *Parastichopus*

parvimensis was rare overall, but more common on the western end of the transect in the rocky areas, with an overall density of 0.042/m². No sea star wasting disease was observed.

Two small, old *Haliotis* spp. shells were found, measuring16 mm and 22 mm. There seemed to be fewer shells overall than last year. *Cypraea spadicea* was moderately abundant at 0.50/m², and most individuals were notably large. No *Megastraea undosa* or *Astraea gibberosa* were observed during sampling, but several *A. gibberosa* were observed at the site. *Kelletia kelletii* was common at 0.38/m², a decrease from last year. *Megathura crenulata* was observed with a density of 0.029/m², and were mostly found along the western end of the transect. *Crassedoma giganteus* was rare at 0.013/m², similar to past years. *Aplysia californica* was not observed during sampling. No *Panulirus interruptus* were observed.

With less kelp than in previous years there was a corresponding decrease in fish densities on the western end of the transect. None of the indicator fish were observed in quadrats. Roving diver fish counts were performed on June 28th with five divers observing 16 species. *Rathbunella hypoplecta*, stripefin ronquil, was common at the site with up to four counted. However, two color morphs were observed for this ronquil and there is some debate as to whether they could be the more uncommon *R. alleni.* It is also possible that the differences in mottling and color could be sexual dimorphism. Figures summarizing RDFC data can be found in Appendix H.

Temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Gull Island, Santa Cruz Island
Site #6, SCGI
Year sampling began: 1982
2010 sampling dates: 7/27, 10/6
2010 status: Mature kelp forest

This site remains a mature kelp forest with a moderate amount of understory algae. *Macrocystis pyrifera* canopy cover was estimated at 60%. Adult and subadult *M. pyrifera* densities were 0.10/m^2 and 0.095/m^2, respectively, a slight decrease from last year. Juvenile *M. pyrifera* densities increased from last year to 2.7/m^2. *Macrocystis pyrifera* cover decreased to 6.2%. *Eisenia arborea* was similar to last year with adult and juvenile densities at 0.21/m² and 0.71/m², respectively, and cover of 3.3%. *Pterygophora californica* were rare overall, with no adults observed in quadrats. Juveniles had a density of 0.042/m^2. Cover of *P. californica* was 0.33%. *Laminaria farlowii* was rare with adult and juvenile densities of 0.042/m² and 0.13/m², respectively. No *L. farlowii* cover was observed on RPCs. No *Desmarestia* spp. were observed. *Sargassum horneri* was not observed at the site. *Cystoseira* spp. cover was 0.67%. Miscellaneous brown algae cover was 1.2%, and consisted mostly of *Agarum clathratum* which was moderately abundant in low lying areas throughout the site. Miscellaneous red algae remained relatively abundant with cover of 54%. *Gigartina* spp. were common with cover of 0.17%. Green algae were not observed on RPCs, but were common at the site. Articulated coralline algae and encrusting coralline algae were both common with covers of 2.0% and 13%, respectively. Bare substrate cover was 9.3%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 11%. The most abundant invertebrates in this category were amphipod tube mats. Tunicate cover was 3.2%, similar to

years prior. *Garveia annulata* was moderately abundant, but notably less than last year. *Styela montereyensis* density was 0.083/m². Sponge cover was 2.0%. *Tethya aurantia* was abundant in all sizes with a density of 0.36/m², the highest density recorded at this site. *Diopatra ornata* were moderately abundant with a cover of 4.2%. Miscellaneous bryozoan cover remained high at 24%. *Diaperoecia californica* cover was observed at 0.67%, a decrease from last year. *Corynactis californica* cover was 2.5%. *Balanophyllia elegans* and *Astrangia lajollaensis* covers were 2.0% and 0.33%, respectively, similar to recent years. *Stylaster californica* was moderately abundant with a density of 0.11/m². *Lophogorgia chilensis* density was 0.039/m^2, similar to last year. No *Muricea californica* or *Muricea fruticosa* were observed during sampling.

Overall, *Strongylocentrotus* spp. were common and notably more abundant inshore than offshore, similar to last year. *Strongylocentrotus franciscanus* and *Strongylocentrotus purpuratus* densities both increased to 1.3/m² and 5.8/m², respectively. Their mean sizes were similar to last year at 69 mm and 32 mm, respectively. *Lytechinus anamesus* density was 0.0097/m^2. *Centrostephanus coronatus* was not observed during sampling. No sea urchin wasting disease was observed.

Pisaster giganteus was sampled on both 1 m quadrats and 5 m quadrats with densities of 0.33/m² and 0.22/m², respectively, an increase from last year. *Patiria miniata* remained moderately abundant with a density of 3.3/m². *Pycnopodia helianthoides* was present with a density of 0.015/m², similar to recent years. *Ophiothrix spiculata* was present mostly in kelp holdfasts, but not observed on RPCs. *Parastichopus parvimensis* had a density of 0.25/m², similar to recent years, and most individuals were large. No *Pachythyone rubra* were observed. No sea star wasting disease was observed.

Cypraea spadicea was common, and notably large, at a density of 0.17/m². *Megastraea undosa* was rare and concentrated on the northern end of the transect. Most individuals were notably large. No *M. undosa* were observed on 1 m quadrats, but nine were measured with a mean size of 102 mm. *Astraea gibberosa* was not observed. *Tegula regina* was not observed. *Kelletia kelletii* density was similar to recent years at 0.0028/m². *Megathura crenulata* remained rare with a density of 0.0056/m². *Aplysia californica* was noticeably absent during sampling. *Crassedoma giganteum* density remained similar to recent years at 0.032/m². Most *C. giganteum* were variable in size with a mean size of 72 mm. *Panulirus interruptus* was not observed at the site.

Fish were moderately abundant and diverse, similar to past years. The density of *Coryphopterus nicholsii* was 0.25/m². Seven *Ophiodon elongatus* were observed at the site, mostly small in size, but only four were observed during the roving diver fish count. There were unusually large numbers of male and female *Semicossyphus pulcher* of all size ranges. Juvenile *Sebastes mystinus* and *Sebastes serranoides* were abundant in large schools throughout the site. Roving diver fish counts were conducted on July 27th by five divers observing 27 species. Figures summarizing RDFC data can be found in Appendix H.

All 14 ARMs were intact and monitored for all indicator species. There were no *Haliotis* spp. observed for the fifth consecutive year. The density of *Cypraea spadicea* was 13/ARM, similar to recent years. Two *C. spadicea* were noted as having juvenile morphology. The mean size of *C. spadicea* remained similar to last year at 44 mm. No *C. spadicea* egg masses were noted in the ARMs. *Kelletia kelletii, Tegula regina, Megastraea undosa,* and *Astraea gibberosa* were not

observed. *Megathura crenulata* had a density of 0.93/ARM, the highest density recorded at this site. *Crassedoma giganteum* had a density of 1.3/ARM and a mean size of 54 mm, similar to last year. *Patiria miniata* density remained similar to last year at 6.5/ARM, and had a mean size of 24 mm. *Pisaster giganteus* density was 1.9/ARM. Mean size remained similar to past years at 49 mm. One large *Pycnopodia helianthoides* was observed for a density of 0.07/ARM. *Strongylocentrotus franciscanus* density was 39/ARM, with a mean size of 32 mm. *Strongylocentrotus purpuratus* density notably increased to 27/ARM, with mean size similar to last year at 23 mm. The density of *Parastichopus parvimensis* <10 cm was 0.93/ARM and *P. parvimensis* >10 cm was 0.36/ARM. A total of four *Octopus* spp. were observed, including one octopus with eggs.

This site has two temperature logger stakes. The original stake and a new stake that was installed in 2007 at the 0 m end about 20 m away from the original stake. Four temperature loggers were deployed for the past two years, two at each stake, to test for a difference in temperature between the two locations. All four loggers were retrieved and all data were downloaded successfully. There was no significant difference in temperature between the two different logger locations over the last two years. As a result, the location of the temperature logger has now been moved permanently to the new location at the 0 m end of the transect. This site has two temperature logger stakes. The original stake and a new stake that was installed in 2007 at the 0 m end about 20 m away from the original stake. Four temperature loggers were deployed for the past two years, two at each stake, to test for a difference in temperature between the two locations. All four loggers were retrieved and all data were downloaded successfully. There was no significant difference in temperature between the two different logger locations over the last two years. As a result, the location of the temperature logger has now been moved permanently to the new location at the 0 m end of the transect. Figures summarizing RDFC data can be found in Appendix H.

Location: Fry's Harbor, Santa Cruz Island
Site #7, SCFH
Year sampling began: 1982
2010 sampling dates: 6/16, 9/1
2010 status: Mature kelp forest

This site has turned into a mature kelp forest with large, widely-spaced adult *Macrocystis pyrifera*. *C*anopy cover was estimated at 95%. The dense canopy has created low light conditions that appear to negatively affect understory algae. *Macrocystis pyrifera* adults and subadults had densities of 0.16/m² and 0.080/m², respectively. Both are decreases from last year, which is common in maturing kelp forests as *M. pyrifera* become larger and more widely-spaced. Juvenile *M. pyrifera* were common, but none were recorded on quadrats. Cover of *M. pyrifera* was 13%. *Eisenia arborea* adult and juvenile densities were 1.9/m² and 0.17/m², respectively. Though still abundant, adults decreased in density from last year. *Eisenia arborea* cover was 25%. No *Pterygophora californica*, *Laminaria farlowii* or *Desmarestia* spp. were observed. Several *Cystoseira* spp. were common along the transect, but none were recorded on RPCs. *Sargassum horneri* was not observed at the site. Miscellaneous red algae were abundant with a cover of 20%. *Gigartina* spp. were common with a cover of 0.67%. *Gelidium* spp. were rare, and none were recorded on RPCs. Miscellaneous green algae were rare with a cover of 0.50%. Encrusting coralline algae cover decreased from last year to 29%. Articulated coralline algae cover was 0.50%. Bare substrate cover was 7.3%.

Overall, encrusting invertebrates such as bryozoans and hydroids were abundant, similar to last year. Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 17%, an increase from last year. The dominant invertebrates in this category were hydroids. Tunicates were common with a cover of 6.3%. *Styela montereyensis* was rare, with two observed at the site but none observed on quadrats. Sponges were common but none were observed on RPCs. One of the most notable changes was the increase in *Tethya aurantia*, which continued to increase for the fifth consecutive year. Density was recorded at 0.21/m², the highest recorded since 1984 and similar to densities when the monitoring program began in 1983. During the first three years of monitoring at this site (1983-1985), *T. aurantia* was abundant. Densities then declined and it was common until around 2000. Between 2000 and 2006, it was rare at the site and for some of those years it was difficult to find more than several for size frequency measurements. We can't emphasize enough how dramatic and surprising this increase in abundance has been for this species; we have not seen an increase like this for *T. aurantia* anywhere since the monitoring program began. It appears that *T. aurantia* may be a good indicator of the condition of a kelp forest as this site's conditions have recently changed to a kelp forest again, similar to how it was described in 1983. *Diopatra ornata* cover remained high at 2.8%. Miscellaneous bryozoans remained abundant with a cover of 39%. The most common species in this category were *Membranipora* sp. and *Bugula* sp. *Diaperoecia californica* was moderately abundant, but cover along the transect was low at 0.17%, similar to recent years. *Balanophyllia elegans* was rare, with a cover of 0.17%. *Astrangia lajollaensis* cover was 9.0%, similar to last year. *Corynactis californica* was rare, with no cover recorded on RPCs. *Lophogorgia chilensis* was abundant with a density of 0.20/m², similar to recent years. Both large and small individuals were present with recent recruitment evident. *Muricea* spp. were not observed. *Eugorgia rubens* was common, similar to past years, but we do not sample this species.

Strongylocentrotus spp. were rare, including juveniles, and most that were measured for size frequencies were found in the shallow areas with moderate search effort. *Strongylocentrotus purpuratus* had a density of 0.29/m^2. *Strongylocentrotus franciscanus* had a density of 0.29/m². *Centrostephanus coronatus* was rare, and not observed on quadrats. *Lytechinus anamesus* was not observed at the site. No sea urchin wasting disease was observed.

Pisaster giganteus was moderately abundant with densities on both 1 m quadrats and 5 m quadrats recorded at 0.54/m² and 0.32/m², respectively, similar to last year. *Patiria miniata* remained relatively abundant at a density of 2.2/m², with many size classes present. *Pycnopodia helianthoides* was common, and had a density of 0.028/m², a decrease from last year. *Parastichopus parvimensis* was common at a density of 0.13/m², similar to recent years. *Ophiothrix spiculata* was rare with a cover of 0.67%. *Pachythyone rubra* was not observed at the site. *Cucumaria* sp. was abundant, similar to past years. No sea star wasting disease was observed.

One 50 mm *Haliotis rufescens* was observed at the site but none were observed during sampling. *Cypraea spadicea* was moderately abundant at a density of 0.50/m^2. No *Megastraea undosa* or *Astraea gibberosa* were observed at the site. *Tegula regina* was rare, and none were recorded on quadrats. *Kelletia kelletii* was rare at a density of 0.0056/m². *Megathura crenulata* remained common at a density of 0.040/m². *Crassedoma giganteum* was rare at a density of 0.0069/m². *Aplysia californica* was rare, with none recorded on band transects. *Panulirus interruptus* was rare with a density of 0.0014/m^2.

Similar to past years, fish diversity and abundance were high. *Coryphopterus nicholsii* was common at 0.83/m², similar to last year, and small individuals were common. *Alloclinus holderi* density remained low at 0.083/m², and consisted mainly of large individuals. *Lythrypnus dalli* was less abundant than in recent years at a density of 0.17/m², and consisted mostly of large individuals. Roving diver fish counts were performed on June 16th by four divers observing 27 species. Figures summarizing RDFC data can be found in Appendix H.

All five ARMs were intact and monitored for all indicator species. No *Haliotis* spp. were found in the ARMs this year, similar to recent years. *Cypraea spadicea* was abundant at 14.6/ARM. *Megathura crenulata* were rare with a density of 0.4/ARM. *Crassedoma giganteum* was relatively abundant at 6.0/ARM, similar to past years. *Patiria miniata* density remained similar to previous years at 9.8/ARM with a mean size of 26.2 mm. *Pisaster giganteus* density was 13.2/ARM, higher than the past several years. *Strongylocentrotus franciscanus* density was 22.6/ARM, similar to last year, with a mean size of 47 mm. *Strongylocentrotus purpuratus* density was 9.6/ARM, similar to last year, with a mean size of 28 mm. *Parastichopus parvimensis* density <10 cm was 3.4/ARM and density >10 cm was 1.4/ARM

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Pelican Bay, Santa Cruz Island
Site #8, SCPB
Year sampling began: 1982
2010 sampling dates: 9/1
2010 status: Kelp forest

Beginning in 2008 we observed the start of a shift from a barren site almost completely devoid of macroalgae and dominated by *Strongylocentrotus* spp. to the beginning of a young, healthy kelp forest. This year, *Macrocystis pyrifera* continued to dominate the first 80 meters of the transect with an abundance of adult, subadult and juvenile plants. Most of the adult plants were small and appeared to have weakened holdfasts probably due in part to the high number of sea urchins that were observed grazing on them. Canopy cover was estimated at 80%, same as last year. Adult *M. pyrifera* densities were observed on both 1 m and 5 m quadrats at 0.33/m² and 0.44/m², respectively, two of the highest densities on record in over a decade. Subadult and juvenile *M. pyrifera* densities were 0.20/m² and0.42/m², respectively, both decreases from last year, but still high for this site. Cover of *M. pyrifera* was 12%, also a decrease from last year but still high for this site. Adult and juvenile *Eisenia arborea* densities were 0.25/m² and 0.0/m², respectively, and cover was 0.17%. Most of the adult plants appeared small. *Pterygophora californica*, *Laminaria farlowii*, *Desmarestia* spp., *Cystoseira* spp., *Gelidium* spp. and *Gigartina* spp. were not observed at the site, same as last year. *Sargassum horneri* was not observed at the site. Green algae were not observed at the site. Miscellaneous brown algae were rare and not observed during sampling. Miscellaneous red algae cover was 0.5%, a decrease from last year. Miscellaneous plants, consisting of filamentous diatoms, had a cover of 4.0%, similar to last year. One healthy-looking *Nereocystis luetkeana*, giant bull kelp, was observed drifting near the site. Articulated coralline algae remained rare at 0.0%. Encrusting coralline algae cover was 33%, a decrease from last year but still relatively high for this site. Bare substrate cover was 30%, similar to last year.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 14%, the highest cover observed since before 2003. The most abundant invertebrates in this category were hydroids and barnacles. Tunicates cover increased this year to 3.0%. The first observation was made of *Styela montereyensis* on 1 m quadrats since monitoring began at this site in 1982. Density of *S. montereyensis* was 0.042/m². Sponge cover was 0.17%, similar to recent years. *Tethya aurantia* remained common at 0.040/m², the highest density on record, and most were observed in small aggregations and covered in silt. *Diopatra ornata* was scattered around the site, and were notably large, with a cover of 9.8%. Miscellaneous bryozoans remained common at 8.5% cover, the highest observed since 1994. *Diaperoecia californica* was common on top of large rocks with a cover of 2.2%. *Corynactis californica* was rare with 0.17% cover. *Balanophyllia elegans* was rare and no cover was recorded on RPCs. *Astrangia lajollaensis* was moderately abundant with a cover of 13%, notably more abundant than last year. *Lophogorgia chilensis* was moderately abundant with a density of 0.13/m², similar to last year. *Muricea californica* and *M. fruticosa* were not observed at the site.

We observed increases in sea urchin densities this year and increases in sizes of both *Strongylocentrotus purpuratus* and *S. franciscanus*. *Strongylocentrotus purpuratus* was moderately abundant, and distribution was patchy, at 19/m², an increase from last year's record low of 2.5/m². A mean size of 30 mm was recorded, an increase from 22 mm last year. *Strongylocentrotus franciscanus* was common at 2.4/m² with a mean size of 48 mm, also notably larger than last year's mean of 40 mm. Juveniles of both species were rare. *Lytechinus anamesus* was rare at 0.028/m². Many whole tests were observed. *Centrostephanus coronatus* density was 0.042/m². No sea urchin wasting disease was observed.

Patiria miniata was moderately abundant at 0.29/m², and notably large. *Pisaster giganteus* was common with densities of 0.083/m² and 0.045/m² on 1 m and 5 m quadrats, respectively. *Pycnopodia helianthoides* was common, and mostly large, at 0.0097/m², same as last year. Approximately 12 very large *P. helianthoides* were observed in the deeper area of the transect with many whole *Strongylocentrotus purpuratus* and about ten small sand dollar tests; both observations are likely due to predation by *P. helianthoides. Ophiothrix spiculata* was rare and not observed on RPCs. *Parastichopus parvimensis* was more common than last year at 0.13/m². *Pachythyone rubra* was not observed on RPCs, though present in patches. No sea star wasting disease was observed.

No live *Haliotis* spp. were observed at the site. *Cypraea spadicea* was common, but not observed on 1 m quadrats, same as last year. *Kelletia kelletii* was rare, and notably large, with a density of 0.0056/m². *Megathura crenulata* density was 0.014/m², similar to last year. *Crassedoma giganteum* was common at 0.0042/m². *Megastraea undosa* was rare at 0.042/m². *Astraea gibberosa* was not observed. *Tegula regina* was rare and not observed on 1 m quadrats. *Aplysia californica* density increased to 0.061/m² and they were notably large and observed in breeding aggregations. *Panulirus interruptus* was not observed at the site although one molt was noted.

Fish remained moderately abundant and diverse. *Coryphopterus nicholsii* declined in density to 0.88/m², the lowest recorded since 1998. *Lythrypnus dalli* density remained similar to last year at 0.042/m^2. *Alloclinus holderi* was not observed. Roving diver fish counts were conducted on September 1st by six divers observing 25 species. Figures summarizing RDFC data can be found in Appendix H.

All six ARMs were sampled for all indicator species. Three *Octopus* spp. were found during sampling. *Haliotis* spp. were not observed in the ARMs. *Cypraea spadicea* density was 4.7/ARM, similar to last year. *Megastraea undosa* and *Astraea gibberosa* were not observed. *Megathura crenulata* density was 0.33/ARM. One *Tegula regina* was observed for a density of 0.17/ARM. *Crassedoma giganteum* density remained relatively high at 5.0/ARM. *Patiria miniata* remained abundant at 21/ARM, same as last year. *Pisaster giganteus* was more abundant than recent years at 11/ARM, the highest density on record for this species. Mean sizes of *A. miniata* and *P. giganteus* were 21 mm and 36 mm, respectively. *Strongylocentrotus franciscanus* density was 25/ARM, similar to last year, with mean size increasing to 42 mm. *Strongylocentrotus purpuratus* density increased to 59/ARM, the highest since 1995, and mean size increased from last year to 31 mm. *Parastichopus parvimensis* <10 cm increased with 17 observed in a single ARM and an overall density of 3.8/ARM. *Parastichopus parvimensis* >10 cm was 0.67/ARM, similar to last year.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Scorpion Anchorage, Santa Cruz Island
Site #9, SCSA
Year sampling began: 1982
2010 sampling dates: 7/14, 8/16
2010 status: Dominated by *Strongylocentrotus purpuratus*

This site continued to be dominated by *Strongylocentrotus purpuratus* and had a moderate density of *Strongylocentrotus franciscanus*, similar to past years. One major change was an influx of sand. Four of the seven ARMs were substantially covered in sand, and RPCs showed a notable increase in sand cover. *Macrocystis pyrifera* was notably less abundant than last year. Urchins were abundant around several holdfasts and it seemed like a number of plants had been consumed since our first visit on 7/14/10. Canopy cover was estimated at 10% on July 14th and 2% on August 16th. The kelp forest at the west end consisted mostly of subadult and juvenile *M. pyrifera*, but several large adults were also present. Adult *M. pyrifera* density notably decreased from last year to 0.0050/m^2. Subadult and juvenile *M. pyrifera* densities also decreased from last year to 0.00/m^2 and 0.083/m^2, respectively. *Macrocystis pyrifera* cover decreased to 0.50%. *Laminaria farlowii* juveniles were common at the westernmost 10 meters of the transect, and several small adults were observed in this area. However, *L. farlowii* was rare overall and was not observed on 1 m quadrats or RPCs. No *Eisenia arborea, Pterygophora californica,* or *Desmarestia* spp. were observed on the transect. *Cystoseira* spp. were rare, and none were observed during sampling. *Sargassum horneri* was not observed at the site. Miscellaneous brown algae were common with cover of 5.0%, similar to recent years. Green algae cover was 1.7%. Miscellaneous red algae cover was 2.7%. No *Gelidium* spp. or *Gigartina* spp. were observed during sampling although *Gigartina* spp. were observed on top of a large rock. Miscellaneous plants, consisting mostly of filamentous diatoms, had a cover of 3.8%. Articulated coralline algae were rare with none observed during RPCs. Encrusting coralline algae cover decreased to 42%. Bare substrate increased to 40%. Sand cover increased notably to 26%, the highest cover recorded at this site.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover remained similar to previous years at 15%. The dominant species in this category were *Spirobranchus spinosus* followed by

barnacles. Tunicates were moderately abundant with a cover of 0.83%, similar to past years. This category consisted mostly of *Pycnoclavella* spp. *Styela montereyensis* was not observed. Sponges were common but no cover was recorded during sampling. *Tethya aurantia* was notably more abundant than in recent years with a density of 0.56/m^2, similar to last year but relatively abundant for this site and the highest density recorded since sampling began. *Phragmatopoma californica* was not observed during sampling, similar to past years. *Serpulorbis squamigerus* was common with 0.50% cover, similar to recent years.

Diopatra ornata was common with cover of 0.67%. Miscellaneous bryozoans were common but none were observed during sampling. *Diaperoecia californica* was common, and appeared more abundant than recent years, but no cover was observed on RPCs. *Corynactis californica* was common with a cover of 0.50%, *Astrangia lajollaensis* and *Balanophyllia elegans* covers were 0.50% and 0.0%, respectively, similar to past years. Gorgonians were rare with only three small *Lophogorgia chilensis* observed on the transect. Density was 0.0028/m^2, similar to past years.

The site continued to be dominated by *Strongylocentrotus purpuratus* with a moderate abundance of *Strongylocentrotus franciscanus. Strongylocentrotus franciscanus* density was 3.9/m^2, similar to past years, with a mean size of 59 mm. *Strongylocentrotus purpuratus* remained abundant at 35/m^2 with a mean size of 33 mm. Urchin mean sizes increased slightly compared to recent years, especially on the west end of the transect where kelp is more abundant. Juvenile *S. franciscanus* and *S. purpuratus* were rare. *Centrostephanus coronatus* was rare with none observed on 1 meter quadrats. *Lytechinus anamesus* was not observed.

Pisaster giganteus was moderately abundant with a density of 0.11/m^2. *Patiria miniata* density remained similar to recent years at 0.42/m^2. No *Pycnopodia helianthoides* or *Ophiothrix spiculata* were observed at the site. *Parastichopus parvimensis* was notably abundant, with all sizes present, at a density of 0.92/m^2, the highest recorded since 1989. *Pachythyone rubra* was not observed on RPCs. Additionally, *Pisaster ochraceus* was notably abundant with at least 20 observed at the site.

Cypraea spadicea was common at a density of 0.042/m^2. *Megastraea undosa* was common at 0.17/m^2, and had a mean size of 74 mm, similar to recent years. *Tegula regina* was rare and none were observed on 1 meter quadrats. *Kelletia kelletii* was not observed at the site, similar to past years. *Megathura crenulata* was moderately abundant with all sizes at 0.20/m^2, the highest density observed since sampling began. *Crassedoma giganteum* was common, with all sizes present, at a density of 0.022/m^2. Large adult *Aplysia californica* were common. Density of *A. californica* was 0.032/m^2, similar to past years. *Panulirus interruptus* was common with a density of 0.011/m^2. Most *P. interruptus* were legal size. Additionally, four recent molts were observed indicating a notable increase from recent visits.

Fish were moderately abundant and diverse, similar to past years. *Coryphopterus nicholsii* was abundant with a density of 0.67/m^2. *Alloclinus holderi* was rare and none were observed on 1 m quadrats. The few *A. holderi* that were observed were notably large, indicating no recent recruitment. Many very large *Paralabrax clathratus* were observed. Roving diver fish counts were conducted on July 14th, and August 16th, by nine divers observing 29 species. Figures summarizing RDFC data can be found in Appendix H.

Three out of the seven ARMs were not sampled due to being more than 50% buried in sediment. ARMs #2426 and #2427 were not sampled due to being 70-80% buried. ARM #2423 was half buried and was not sampled. ARM #2422 was half buried but was sampled anyways due to the species abundance being comparable to the other ARMs sampled. ARMs #2382 and #2424 had one and two layers of bricks buried, respectively, while ARM #2425 was not buried at all. All three were sampled. One medium sized *Octopus* spp. was observed. No *Haliotis* spp. were observed in the ARMs. *Cypraea spadicea* was notably less abundant than recent years at 7.0/ARM. This may have been an artifact of the substantial sedimentation in all the ARMs, reducing habitat availability within the ARMs. No *Megastraea undosa* were present in the ARMs. *Megathura crenulata* density was 0.14/ARM. *Crassedoma giganteum* density decreased to 0.43/ARM. Mean size was larger than in recent years at 121 mm, although this might be an artifact of the small sample size. *Patiria miniata* remained rare with a density of 0.57/ARM. *Pisaster giganteus* was abundant at 1.0/ARM. No *Pycnopodia helianthoides* were observed in the ARMs. *Strongylocentrotus franciscanus* density decreased to 4.3/ARM, with a mean size of 34 mm. *Strongylocentrotus purpuratus* density decreased to 47/ARM. Mean size for *S. purpuratus* was 39 mm, similar to recent years. No *Centrostephanus coronatus* were observed. *Parastichopus parvimensis* was abundant with a density of 1.5/ARM and 11/ARM for sizes <10 cm and >10 cm, respectively.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Yellow Banks, Santa Cruz Island
Site #10, SCYB
Year sampling began: 1986
2010 sampling dates: 7/14, 10/7
2010 status: Mature kelp forest

Overall, this site appeared similar to last year. There was a mix of both large and small *Macrocystis pyrifera* plants. Canopy cover was estimated at 35%. Adult and subadult *M. pyrifera* densities were 0.11/m² and 0.67/m², respectively. Juvenile *M. pyrifera* density increased from last year to 5.1/m². Overall *M. pyrifera* cover was 9.0%. Adult *Eisenia arborea* were common, but none were observed on 1 m quadrats. Juvenile *E. arborea* density was 0.042/m². Total cover of *E. arborea* was 0.67%. Adult and juvenile *Pterygophora californica* were common with a density of 0.42/m² and 3.2/m², respectively. Total cover of *P. californica* was 2.8%. *Laminaria farlowii* was common with adult and juvenile densities of 0.042/m² and 0.17/m², respectively. Cover of *L. farlowii* was 2.1%. *Cystoseira* spp. were common, and mostly small, with a cover of 2.0%. *Desmarestia* spp. were rare and none were observed during sampling. *Sargassum horneri* was not observed at the site. Miscellaneous brown algae were common with 0.67% cover. No *Gigartina* spp. or *Gelidium* spp. were observed at the site. Miscellaneous red algae cover was 27%, relatively high for this site and the highest recorded since 2006. Green algae were rare with a total cover of 0.33%. Miscellaneous plants, consisting mostly of filamentous diatoms, were common with a cover of 0.67%. Encrusting coralline algae were abundant with a cover of 42%. Articulated coralline algae remained rare at 3.7% cover, similar to recent years. Bare substrate cover increased to 26%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover decreased to 4.2%, and consisted mostly of hydroids. Tunicates were rare overall at 1.5% cover. The most common

tunicate was *Didemnum* spp. and/or *Tridemnum* spp. Sponges were common at 0.50% cover. *Tethya aurantia* was moderately abundant at a density of 0.22/m², the highest density recorded at this site. *Diopatra ornata* was common with a cover of 0.17%. Miscellaneous bryozoans were common with a cover of 2.7%. *Diaperoecia californica* was common with a cover of 0.33%. No *Urticina lofotensis* were observed. *Corynactis californica* was not observed. *Balanophyllia elegans* and *Astrangia lajollaensis* were common with covers of 0.67% and 1.7%, respectively. *Lophogorgia chilensis* was common at a density of 0.044/m², similar to recent years. *Muricea fruticosa* was rare at a density of 0.0014/m². *Muricea californica* was common at a density of 0.015/m², similar to past years.

Strongylocentrotus spp. were common in all sizes, though juveniles were rare. Signs of active predation on *S. purpuratus* by *Pycnopodia helianthoides* were common. Density of *S. purpuratus* remained relatively high at 10/m². *Strongylocentrotus franciscanus* was common at a density of 1.0/m². *Lytechinus anamesus* was common, but very cryptic and noticeably small with a density of 0.14/m². *Centrostephanus coronatus* was rare and not observed during sampling. No urchin wasting disease was observed.

Pisaster giganteus was common and sampled on 1 m quadrats and 5 m quadrats with densities of 0.29/m² and 0.060/m², respectively. *Patiria miniata* was also common for this site at 2.1/m², similar to last year's record high. Many were small indicating recent recruitment. *Pycnopodia helianthoides* was common and notably large at a density of 0.0069/m². A total of 13 *P. helianthoides* were measured for size frequencies for mean size of 270 mm. *Ophiothrix spiculata* was common with a cover of 0.17%. No *Parastichopus parvimensis* were observed during sampling, but it was present at the site and notably large. At least three *Parastichopus californicus* were observed at the site. No sea star wasting disease was observed.

No live *Haliotis* spp. were observed along the transect. *Megastraea undosa* was common at a density of 0.042/m^2. *Megastraea undosa* was mostly large with a mean size of 102 mm. *Cypraea spadicea* was not observed at the site. *Astraea gibberosa* was rare at a density of 0.042/m². *Tegula regina* was not observed during sampling. *Kelletia kelletii* was common with a density of 0.032/m². *Megathura crenulata* was common, with all size classes present, at a density of 0.0069/m². *Crassedoma giganteum* was rare at a density of 0.0042/m², similar to past years. *Aplysia californica* was common at a density of 0.019/m^2. *Panulirus interruptus* was noticeably absent at the site.

Fish abundance and diversity were moderate, similar to last year. *Coryphopterus nicholsii* was common at a density of 0.67/m². There were two different size classes of *Sebastes miniatus* juveniles present: young of year and 2-3 year old juveniles. Figures summarizing RDFC data can be found in Appendix H.

Over the last several years this site has become a kelp forest with declining *Strongylocentrotus* spp. densities. There has been a corresponding shift in sea urchin habitat preference from being out in the open to the current usage of crevices for habitat. The ARMs function as excellent crevice habitat and as expected, we are observing much higher densities of sea urchins inside the ARMs as compared to outside. Due to the high number of *Strongylocentrotus* spp. in the ARMs and the amount of bottom time required to sample at this relatively deep site we did not sample all ARMs for *Strongylocentrotus* spp. this year. A total of seven ARMs were monitored for all

indicator species and eight ARMs were sampled for all indicator species excluding *Strongylocentrotus* spp.

The number of *Haliotis rufescens* observed in the ARMs was the highest since monitoring began in 1994, with a density of 0.47/ARM and a mean size of 22 mm. Three *Haliotis corrugata* were also observed at 0.20/ARM with a mean of 28 mm. This is a notable increase in *Haliotis* spp. recruitment relative to the past several years. *Cypraea spadicea* density was 3.7/ARM. No *Tegula regina*, *Kelletia kelletii* or *Astraea gibberosa* were observed. *Megastraea undosa* was observed for the first time since 2005, at a density of 0.20/ARM and a mean size of 26 mm. *Megathura crenulata* density has steadily increased since the record low of 0.07/ARM in 2005. This year's *M. crenulata* density was a record high at 1.1/ARM. Mean size was 28 mm. *Crassedoma giganteum* density was 0.80/ARM, similar to last year. *Strongylocentrotus franciscanus* density increased from last year to 86/ARM with a mean size of 18 mm. *Strongylocentrotus purpuratus* density remained similar to last year at 284/ARM with a mean of 28 mm. *Centrostephanus coronatus* was not observed. *Patiria miniata* density was 7.1/ARM and mean size was 19 mm, similar to past years. *Pisaster giganteus* density increased from last year to 2.8/ARM and a mean size of 21 mm. *Parastichopus parvimensis* <10 cm and >10 cm were observed at 0.33/ARM and 0.53/ARM, respectively. The ARMs densities of *P. parvimensis* <10 cm have shown a steady decline since 2006. Five *Octopus* spp. were observed in the ARMs.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Admiral's Reef, Anacapa Island
Site #11, ANAR
Year sampling began: 1982
2010 sampling dates: 6/15, 10/4
2010 status: Dominated by *Ophiothrix spiculata*

Overall, there was little change as this site remained largely dominated by *Ophiothrix spiculata*. Most of the transect directly along the line was devoid of macroalgae, and there was notably less algae inshore of the transect and on top of the reef compared to last year. *Macrocystis pyrifera* was rare with no adults or subadults observed at the site, although juveniles were present at a density of 0.083/m^2. Cover of *Macrocystis pyrifera* was 0.17%. *Eisenia arborea* was rare with no adults or juveniles recorded on 1 m quadrats or RPCs. *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp. and *Desmarestia* spp. were absent from the site, similar to recent years. Miscellaneous brown algae were also rare at 0% cover. *Sargassum horneri* was rare with adult and juvenile densities at 0.03/m^2 and 0.067m^2, respectively. A dense patch of *S. horneri* was observed inshore of the transect and consisted of both large and small plants. The smaller plants were less than 10 cm tall. The larger plants were tattered, with reproductive structures present and are most likely from last year. Miscellaneous red algae were common with a cover of 9.2%, similar to recent years. *Gigartina* spp. and *Gelidium* spp. were not observed on RPCs. Green algae cover was rare and not observed on RPCs for the first time since 2000. Miscellaneous plant cover, consisting of filamentous diatoms, was 8.2%. Encrusting coralline algae was abundant and cover was the highest recorded for this site at 73%. Articulated coralline algae continued to be rare at 0.5% cover. Bare substrate cover was 9.3%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 23%, the highest recorded cover since 2005.The most common invertebrates in this category were gorgonians, consisting mostly of *Eugorgia rubens,* and secondly *Spirobranchus spinosus*. In addition, barnacles were moderately abundant on the rocky reef areas and amphipod tube mats were also common. *Diopatra ornata* and *Serpulorbis squamigerus* were both rare and not observed on RPCs. Tunicates were rare at a cover of 0.67%. Sponges were rare with a cover of 1.2%, similar to previous years. *Tethya aurantia* was relatively abundant, and most were large, at a density of 0.064/m². Miscellaneous bryozoans were rare with a cover of 1.0%. *Diaperoecia californica* was also rare at a cover of 0.17%. *Corynactis californica* was common at 2.7% cover. *Astrangia lajollaensis* was relatively common and cover was 0.50%. *Balanophyllia elegans* was rare and none were observed on RPCs. Gorgonians were moderately abundant, similar to past years. *Lophogorgia chilensis* density was 0.065/m². *Muricea fruticosa* and *Muricea californica* densities were 0.0069/m² and 0.044/m², respectively.

Strongylocentrotus franciscanus was moderately abundant at a density of 7.8/m², and had an average size of 41 mm, similar to last year. *Strongylocentrotus purpuratus* was common with densities at 5.5/m², similar to recent years. Mean size of *S. purpuratus* was similar to last year at 28 mm. Juveniles for both *S. franciscanus* and *S. purpuratus* were notably rare. *Lytechinus anamesus* remained rare, and most were large, with a density of 0.0028/m². *Centrostephanus coronatus* was common at a density of 0.75/m², similar to past years. At most sites where *C. coronatus* recruited during the 1997/1998 El Niño we have observed recent declines. However, at this site the density has remained stable over the last several years. On June 15th we observed sea urchin wasting disease in approximately 3% of *S. franciscanus* and *S. purpuratus.*

Echinoderm densities remained high with *Ophiothrix spiculata* being most abundant and covering 44% of the bottom, similar to recent years. *Ophiothrix spiculata* dominated the site for the first 70 meters of the transect. *Pisaster giganteus* was sampled on 1 m quadrats and 5 m quadrats and remained common with densities of 0.083/m² and 0.055/m², respectively. *Patiria miniata* also remained moderately abundant, and most were large, with a density of 2.3/m², similar to last year. *Pycnopodia helianthoides* was not observed, similar to previous years. *Parastichopus parvimensis* was common at a density of 0.71/m², the highest density recorded at this site since 1999. *Linckia columbiae* were common, similar to past years. No sea star wasting disease was observed.

No *Haliotis* spp. were observed at the site, similar to previous years. *Cypraea spadicea* was common although none were observed on 1 m quadrats. *Megastraea undosa* was common at a density of 0.042/m^2. *Tegula regina* was rare and not observed on 1 m quadrats. *Kelletia kelletii* density was 0.035/m², similar to last year. *Megathura crenulata* was relatively abundant with a density of 0.11/m², the highest recorded density for this species since 2002. *Crassedoma giganteum* was common, with all sizes present, at a density of 0.018/m², similar to previous years. *Aplysia californica* was relatively uncommon with a recorded density of 0.019/m². *Panulirus interruptus* was rare, and small, at a density of 0.0042/m², same as last year.

Overall, fish continued to be diverse and relatively abundant for a reef that is dominated by echinoderms. *Coryphopterus nicholsii* abundance was similar to recent years at 1.1/m². *Alloclinus holderi* density was 0.042/m^2. Small female *Semicossyphus pulcher* were abundant and are most likely from last year's high juvenile recruitment. Roving diver fish counts were

conducted on June 15th by five divers counting 23 species. Figures summarizing RDFC data can be found in Appendix H.

All six ARMs were monitored for all indicator species. *Strongylocentrotus franciscanus* and *Strongylocentrotus purpuratus* were notably small, but common in the ARMs. Several *Sargassum horneri* juveniles were present on top of ARM #2306. *Cypraea spadicea* was present at 0.67/ARM, similar to last year. *Megathura crenulata* increased from last year to 1.7/ARM. *Crassedoma giganteum* was present at 0.67/ARM, similar to last year, and a mean size of 79 mm. *Tegula regina* was present at 0.17/ARM. *Patiria miniata* density was 15/ARM, with a mean size of 26 mm. *Pisaster giganteus* was not observed in the ARMs. *Strongylocentrotus franciscanus* density was 14/ARM with a mean of 21 mm. *Strongylocentrotus purpuratus* density remained similar to last year at 31/ARM and a mean of 17 mm. *Parastichopus parvimensis* <10 cm were present at 0.50/ARM and *P. parvimensis* >10 cm were absent from the ARMs.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Cathedral Cove, Anacapa Island
Site #12, ANCC
Year sampling began: 1982
2010 sampling dates: 6/14, 7/2
2010 status: Mature kelp forest

This site continued to be a mature kelp forest with a canopy cover of approximately 95%. All life stages of *Macrocystis pyrifera* were abundant with adult densities at 0.30/m², subadult densities at 0.45/m², and juvenile density at 37/m², the highest density of juvenile *M. pyrifera* recorded at this site. Cover of *M. pyrifera* was 34%. Adult *Eisenia arborea* were rare with a density at 0.21/m², same as last year. Juvenile *E. arborea* were common at a density of 0.17/m². Cover of *E. arborea* was 2.5%. *Laminaria farlowii* was abundant with adult densities at 4.9/m². Juvenile *L. farlowii* density was 25/m². Cover of *L. farlowii* remained similar to last year at 43%. *Cystoseira* spp. were abundant with a cover of 19%. No *Desmarestia* spp. were observed at the site. *Pterygophora californica* was rare. Adults were observed for the first time on 1 m quadrats since sampling began at this site at a density of 0.083/m^2. One small *Sargassum horneri* was observed on band transects for a density of 0.0014/m^2, though it did not look healthy. This is the first year we have sampled for *S. horneri* as an indicator species, although we had observed it at this site last year. Miscellaneous brown algae cover was moderately abundant at 2.5%. Miscellaneous red algae were common with cover at 18%. No *Gelidium* spp. or *Gigartina* spp. were observed on RPCs, but *Gelidium* spp. were present. Green algae were rare and none were recorded on RPCs. Miscellaneous plants cover, consisting of filamentous diatoms, was 0.17%. Articulated coralline algae cover was moderately abundant at 26%. Encrusting coralline algae cover was common at 24%. Bare substrate cover decreased from last year to 8.8%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, were diverse and abundant at a cover of 16%, the highest recorded cover since 2006. The most abundant invertebrates in this category were hydroids, with anemones and amphipod tube mats also being common. Tunicates were abundant and moderately diverse with 13% cover, the highest cover recorded at the site since monitoring began in 1982. The most abundant tunicates were *Metandrocarpa* sp.,

Pycnoclavella sp., *Aplidium* sp. and *Distaplia* sp. Sponges were moderately abundant with a cover of 2.2%. *Tethya aurantia* was rare at a density of 0.0083/m². *Diopatra ornata* was common at 8.0% cover, the highest recorded cover since sampling began in1982. *Serpulorbis squamigerus* was moderately abundant at 0.67% cover. *Phragmatopoma californica* was notably more abundant than in recent years at a cover of 5.7%, the highest cover recorded since sampling began in 1982. Although *P. californica* were small, they were observed completely covering rocks and shells, such as *Megastraea undosa*. Miscellaneous bryozoans remained abundant and diverse with a cover of 25% and included *Bugula* spp. and *Thalamoporella* spp. *Diaperoecia californica* was common and notably small, although none were recorded on RPCs. *Astrangia lajollaensis* was rare with cover at 0.17%, similar to last year. *Balanophyllia elegans* was not observed during sampling. *Corynactis californica* was rare at 0.0% cover. No gorgonians were observed at the site, similar to previous years.

Strongylocentrotus franciscanus and *Strongylocentrotus purpuratus* were moderately abundant and distributed evenly over the transect. *Strongylocentrotus franciscanus* and *S. purpuratus* densities were similar to the last several years at 4.2/m² and 1.8/m², respectively. A wide range of sizes were present for *Strongylocentrotus* spp. and juveniles were common. The mean size of *S. franciscanus* was 76 mm. The mean size of *S. purpuratus* was 34 mm, a slight increase from last year. No *Centrostephanus coronatus* were observed during sampling, and were relatively rare directly along the transect. No *Lytechinus anamesus* were observed. No sea urchin wasting disease was observed.

Patiria miniata was rare and mostly small. None were observed on quadrats or found for size frequencies. *Pisaster giganteus* was also rare at a density of 0.01/m^2, the first recorded density since 2004. No *P. giganteus* were measured for size frequencies. *Pycnopodia helianthoides* was not observed at the site. *Ophiothrix spiculata* was rare at a cover of 0.33%, the first recorded cover since sampling began in 2003. *Parastichopus parvimensis* was abundant, with all sizes present, at a density of 1.5/m², similar to past years. No sea star wasting disease was observed.

Haliotis corrugata was rare at a density of 0.0028/m^2. Four live *Haliotis corrugata* were found and measured for size frequencies at an average size of 96 mm. Two fresh *H. corrugata* shells were measured at 83 mm and 90 mm. *Cypraea spadicea* was common at a density of 0.083/m². *Megastraea undosa* were moderately abundant at 0.17/m², the lowest density recorded at this site since sampling began in1982. *Tegula regina* was rare with none recorded during sampling. *Kelletia kelletii* was rare at a density of 0.0069/m^2 and most were small. *Megathura crenulata* was rare with none observed during sampling, though present at the site. *Crassedoma giganteum* was common with all sizes present at 0.014/m², the lowest recorded density at this site since sampling began in 1983. *Aplysia californica* was rare and large with none recorded during sampling, and notably less abundant than in recent years. *Panulirus interruptus* density remained similar to recent years at 0.025/m^2.

Similar to past years, fish were abundant and diverse. *Coryphopterus nicholsii* was present at a density of 0.17/m². This is the lowest recorded density since 2000. *Alloclinus holderi* was present at a density of 0.17/m²and all were notably large. This is the lowest recorded density since 2000. One *Semicossyphus pulcher* female approximately 40 cm was seen with a pink UCSB tag attached. Roving diver fish counts were conducted on June 14th by six divers counting 25 species. Figures summarizing RDFC data can be found in Appendix H.

All seven ARMs were sampled for all indicator species with one ARM turned over, but still in good condition. ARM #2430 was turned upside down and had six bricks broken inside, while ARM #2350 had sediment covering the bottom layer of bricks. Ten *Cypraea spadicea* egg masses and five *Octopus* spp. were found in the ARMs this year. No *Haliotis* spp. were observed in the ARMs. *Cypraea spadicea* were recorded at a density of 9.9/ARM. *Megastraea undosa* were not observed in the ARMs this year. *Kelletia kelletii* were rare with a density of 0.43/ARM. *Megathura crenulata* were absent from all ARMs. *Crassedoma giganteum* density was 5.0/ARM, the highest recorded density since 1996. *Patiria miniata* density was the lowest since 1998, at 5.6/ARM. *Pisaster giganteus* density was 7.6/ARM, the highest recorded density since monitoring ARMs began here in 1992. *Strongylocentrotus franciscanus* density was 32/ARM. *Strongylocentrotus purpuratus* density was 71/ARM. *Centrostephanus coronatus* were absent from all ARMs. *Parastichopus parvimensis* densities increased from last year, due to the ARMs conditions, with individuals <10 cm and >10 cm observed at 3.7/ARM and 2/ARM, respectively.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Landing Cove, Anacapa Island
Site #13, ANLC
Year sampling began: 1982
2010 sampling dates: 6/4, 7/15
2010 status: Mature kelp forest

Overall, the site was similar to recent years with all indicator algae present in similar abundances. The site remains a mature kelp forest with canopy cover estimated at approximately 15%, and a thick understory of brown and red algae. Most notable was the huge recruitment of *Macrocystis pyrifera*, *Eisenia arborea*, *Laminaria farlowii* and *Pterygophora californica.* *Macrocystis pyrifera* adults were common although density decreased from last year to 0.083/m². Subadult density was similar to last year at 0.16/m². Juveniles were abundant at 52/ m², the highest density recorded at the site. Cover was 9.5%, similar to last year. Adult *E. arborea* were abundant on top of the reef and juveniles were moderately abundant with densities of 1.7/m² and 0.83/m², respectively, and cover was 17%, all similar to last year. Adult and juvenile *P. californica* were moderately abundant and abundant, respectively, in the low-lying cobble areas near the middle of the transect. Adult and juvenile *P. californica* were observed at 0.71/m² and 20/m², respectively, with juvenile density being the highest recorded density for the site. *Pterygophora californica* cover was observed at 12%, similar to past years. *Laminaria farlowii* remained abundant. Adult *L. farlowii* density remained similar to last year at 4.7/m² and juvenile density remained similar to last year's all time high with a density of 34/m². *Laminaria farlowii* cover was observed at 18%, a decrease from last year. *Cystoseira* spp. were common with a cover of 1.0%, similar to last year. *Desmarestia* spp. were common in the low-lying areas, with a cover of 0.17%, a decrease from last year's all time high. Miscellaneous brown algae cover was low at 1.2%. *Sargassum horneri* was not observed at the site. Miscellaneous red algae cover was similar to recent years at 35%. *Gelidium* spp. were observed on top of the reef at the eastern end of the transect, similar to past years, with a cover of 20%. No *Gigartina* spp. were observed on RPCs, similar to last year. Green algae cover was 0.33%, similar to last year. Articulated coralline algae cover was 15%, similar to previous years. Encrusting coralline algae cover remained low relative to past years, and the lowest on record for this site at 14%. Bare substrate cover remained similar to last year at 21%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was similar to recent years at 16%. The most common invertebrates in this category were hydroids. Tunicates were moderately abundant and diverse on the top of the reef with a cover of 3.7%, a decrease from last year. Sponges were moderately abundant and diverse in high relief areas at 1.0% cover, a decrease from last year. *Tethya aurantia* density was similar to last year at 0.011/m². *Diopatra ornata* was common and had a cover of 0.83%. *Phragmatopoma californica* was common with a cover of 0.83%, similar to last year. *Serpulorbis squamigerus* was not observed on RPCs, but was common at the site. Miscellaneous bryozoans were moderately abundant with a cover of 8.5%, a decrease from last year. *Diaperoecia californica* was moderately abundant on top of the reef with a cover of 1.7%, similar to last year. *Corynactis californica* cover was similar to last year at 0.67%. *Astrangia lajollaensis* was common with a cover of 0.17%. *Balanophyllia elegans* was rare with a cover of 0.17%. *Lophogorgia chilensis* was rare with a density of 0.0028/m². No *Muricea californica* or *M. fruticosa* were observed at the site.

Strongylocentrotus franciscanus was moderately abundant at 2.8/m², similar to last year and there was relatively low recruitment found under the spine canopy of conspecifics. Mean size of *S. franciscanus* was similar to last year at 81 mm. *Strongylocentrotus purpuratus* density was similar to recent years at 4.0/m² and recruitment also appeared low. Mean sizes of *S. purpuratus* was similar to last year at 36 mm. *Centrostephanus coronatus* was common but not observed on 1 m quadrats. *Lytechinus anamesus* was rare with none observed during band transects, similar to past years. No sea urchin wasting disease was observed.

Pisaster giganteus remained common, and most were large, but mostly only in high relief areas. *Pisaster giganteus* was observed on 1 m quadrats and 5 m quadrats at densities of 0.042/m² and 0.0050/m², respectively, similar to last year. *Patiria miniata* was rare with a density of 0.083/m^2. However, many were present in the ARMs, see below. *Pycnopodia helianthoides* was not observed at the site. *Ophiothrix spiculata* was not observed at the site. *Parastichopus parvimensis* was common in the low lying areas with a density of 0.33/m². No sea star wasting disease was observed.

Haliotis corrugata was rare with four individuals observed at the site. Densities of *H. corrugata* remained low at 0.0028/m², similar to last year. Three adult *H. corrugata* were measured at 80 mm, 149 mm and 153 mm. *Cypraea spadicea* was common at 0.13/m², similar to past years. *Megastraea undosa* was rare at a density of 0.042/m². *Kelletia kelletii* was common at 0.017/m². *Megathura crenulata* was rare at 0.0083/m², similar to past years. *Crassedoma giganteus* was moderately abundant on steep walls with a density of 0.068/m², the lowest density on record since monitoring began in 1983. *Aplysia californica* remained rare with none observed during sampling, though some were present. *Panulirus interruptus* was moderately abundant at 0.014/m^2, similar to recent years.

Similar to past years, fish were abundant and diverse. *Coryphopterus nicholsii* density was moderately abundant at 0.17/m^2. Roving diver fish counts were conducted on June 4th by six divers observing 32 species. Figures summarizing RDFC data can be found in Appendix H.

All six ARMs were sampled for all indicator species. Six *Haliotis corrugata* were observed in the ARMs for a density of 1.00/ARM and were measured at 17 mm, 20 mm, 23 mm, 23 mm, 24 mm and 48 mm. One of the *H. corrugata* individuals measuring 23 mm was misplaced and not

returned to the ARM. *Cypraea spadicea* was less abundant this year. The density of *C. spadicea* in the ARMs was 5.8/ARM. Small *Kelletia kelletii* were relatively common in the ARMs with a density of 1.3/ARM, higher than past years. *Megastraea undosa* density was 0.17/ARM, low for this site. *Megathura crenulata* density remained low at 0.50/ARM, similar to past years. *Crassedoma giganteum* density was 5.8/ARM, similar to last year. *Tegula regina* was not observed. *Patiria miniata* density was similar to last year at 7.0/ARM. *Pisaster giganteus* density was high at 5.5/ARM, an increase from year. *Strongylocentrotus franciscanus* density was similar to last year at 66/ARM. *Strongylocentrotus purpuratus* density was 232/ARM, similar to recent years. The urchins in ARM 2371 were severely damaged while hanging in a mesh bag off the stern. Wind swell caused the mesh bag to knock into the boat for an extended period of time and all individuals most likely died. *Parastichopus parvimensis* density was 1.2ARM <10 cm and 5.0/ARM >10 cm, a decrease in individuals <10 cm and an increase in individuals >10 cm compared to last year. Three small *Octopus* spp. were observed in the ARMs. Four *Parastichopus californicus* <10 cm and one >10 cm were observed.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Southeast Sea Lion Rookery, Santa Barbara Island
Site #14, SBSESL
Year sampling began: 1982
2010 sampling dates: 6/2
2010 status: Dominated by *Ophiothrix spiculata* and *Strongylocentrotus purpuratus*

Overall, this site has changed drastically from previous years. The most notable change was an increase in algae, mainly *Desmarestia* spp., as well as fish being more abundant and diverse. The site was still dominated by echinoderms, but *Ophiothrix spiculata* had decreased in cover, likely due to less substrate being available as a result of the increased cover of *Desmarestia* spp. Another notable change was the discovery of the invasive algal species *Sargassum horneri*. This is the first documented observation of this species at this site. *Macrocystis pyrifera* was present as adults, subadults and juveniles. Adults were rare at a density of 0.010/m^2. Subadults were common at a density of 0.020/m^2. This is the first time density has been recorded in either of these categories since 2003. Juvenile density was 1.21/m^2, the highest density recorded at this site. Cover of *M. pyrifera* was 1.0%. No *Laminaria farlowii* or *Pterygophora californica* were observed at the site. No *Eisenia arborea* were observed during sampling, but juveniles were observed at the site on the tops of large boulders. *Cystoseira* spp. were rare with no cover observed on RPCs, similar to previous years. *Desmarestia* spp. were abundant with a cover of 29%, the highest recorded at this site. *Sargassum horneri* juveniles were observed with a density of 0.005/m^2. A total of two adult and two juvenile *S. horneri* were found at the site. Miscellaneous brown algae were moderately abundant with a cover of 2.2%. Miscellaneous red algae were common with a cover of 2.2%. Green algae were recorded with 1.0% cover, similar to recent years, and consisted mainly of *Codium* spp. Miscellaneous plant cover, consisting of filamentous diatoms, was recorded at 2.2%. Encrusting coralline algae were abundant with a cover of 79%, similar to last year. Articulated coralline cover was 0.17%. Bare substrate cover was 12%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 3.3%, similar to recent years. Anemones were the most abundant taxa in this category. Tunicates were rare with a cover of 0.67%. Sponges were common but none were recorded on RPCs. *Tethya aurantia* was abundant with a density of 0.17/m², the highest recorded at this site. Miscellaneous bryozoan cover was 0.17%. *Diaperoecia californica* was not observed on RPCs but was present at the site. *Corynactis californica* was common with a cover of 2.0%, similar to past years. *Astrangia lajollaensis* was not observed at the site. *Balanophyllia elegans* was not observed on RPCs though it was observed at the site. *Lophogorgia chilensis* was moderately abundant with a density of 0.13/m², similar to recent years. *Muricea fruticosa* was not recorded on band transects though it was present. *Muricea californica* was moderately abundant with a density of 0.026/m^2.

Strongylocentrotus purpuratus was common with a density of 16/m² and had a mean size of 21 mm, both similar to last year. *Strongylocentrotus franciscanus* was common with a density of 6.6/m². The mean size of *S. franciscanus* was 32 mm, similar to last year. Juvenile *S. purpuratus* and *S. franciscanus* were common. *Lytechinus anamesus* density remained low at 0.017/m². *Centrostephanus coronatus* was common with a density of 0.63/m². No sea urchin wasting disease was observed.

Pisaster giganteus density on 1 m quadrats and 5 m quadrats were 0.0/m² and 0.015/m², respectively, similar to last year. *Patiria miniata* was common with a density of 0.50/m². Most *P. miniata* individuals were notably large but many size classes were present. *Pycnopodia helianthoides* was not observed at the site. Cover of *Ophiothrix spiculata* remained very high but decreased from last year to 48%. *Parastichopus parvimensis* density was 0.13/m², similar to previous years, and consisted mainly of large individuals. No sea star wasting disease was observed.

Neither *Haliotis* spp. nor any fresh shells were observed. *Cypraea spadicea* was common, but not observed on 1 m quadrats. *Megastraea undosa* was rare with a density of 0.042/m². No *Astraea gibberosa* was recorded on 1 m quadrats but it was observed at the site. *Tegula regina* was rare with a density of 0.083/m², similar to recent years. No *Kelletia kelletii* or *Megathura crenulata* were observed at the site. *Crassedoma giganteum* was rare at 0.0069/m². *Aplysia californica* density was high at 0.10/m². Two *Panulirus interruptus* were observed at the site, but none were recorded on band transects. A lobster trap was found about 30 m east of the site. It had two large lobsters in it (approximately 4 lbs and 7 lbs) that were barely conscious. It was difficult to tell if the trap was from last season, but it had little rust indicating it was likely recently deployed. This site is inside the Marine Reserve at Santa Barbara Island, where take of any living marine resources is prohibited.

Overall, fish diversity and abundance were greater than in past years, similar to most other sites at this island. *Coryphopterus nicholsii* was common with a density of 0.42/m². *Alloclinus holderi* was rare with none recorded on 1 m quadrats. The most notable observation was a large number of juvenile bocaccio rockfish present. Roving diver fish counts were conducted on June 2nd with six divers observing 20 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Arch Point, Santa Barbara Island
Site #15, SBAP
Year sampling began: 1982
2010 sampling dates: 5/17
2010 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*

Similar to previous years, macroalgae were rare and what little algae were present were located primarily on the top of large rocks. *Macrocystis pyrifera* cover was 0.83%, the first recorded cover since 2004. No *M. pyrifera* was recorded on 1 m quadrats or 5 m quadrats, although 15 plants were observed on the offshore side of the transect. Juveniles were rare along the transect. No *Laminaria farlowii, Pterygophora californica, Cystoseira* spp. or *Desmarestia* spp. were observed. *Eisenia arborea* adults were rare and juveniles were common on top of large rocks, with densities of 0.0/m^2 and 0.21/m^2, respectively. *Eisenia arborea* cover was recorded at 0.67%. Miscellaneous brown algae were moderately abundant at the southern end of the transect and had a cover of 3.7%, the highest recorded cover since 2004. In this same area there was a patch of *Dictyota* spp. */Pachydictyon* spp., similar to previous years, with abundant four to seven foot tall *Sargassum muticum* present. No *Sargassum horneri* was observed at the site. Miscellaneous red algae cover was common and recorded at 16%. *Microcladia* spp. and *Endocladia* spp. were observed at the site. One *Gigartina* spp. was observed growing epiphytically on a *Muricea californica*. Green algae remained rare at 0.83% cover and consisted mostly of *Codium setchellii* and *Derbesia marina.* Miscellaneous plant cover, consisting mostly of filamentous diatoms, was at 3.3% cover. Articulated coralline algae were common with cover at 0.67%, similar to past years. Encrusting coralline algae were moderately abundant and cover was recorded at 47%. Bare substrate cover was 27%, similar to last year.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 14.3%. The most common invertebrates in this category were barnacles followed by *Spirobranchus spinosus.* Tunicates were rare at a cover of 0.67%. *Serpulorbis squamigerus* remained rare with a cover of 0.0%. Sponges were rare with 0.0% cover. *Tethya aurantia* was rare at a density of 0.0/m^2, though one was observed at the site. Miscellaneous bryozoans were rare with a cover of 2.0%. *Diaperoecia californica* was not observed on RPCs, but it was present on the steep sides of rocky reefs. *Corynactis californica* remained common at 6.5% cover, similar to last year. In the past 28 years, *C. californica* has gone through three distinct cycles of high and low percent cover. *Astrangia lajollaensis* cover was 0.83%, similar to recent years. *Balanophyllia elegans* was not observed on RPCs. *Lophogorgia chilensis* and *Muricea fruticosa* were rare and not observed on band transects. *Muricea californica* was also rare at a density of 0.0014/m².

Strongylocentrotus purpuratus was abundant with a density of 131.5/m², similar to previous years. *Strongylocentrotus franciscanus* density was 6.7/m², similar to last year's low density. *Strongylocentrotus purpuratus* recruits were abundant while *S. franciscanus* recruits were common. The mean size of *S. purpuratus* remained low at 15 mm, while *Strongylocentrotus franciscanus* had an increase in average size to 44 mm, the highest recorded average size since 1998. *Lytechinus anamesus* was rare with density of 0.021/m². *Centrostephanus coronatus* was rare at a density of 0.083/m². One juvenile was observed. No sea urchin wasting disease was observed.

Pisaster giganteus was abundant with densities on 1 m quadrats and 5 m quadrats at 0.042/m² and 0.15/m², respectively, an increase from last year. Most *P. giganteus* were large with 63

measured for a mean size of 118 mm. *Patiria miniata* density was 1.3/m², similar to recent years, with all sizes present. *Pycnopodia helianthoides* was not observed at the site. *Ophiothrix spiculata* was not observed on RPCs, similar to past years, though present in low numbers around the site. *Parastichopus parvimensis* was very abundant at a density of 0.17/m², and several juveniles were observed. No sea star wasting disease was observed.

No *Haliotis* spp. were observed at this site. *Cypraea spadicea* was common at a density of 0.083/m². *Megastraea undosa* was moderately abundant near the 100 m end of the transect and relatively rare at the rest of the site. Density was 0.042/m², similar to last year's lowest recorded density. Forty-six *M. undosa* were found for size frequencies at an average size of 90 mm, the highest recorded average size since 1985. *Tegula regina* was abundant, but patchy, with a density of 0.29/m². *Kelletia kelletii* was not observed. *Megathura crenulata* was rare with a density of 0.0056/m², and only one measured for size frequencies. *Crassedoma giganteum* density remained low at 0.0069/m². *Aplysia californica* was abundant, and mostly consisted of small individuals, at a density of 0.32/m², similar to previous years. *Panulirus interruptus* was rare with a density of 0.0014/m². One *P. interruptus* was notably large while the others were around the legal size limit.

Fish abundance and diversity was higher than has been seen in previous years. This year the site experienced the highest density of juvenile rockfish recruits ever recorded. *Coryphopterus nicholsii* was recorded at a density of 0.13/m^2. A large school of up to 30,000 unidentified juvenile baitfish was observed. Roving diver fish counts were conducted on May 17th, by six divers observing a total of 21 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were deployed and retrieved and all temperature data were downloaded successfully.

Location: Cat Canyon, Santa Barbara Island
Site #16, SBCAT
Year sampling began: 1986
2010 sampling dates: 5/19
2010 status: State of transition

This site had notably more algae than in recent years. *Macrocystis pyrifera* juveniles and subadults were abundant in patches from 0-25 m and 55-100 m along the transect. *Dictyota* sp. and *Pachydictyon* sp. were also abundant in these same areas. Adult, subadult, and juvenile *M. pyrifera* densities were 0.0/m^2, 0.66/m^2, and 5.7/m^2, respectively. Cover of *M. pyrifer*a was 42%. *Desmarestia* sp. had a cover of 1.8%. *Eisenia arborea* cover was 0.5%. *Pterygophora californica* cover was 0.67%. Miscellaneous brown algae, which consisted mainly of *Dictyota* spp. and *Dictyopterus* spp., had 43% cover, the highest recorded at the site since sampling began in 1986. Miscellaneous red algae cover was 17%. Miscellaneous plants, consisting mainly of filamentous diatoms, were present at 14% cover. Encrusting coralline algae remained abundant with a cover of 68%. Bare substrate cover decreased to 20%. No *Cystoseira* spp., *Gelidium* spp., *Gigartina* spp., *Laminaria farlowii*, *Sargassum horneri* or articulated coralline algae were observed on RPCs, though *Cystoseira* spp. were present.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover decreased to 5.8%. This category consisted mostly of *Spirobranchus spinosus*. *Serpulorbis squamigerus* was common and recorded at 0.17%. *Diopatra ornata* was rare with none observed on RPCs. Tunicate cover was 0.67%. No *Tethya aurantia* was observed at the site. No Sponges were observed on RPCs. Similar to past years, miscellaneous bryozoan cover was 3.7%. *Diaperoecia californica* was uncommon with none observed during RPCs. *Astrangia lajollaensis* was common with a cover of 0.67%. *Balanophyllia elegans* was common, but not observed on RPCs. *Corynactis californica* was common, with a cover of 0.5%. Gorgonians were rare. *Muricea fruticosa* had a density of 0.0028/m^2.

Strongylocentrotus spp. continued to be moderately abundant and small in size. *Strongylocentrotus purpuratus* juveniles were rare, while *Strongylocentrotus franciscanus* juveniles were common under conspecifics. *Strongylocentrotus purpuratus* density decreased to 35/m², after last year's record high density. *Strongylocentrotus purpuratus* individuals were mostly small; with a mean size of 20 mm. *Strongylocentrotus franciscanus* density was 7.5/m², similar to last year. This species has been gradually declining in density since 2004. *Strongylocentrotus franciscanus* individuals were mostly small; with a mean size of 32 mm, similar to last year. *Lytechinus anamesus* was rare and none were observed during band transects. *Centrostephanus coronatus* was common to the site and a density of 0.042/m² was observed. No sea urchin wasting disease was observed.

Pisaster giganteus densities on 1 m quadrats and 5 m quadrats were 0.0/m² and 0.045/m², respectively. *Patiria miniata* density was 0.25/m², similar to recent years. *Pycnopodia helianthoides* was not observed. *Ophiothrix spiculata* was rare and not observed on RPCs. *Parastichopus parvimensis* density increased to 0.25/m², after a record low last year. No sea star wasting disease was observed.

No live *Haliotis* spp. were observed. *Cypraea spadicea* was common, but not observed on 1 m quadrats. *Megastraea undosa* density decreased to 0.88/m². All sizes were present, with a mean of 62 mm, similar to last year. *Tegula regina* density was 0.38/m². *Kelletia kelletii* remained rare at a density of 0.0028/m^2. *Megathura crenulata* remained rare and none were recorded during sampling. *Crassedoma giganteum* remained rare at a density of 0.0056/m². *Aplysia californica* was abundant with a density of 0.38/m², similar to last year. *Panulirus interruptus* was rare and not observed during band transects. However, small and large individuals were common in shallow water off of the transect.

Overall, fish diversity and abundance remained low. *Coryphopterus nicholsii* density was 0.33/m², similar to last year and the highest recorded since 1989. Roving diver fish counts were conducted on May 19th by five divers observing 20 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed. Unfortunately both loggers had technical difficulties and we could not retrieve data from either. The loggers were sent to Onset Computer Corporation for data recovery. The UTBI unit was faulty and no data could be retrieved. The Tidbit logger ran out of battery power on April 13, 2010 at 1403 hours, so only the data before this date was collected and we are missing temperature data from this date until loggers were deployed this trip on May 19, 2010.

One lobster trap without a float was found near the site. It was closed with wire crimps that appeared to not be legal because they did not destruct. The trap was recovered from the bottom.

Location: Miracle Mile, San Miguel Island
Site #21, SMMM
Year sampling began: 2001
2010 sampling dates: 7/28
2010 status: Mature kelp forest

Miracle Mile is neither one of the original nor one of the additional kelp forest monitoring sites implemented to monitor the kelp forest ecosystem and/or marine reserves. This site was created specifically to monitor *Haliotis rufescens*. Originally three sites were proposed to better monitor the abalone population at San Miguel Island, but Miracle Mile was the only site that was funded. This site was established in 2001 by Jim Marshall, a commercial abalone and sea urchin fisherman, in conjunction with the County of Santa Barbara, and with the assistance of the Channel Islands National Park. Jim Marshall selected this site based on its exceptionally high density of *Haliotis rufescens*. However, when a site is selected for high density of a target species, it is often more likely to experience a decrease in density of the target species than an increase. At this site, we observed a decrease in abundance of *H. rufescens* initially, but the site has since stabilized with a relatively high density. The KFM program has continued to monitor this site annually if time allows as we think more than two sites are needed to adequately monitor the kelp forests at San Miguel Island.

This site continued to be a healthy and mature kelp forest with a dense and diverse understory of algae. *Macrocystis pyrifera* formed a thick canopy covering 100% of the transect that was notably thicker than last year. Adult *M. pyrifera* were abundant with a density of 0.23/m². Subadult and juvenile *M. pyrifera* densities were 0.030/m² and 0.46/m², respectively. Overall cover of *M. pyrifera* was 15%. *Eisenia arborea* adults were large though notably less abundant than last year. There was a high number of old and senescing plants, possibly due to the low light levels caused by the increased thickness of the *M. pyrifera* canopy. Adult and juvenile *E. arborea* were common and both had densities of 0.13/m². *Eisenia arborea* cover was 13%, similar to last year. Adult and juvenile *Pterygophora californica* were common at 0.21/m² and 0.58/m², respectively. Cover of *P. californica* remained low at 2.2%, similar to recent years. *Laminaria farlowii* was not observed at the site. *Cystoseira* spp. were common with a cover of 2.5%. *Desmarestia* spp. were common but only showed 0.17% cover on RPCs. *Sargassum horneri* was not observed at the site. Miscellaneous green algae and miscellaneous brown algae cover remained similar to last year at 0.0% and 1.0%, respectively. Miscellaneous red algae were abundant at 62%. *Gigartina* spp. were moderately abundant at 6.1% cover and *Gelidium* spp. were rare at 0.33% cover. Miscellaneous plants, consisting of filamentous diatoms, had a cover of 0.0%. Articulated coralline cover was 31%, similar to recent years, and encrusting coralline cover was 43%. Bare substrate cover was 15%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover remained similar to last year at 7.2%. Tunicates were abundant and diverse with 15% cover. *Styela montereyensis* was common with a density of 0.17/m^2. Sponges were also abundant and diverse with a cover of 6%, similar to recent years. *Tethya aurantia* density was 0.20/m². Both *Phragmatopoma californica* and *Serpulorbis squamigerus* were common with covers of 2.0% and 0.17%, respectively. *Diopatra ornata* cover was similar to recent years at 0.33%. Miscellaneous bryozoans cover was

9.7%. *Urticina lofotensis* was moderately abundant at 0.17/m². *Corynactis californica* was common but not observed on RPCs. *Balanophyllia elegans* was moderately abundant with cover of 1.0%. *Astrangia lajollaensis* was not observed. No gorgonians were observed at the site.

Strongylocentrotus spp. abundance remained relatively low. *Strongylocentrotus franciscanus* density was 2.6/m² with mean size of 86 mm, similar to recent years. Many were scattered in small groups in crevice habitat, with very few small urchins but a range of larger sizes. *Strongylocentrotus purpuratus* was rare at 0.13/m² with a mean of 48 mm. No *Centrostephanus coronatus* or *Lytechinus anamesus* were observed. No sea urchin wasting disease was observed.

Pycnopodia helianthoides was common with a density of 0.018/m². Most were small with a mean size of 72 mm. *Patiria miniata* was abundant at 3.1/m². *Pisaster giganteus* was noticeably more abundant than last year and were observed on 1 m quadrats and 5 m quadrats with densities of 0.42/m² and 0.35/m², respectively. *Parastichopus parvimensis* was common at 0.25/m². *Ophiothrix spiculata* was not observed during sampling. No sea star wasting disease was observed.

Haliotis rufescens was abundant with observed densities on band transects and 1 m quadrats of 0.56/m² and 0.29/m^2, respectively, similar to past years. A total of 114 *H. rufescens* were measured for size frequencies with a mean of 184 mm. Juvenile *H. rufescens* were rare, with only a few measuring less than 50 mm. However, *H. rufescens* between 110-140 mm were common. *Astraea gibberosa* was moderately abundant, and variable in size, with a density of 0.42/m², the highest density observed at this site. No *Megastraea undosa, Tegula regina* or *Cypraea spadicea* were observed on 1 m quadrats, similar to past years, although *Cypraea spadicea* was common at this site. *Kelletia kelletii* was rare at 0.0083/m², the lowest density observed since 2003. *Megathura crenulata* density was 0.017/m². *Crassedoma giganteum* was rare and none were observed on band transects. *Aplysia californica* was not observed at the site.

Fish were moderately abundant and diverse, similar to past years. *Coryphopterus nicholsii* was rare at 0.042/m². Roving diver fish counts were conducted on July 28th by five divers observing 23 species. Figures summarizing RDFC data can be found in Appendix H.

Six of the seven ARMs were monitored for all indicator species. The lid on ARM #2471 was nearly ripped off and the top two layers of bricks were outside of the ARM cage. The remaining six ARMs cages were in good condition and few had sand covering the bottom layer of bricks, which has been a problem in past years. A total of four *Haliotis rufescens* were observed for a density of 0.67/ARM, slightly lower than recent years, with an increase in mean size to 133 mm. Three *Astraea gibberosa* were observed for a density of 0.50/ARM. Two *Crassedoma giganteum* were observed for a density of 0.33/ARM. *Kelletia kelletii* was not observed. *Patiria miniata* density was 6.7/ARM and had a mean size of 35 mm, similar to last year. *Pisaster giganteus* was observed at 0.50/ARM with a mean size of 45 mm. One 43 mm *Pycnopodia helianthoides* was observed for a density of 0.17/ARM. *Strongylocentrotus franciscanus* density was 3.7/ARM with a mean size of 89 mm, similar to last year, and *Strongylocentrotus purpuratus* density was 1.2/ARM with a decrease in mean size to 21 mm.

Location: Cluster Point, Santa Rosa Island
Site #22, SRCP
Year sampling began: 2005
2010 sampling dates: 6/30, 10/5
2010 status: Mature kelp forest

This site was a mature kelp forest with large, widely-spaced adult *Macrocystis pyrifera* plants and a low density of subadults. Canopy cover appeared lower than last year and was estimated at 50%. Density of adult and subadult *M. pyrifera* both decreased from last year to 0.11/m² and 0.01/m², respectively. Juvenile *M. pyrifera* density was 0.42/m², similar to last year. Cover decreased for the second year to 14.0%. *Eisenia arborea* and *Pterygophora californica* were moderately abundant. *Eisenia arborea* adult and juvenile densities were recorded at 0.25/m² and 0.08/m², respectively, similar to last year. Cover increased from last year to 13%. *Pterygophora californica* adult and juvenile densities were recorded at 2.0/m² and 0.21/m², respectively. Cover was recorded at 35%, similar to last year. *Laminaria farlowii* was not observed at the site. *Desmarestia* spp. were rare with cover decreasing from last year to 0.17%. *Cystoseira* spp. were common but no cover was recorded on RPCs. *Sargassum horneri* was not observed. Miscellaneous brown algae cover was 1.7%. No green algae were observed. Miscellaneous red algae were abundant on the tops of rocks with a cover of 52%, similar to last year. *Gigartina* spp. were common but no cover was recorded on RPCs. Articulated coralline algae cover decreased from last year to 5.0%. Encrusting coralline algae had a cover of 41%, similar to last year. Bare substrate cover was 14%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was high at 20% and the most dominant taxa in this category were amphipod tube mats followed by hydroids. Encrusting invertebrates were abundant in the rocky areas and consisted largely of sponges including *Hymenamphiastra cyanocrypta* and *Leucosolenia eleanor*. The *L. eleanor* were larger and more abundant than David Kushner has ever seen in 20 years. Sponge cover was 3.0%. *Tethya aurantia* density was 0.41/m², similar to last year. Tunicates were moderately abundant at 11% cover, similar to last year. *Styela montereyensis* density was 0.46/m². *Serpulorbis squamigerus* was present but not observed on RPCs. *Phragmatopoma californica* was common with a cover of 0.33%. *Diopatra ornata* was common, and patchy in low lying areas at the east end of the transect, with a 2.8% cover. Miscellaneous bryozoans were common with a cover of 10%. *Diaperoecia californica* was rare and was not observed on RPCs. *Urticina lofotensis* density was similar to last year at 0.078/m², with many small individuals observed. *Corynactis californica* was common with a cover of 0.50%. *Balanophyllia elegans* and *Astrangia lajollaensis* covers were low at 1.7% and 0.67%, respectively. *Lophogorgia chilensis*, *Muricea californica* and *Muricea fruticosa* were not observed.

Strongylocentrotus spp. were common at the site, similar to last year. However, they have been gradually increasing in density since we began monitoring in 2005. *Strongylocentrotus franciscanus* density was 4.3/m², the same as last year. *Strongylocentrotus purpuratus* density was 6.4/m², also the same as last year. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed, similar to previous years. No sea urchin wasting disease was observed.

Pisaster giganteus density remained similar to last year on both 1 m quadrats and 5 m quadrats at 0.21/m² and 0.13/m², respectively. *Patiria miniata* was moderately abundant and decreased in density from last year to 2.3/m². *Pycnopodia helianthoides* was common with a density of

0.014/m². *Parastichopus parvimensis* was common in the low lying areas at 0.29/m². *Ophiothrix spiculata* was not observed on RPCs. No sea star wasting disease was observed.

Haliotis rufescens was rare with only two observed at the site. One of which was sampled on band transects for an overall density of 0.0014/m². Both were measured for size frequencies at 144 mm and 186 mm. The two *H. rufescens* measured here last year were over 190 mm, so these two appear to be different individuals. *Cypraea spadicea* was common at a density of 0.17/m². No *Megastraea undosa* were observed. *Astraea gibberosa* was rare and none were recorded on 1 m quadrats. *Kelletia kelletii* was common in the low lying areas and had a density of 0.049/m², an increase from previous years. *Megathura crenulata* was common and relatively large with a density of 0.021/m². *Crassedoma giganteum* was common and had a density of 0.036/m².

Fish were moderately diverse and abundant, similar to past years. *Coryphopterus nicholsii* was rare at a density of 0.042/m². Roving diver fish counts were performed on June 30th with four divers observing 23 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Trancion Canyon, Santa Rosa Island
Site #23, SRTC
Year sampling began: 2005
2010 sampling dates: 6/29
2010 status: Mature kelp forest

This site has notably changed from last year with a decrease in *Macrocystis pyrifera* and understory algae, and an increase in *Strongylocentrotus franciscanus* and *Strongylocentrotus purpuratus densities*. Additionally, the appearance of small urchin barrens scattered around the site deserves note. The site remained a mature kelp forest with large, widely spaced *M. pyrifera* plants and few subadults. *Macrocystis pyrifera* adults were moderately abundant with a density of 0.040/m², a decrease from last year. Juvenile and subadult densities of *M. pyrifera* were similar to last year at 1.7/m² and 0.015/m², respectively. Cover of *M. pyrifera* was observed at 1.0%, a notable decrease from last year. *Eisenia arborea* was moderately abundant in the low lying areas with adults absent and juvenile density of 0.083/m², a decrease in adults compared to last year. Cover of *E. arborea* was observed at 1.5%. Adult *Pterygophora californica* were moderately abundant with a density of 0.17/m², a decrease from last year's highest recorded density of 0.96/m^2. Juvenile *P. californica* were observed at 0.71/m², similar to previous years. Cover of *P. californica* was 6.7%, similar to last year. No *Laminaria farlowii* was observed. *Desmarestia* spp. were rare and cover was observed at 0.33%. *Cystoseira* spp. were rare and cover was observed at 0.33%, a decrease from last year. *Sargassum horneri* was not observed at the site. Miscellaneous brown algae cover was 0.67%, similar to last year. Miscellaneous red algae were abundant with a cover of 28%, similar to last year. *Gigartina* spp. was common with a cover of 1.0%, similar to last year. Articulated coralline algae cover was moderately abundant at 4.2%, a decrease from last year. Encrusting coralline algae cover was moderately abundant at 31%, similar to last year. Bare substrate cover was similar to last year at 16%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover increased to 22% with hydroids and amphipod tube mats being the most common invertebrates in this category.

Tunicates were moderately abundant and diverse with 4.7% cover, similar to last year. *Styela montereyensis* was common with a density of 0.21/m². Sponges were moderately abundant at 4.0% cover, similar to previous years. *Tethya aurantia* density was 0.27/m², similar to last year. *Diopatra ornata* was moderately abundant in the low-lying areas with most individuals covered in red algae. Cover of *D. ornata* was 12%, similar to past years. *Phragmatopoma californica* was common with a cover of 1.2%. Miscellaneous bryozoans were common but decreased in cover to 3.0%. *Diaperoecia californica* was rare and cover was 0.17%, a decrease from last year. *Urticina lofotensis* density was 0.16/m². *Corynactis californica* was moderately abundant and cover was 1.3%. *Balanophyllia elegans* was abundant and cover was 3.2%. *Astrangia lajollaensis* was moderately abundant and cover was 1.2%. One individual *Lophogorgia chilensis* was observed with a density of 0.0014/m^2. No *Muricea* spp. were observed at the site.

Strongylocentrotus franciscanus was abundant and present in high density patches over much of the site. Density was recorded at 11/m², similar to previous years. There were fewer S. *franciscanus* juveniles than last year although they remained common. Both species of urchins were not in crevice habitat as much as in past years. *Strongylocentrotus purpuratus* was moderately abundant with all sizes present, but was patchy over much of the site. Juveniles were common. Density of S. *purpuratus* was 21/m^2, continuing an upward trend and representing the highest density observed at this site since recording began in 2005. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed. No sea urchin wasting disease was observed.

Pisaster giganteus and *Patiria miniata* were both moderately abundant. *Pisaster giganteus* was sampled on both 1 m quadrats and 5 m quadrats at 0.54/m² and 0.36/m², respectively, a decrease from last year's high. Most were small, with a mean size of 96 mm. *Patiria miniata* was observed at 3.0/m², similar to previous years. *Pycnopodia helianthoides* was common at 0.026/m², an increase from last year. *Parastichopus parvimensis* was moderately abundant at 0.54/m², similar to last year. No *Pachythyone rubra* or *Ophiothrix spiculata* were observed. No sea star wasting disease was observed.

Haliotis rufescens was rare and none were observed on band transects. One *H. rufescens* was measured at 179 mm during size frequencies. Two fresh *H. rufescens* shells both at 31 mm were found near the east end of the transect. *Cypraea spadicea* was moderately abundant at 0.42/m². *Megastraea undosa* was rare throughout the site. No *Megastraea undosa* or *Astraea gibberosa* were observed during sampling. *Kelletia kelletii* was observed at a density of 0.0042/m². *Megathura crenulata* was common with a density of 0.036/m², similar to previous years. *Crassedoma giganteum* was common at a density of 0.013/m². Similar to previous years, no *Aplysia californica* or *Panulirus interruptus* were observed at the site. No *Cryptochiton stelleri*, gumboot chiton, were observed although we have observed this species in previous years and have recorded those observations.

Fish were moderately abundant and diverse, similar to past years. *Coryphopterus nicholsii* had a density of 0.50/m^2. Roving diver fish counts were conducted on June 29th by four divers observing 27 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Chickasaw, Santa Rosa Island
Site #24, SRCSAW
Year sampling began: 2005
2010 sampling dates: 8/18
2010 status: Mature kelp forest

This site remained a healthy, mature kelp forest with large, widely spaced adult *Macrocystis pyrifera* plants. The substrate appeared more scoured than last year, with an increase in exposed bare rock. *Macrocystis pyrifera* adult density was 0.33/m², similar to last year. Densities of subadults and juveniles were 0.20/m² and 0.0/m², respectively, both decreases from last year. *Macrocystis pyrifera* cover remained similar to last year at 9.5%. *Eisenia arborea* was rare with 0.0/m² and an overall cover of 0.33%. *Pterygophora californica* adults remained moderately abundant with a density of 0.50/m² while juveniles were rare and not observed on 1 m quadrats. Cover of *P. californica* was 1.5%, a decrease from last year but similar to years past. *Laminaria farlowii* was not observed at the site. *Cystoseira* spp. were common at 2.0% cover, similar to last year. *Desmarestia* spp. were not observed during sampling. *Sargassum horneri* was not observed at the site. Miscellaneous brown algae were rare with a cover of 0.17%. Miscellaneous red algae were common with a cover of 32%, a decrease from last year. *Gigartina* spp. were rare at 0.17% cover, a decrease from last year but similar to years past. Miscellaneous green algae were not observed on RPCs. Articulated coralline algae cover remained similar to last year at 7.7%. Encrusting coralline algae cover increased to 22%, but remained similar to recent years. Bare substrate cover was 9.5%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover decreased from last year to 6.7%, but remained similar to years past. The most common miscellaneous invertebrates were anemones, mainly *Epiactis* spp. Tunicates were moderately abundant and diverse at 17% cover, an increase from last year. Similar to our nearby site South Point, we observed an increase in very small *Styela montereyensis* this year. Density of *S. montereyensis* was 0.50/m². Sponges were abundant and diverse at 2.3% cover. *Tethya aurantia* remained moderately abundant at 0.16/m². There was an increase in *Phragmatopoma californica* cover to 11%, the highest recorded at this site. *Diopatra ornata* was common with a cover of 11%. Miscellaneous bryozoans were moderately abundant at 30% cover, an increase from last year. Bryozoans were mostly observed growing epiphytically on red algae. *Diaperoecia californica* was not observed on RPCs, but was rare to the site. *Urticina lofotensis* remained common with a density of 0.11/m². *Corynactis californica* was rare with a cover of 0.83%, similar to past years. *Balanophyllia elegans* was rare with a cover of 0.33%. A*strangia lajollaensis* was not observed at the site. No *Lophogorgia chilensis, Muricea californica* or *Muricea fruticosa* were observed, similar to past years.

Densities of *Strongylocentrotus* spp. remain low, but have gradually increased since we began monitoring this site in 2005 and we are currently observing the highest densities on record. *Strongylocentrotus purpuratus* was common with a density of 2.4/m² and a mean size of 30 mm, similar to recent years. *Strongylocentrotus franciscanus* was moderately abundant in most of the available crevice habitat with an overall density of 2.5/m², and mean size of 73 mm. *Strongylocentrotus* spp. recruits were rare. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed. No sea urchin wasting disease was observed.

Pycnopodia helianthoides was common at a density of 0.0056/m². *Patiria miniata* was moderately abundant, similar to years past, at a density of 1.8/m². *Pisaster giganteus* density increased and was sampled on both 1 m quadrats and 5 m quadrats with densities of 0.29/m² and 0.16/m², respectively. *Ophiothrix spiculata* was not observed at the site. *Parastichopus parvimensis* was common with a density of 0.17/m². No sea star wasting disease was observed.

Haliotis rufescens was common with a density of 0.014/m², similar to past years. Several smaller (<70 mm) live *H. rufescens* and several small fresh shells were observed, possibly indicating more recent recruitment than we have observed at nearby sites. Forty-seven *H. rufescens* were measured for size frequencies for a mean of 181 mm. Size frequency measurements for *H. rufescens* were conducted during band transects covering the area between each transect as well resulting in a thorough and effective search effort. Six large fresh *H. rufescens* shells were found indicating some recent mortality. *Cypraea spadicea* was common at 0.38/m². *Megastraea undosa* was rare and not observed during quadrats. *Astraea gibberosa* was not observed at the site. *Megathura crenulata* and *Crassedoma giganteum* were both common with densities of 0.0069/m² and 0.031/m², respectively, with an increase observed in *C. giganteum* density. *Aplysia californica* was not observed. *Phragmatopoma californica* cover increased to 11%, the highest cover recorded. *Serpulorbis squamigerus* cover was 0.17%. *Panulirus interruptus* was not observed at the site.

Fish were moderately abundant and diverse, similar to last year. *Coryphopterus nicholsii* was rare with a density of 0.042/m². Roving diver fish counts were performed on August 18th with six divers observing 23 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: South Point, Santa Rosa Island
Site #25, SRSP
Year sampling began: 2005
2010 sampling dates: 8/17
2010 status: Mature kelp forest

This site continued to be a mature kelp forest with an estimated canopy cover of 100%. Adult *Macrocystis pyrifera* was healthy and abundant with a density of 0.30/m^2. Juvenile *M. pyrifera* was common at a density of 0.083/m^2. Subadults were rare at a density of 0.0050/m^2. Cover of *M. pyrifera* decreased from last year to18%. Adult and juvenile *Eisenia arborea* were rare, with none observed on quadrats. Cover was 0.33%. *Pterygophora californica* adults were moderately abundant while juveniles were common with densities of 0.75/m^2 and 0.58/m^2, respectively, with overall cover of 13%. Most *Pterygophora californica* individuals appeared to be unhealthy. Adult and juvenile *Laminaria farlowii* were common with densities of 0.54/m² and 0.50/m², respectively. *Laminaria farlowii* cover decreased to 6.3% after last year's record high cover and density. *Desmarestia* spp. were not observed at the site. *Cystoseira* spp. were moderately abundant, and mostly small, with a cover of 3.5%. *Sargassum horneri* was not observed at the site. Miscellaneous brown algae had 0% cover. Miscellaneous red algae were moderately abundant with a cover of 33%. Green algae were rare and not observed on RPCs. *Gigartina* spp. was common with a cover of 2.2%. *Gelidium* spp. was not observed on RPCs. Articulated

coralline algae cover was 15%, similar previous years. Encrusting coralline algae cover was 15%, similar to previous years. Bare substrate cover was 6.5%.

Overall, invertebrate densities were similar to recent years with encrusting invertebrates being very abundant. Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 34%, and consisted mainly of hydroids and *Cucumaria* spp. Tunicates remained abundant and diverse with a cover of 9.3% and this category included *Cystodytes lobatus, Polyclinum planum, Pycnoclavella* spp. *Distaplia* spp. and other encrusting tunicates. Large individuals of *Styela montereyensis* were common and small individuals were abundant. *Styela montereyensis* density was 3.2/m², which is the highest recorded density since monitoring at this site in 2005. Sponges were abundant, especially *Acarnus* spp. and *Polymastia* spp., with overall cover of 5.3%. *Tethya aurantia* density increased to 0.13/m². *Phragmatopoma californica* was abundant and increased in cover to 13%, the highest recorded cover at this site. *Serpulorbis squamigerus* was common at a density of 0.33/m^2. *Diopatra ornata* was moderately abundant in the appropriate habitat with a cover of 7.5%. Miscellaneous bryozoan cover increased to 25%. *Diaperoecia californica* was rare and was not observed on RPCs. *Urticina lofotensis* was common with a density of 0.036/m², similar to previous years. No *Corynactis californica, Astrangia lajollaensis* or *Balanophyllia elegans* were recorded on RPCs, but were considered common at the site. Similar to past years, no *Lophogorgia chilensis, Muricea californica* or *Muricea fruticosa* were observed.

Strongylocentrotus spp. adults were moderately abundant and juveniles were rare throughout the site. *Strongylocentrotus franciscanus* individuals were notably large. Large aggregations occupied most of the crevices where abalone would typically be. *Strongylocentrotus franciscanus* had a density of 1.5/m² and a mean size of 74 mm. *Strongylocentrotus purpuratus* density was 8.8/m², and mean size of 35 mm. This was the highest density recorded at this site. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed during sampling. No sea urchin wasting disease was observed.

Pycnopodia helianthoides was common, and individuals were mostly medium sized, with a density of 0.011/m². *Patiria miniata* remained moderately abundant with a density of 2.9/m². *Pisaster giganteus* was moderately abundant, and individuals were mostly medium sized, with a mean of 101 mm. *Pisaster giganteus* densities for 1 m quadrats and 5 m quadrats were 0.083/m² and 0.080/m², respectively, similar to last year. *Parastichopus parvimensis* was rare at a density of 0.083/m^2. *Ophiothrix spiculata* was not observed on RPCs. Additional echinoderms that were abundant included *Dermasterias imbricata, Henricia leviuscula,* and *Cucumaria* spp. No sea star wasting disease was observed.

Haliotis rufescens adults were moderately abundant and juveniles were rare with an overall density of 0.072/m², similar to past years. We measured *H. rufescens* during band transects and covered the area between the bands so we covered the entire 2000 m^2 transect. With this search method, we measured 109 individuals for a mean size of 185 mm. Five large, fresh *H. rufescens* shells were observed at the site. *Cypraea spadicea* was common at 0.17/m². *Astraea gibberosa* and *Megastraea undosa* were not observed during quadrats, although several large *M. undosa* were observed along the transect, similar to past years. *Kelletia kelletii* remained rare with a density of 0.0014/m². *Megathura crenulata* remained rare at 0.0056/m². *Crassedoma giganteum* was rare with a density of 0.0014/m², similar to last year. *Aplysia californica* was rare and not observed during sampling. No *Panulirus interruptus* were observed.

Fish were moderately abundant and diverse, similar to previous years. Most of the *Coryphopterus nicholsii* were large adults and had a density was 0.17/m². *Alloclinus holderi* and *Lythrypnus dalli* were not observed. Roving diver fish counts were conducted on August 17th by six divers observing 23 species of fish. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Devil's Peak Member, Santa Cruz Island
Site #26, SCDPM
Year sampling began: 2005
2010 sampling dates: 6/17
2010 status: Dominated by *Strongylocentrotus purpuratus*

Overall, this site changed little from last year and continued to be dominated by *Strongylocentrotus purpuratus.* The site was devoid of indicator macroalgae species with the exception of juvenile *Eisenia arborea* and *Macrocystis pyrifera*. Juvenile *E. arborea* were common over much of the transect at a density of 0.083/m^2 and juvenile *M. pyrifera* were rare at 0.042/m^2. *Eisenia arborea* had a cover of 0.33%. No other *Macrocystis pyrifera*, *Pterygophora californica, Laminaria farlowii, Desmarestia* spp., *Cystoseira* spp., *Sargassum horneri* or miscellaneous brown algae were observed during sampling. Miscellaneous red algae cover was 19%, similar to last year. Miscellaneous green algae were not observed, similar to past years. Miscellaneous plant cover, mostly consisting of filamentous diatoms, was 4.5%. Encrusting coralline algae were moderately abundant and the most abundant algae with a cover of 59%, similar to last year. Articulated coralline algae were rare and none were observed on RPCs. Bare substrate cover was 3.8%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 30%, similar to last year. The most common miscellaneous invertebrate on RPCs were barnacles, followed by *Spirobranchus spinosus*. Tunicates were moderately abundant and diverse, consisting mostly of *Pycnoclavella* spp. and what looked like *Distaplia* spp. Tunicate cover was observed at 4.3%. Sponges were common with a cover of 1.0%. *Tethya aurantia* density continued to gradually increase for the fourth consecutive year to 0.13/m², the highest recorded at this site since we began monitoring in 2005. *Serpulorbis squamigerus* was common, but not observed during RPC's. *Diopatra ornata* was present in the low lying sandy areas with a cover of 0.17%. Miscellaneous bryozoans were moderately abundant with a cover of 11%, relatively high for this site. *Diaperoecia californica* was common with a cover of 1.5%. *Corynactis californica* was common although none were observed on RPCs, similar to last year. *Astrangia lajollaensis* was moderately abundant with a cover of 3.5% similar to past years. *Balanophyllia elegans* was rare and not recorded on RPCs. *Lophogorgia chilensis* was abundant with a density of 0.12/m², similar to last year. *Muricea californica* was moderately abundant with a density of 0.0056/m² and *M. fruticosa* was rare with a density of 0.0014/m².

Strongylocentrotus purpuratus continued to dominate this site with a density of 14/m², a decrease from last year. *Strongylocentrotus franciscanus* was moderately abundant with a density of 2.5/m², similar to last year. Both species were found in these relative densities throughout the site, similar to last year. Juvenile *S. purpuratus* and *S. franciscanus* were rare.

Centrostephanus coronatus was common although none were observed during sampling. *Lytechinus anamesus* was rare and counted on both 1 m quadrats and band transects with a densities at 0.25/m^2 and 0.0042/m^2, respectively. No sea urchin wasting disease was observed.

Pisaster giganteus was observed on 1 m quadrats and 5 m quadrats with densities of 0.21/m^2 and 0.34/m^2, respectively, an increase from last year. Most *P. giganteus* were medium in size with a mean size of 123 mm. *Patiria miniata* was moderately abundant and mostly large with a density of 0.42/m^2, similar to last year. *Pycnopodia helianthoides* was common at 0.0014/m^2, a decrease from last year. Most *P. helianthoides* were medium to large in size. Several *Pisaster ochraceus* were observed at the site, including one individual at a depth of 40 feet. *Pachythyone rubra* was rare, with few individuals scattered throughout the site. *Pachythyone rubra* cover continued to decrease for the fourth consecutive year with none observed during RPCs. *Parastichopus parvimensis* was common with a density of 0.42/m^2, similar to last year. No *Ophiothrix spiculata* were observed. No sea star wasting disease was observed.

No *Haliotis* spp. or fresh shells were observed. *Cypraea spadicea* was common with a density of 0.042/m^2, a decrease from last year. *Megastraea undosa* was common throughout the site although none were observed during sampling. *Tegula regina* was common at 0.042/m^2, similar to last year. *Kelletia kelletii* was rare with none observed during sampling. *Megathura crenulata* was abundant and continued to increase in density to 0.64/m^2. This species has increased in density every year since monitoring began at this site. *Crassedoma giganteum* was common at 0.035/m^2. *Aplysia californica* was rare, and most were notably large, with a density of 0.0028/m^2, a decrease from last year. *Panulirus interruptus* was rare at a density of 0.0014/m^2, similar to last year.

Similar to past years, this site had a moderate diversity and abundance of fish. *Coryphopterus nicholsii* was common with a density of 0.67/m^2. *Alloclinus holderi* was rare with a density of 0.083/m^2. Roving diver fish counts were conducted on June 17th with four divers observing 27 species of fish. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Potato Pasture, Santa Cruz Island
Site #27 SCPP
Year sampling began: 2005
2010 sampling dates: 9/13
2010 status: Dominated by *Strongylocentrotus purpuratus*

This site has gone through some notable change since last year. It remained dominated by *Strongylocentrotus purpuratus*, but there were more macroalgae present than in past years. *Macrocystis pyrifera* was present in patches along the transect; mostly on the offshore side from 0-50 m and on top of large rocks. Densities of adult, subadult and juvenile *M. pyrifera* were 0.0/m^2, 0.28/m^2, and 0.75/m^2, respectively. Cover of *M. pyrifera* was 2.2%. *Eisenia arborea* adults were common and juveniles were moderately abundant with respective densities of 0.13/m^2 and 1.8/m^2. Most of the adults were small. Cover of *E. arborea* was 2.5%. There was no *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp., *Gelidium* spp., or *Gigartina* spp. along the transect. *Sargassum horneri* was not observed at the site.

Miscellaneous brown algae cover was 1.5%, same as last year, and consisted mostly of *Dictyota* sp. Miscellaneous red algae cover was 12%, similar to previous years. Green algae cover was 0.83%. This category consisted mainly of *Codium setchellii* and *C. fragile*. Miscellaneous plants cover, consisting of filamentous diatoms, was 4.8%. Encrusting coralline algae had a cover of 52%, similar to last year. Articulated coralline algae cover was 0.50%. Bare substrate cover was similar to last year at 15%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 21%. The most dominant invertebrates in this category were *Spirobranchus spinosus* and barnacles. Tunicates were moderately abundant and had a cover of 6%, the highest recorded at this site. Sponges were common and had a cover of 0.33%. *Tethya aurantia* was moderately abundant at a density of 0.13/m², the highest recorded at this site. Most were small. *Diopatra ornata* was common but not observed on RPCs. Bryozoans were moderately abundant at a cover of 7.2%. This category consisted mainly of *Membranipora* sp. and *Bugula* sp. *Diaperoecia californica* was common on the sides of rocks and cover was 2.0%. *Corynactis californica* was common, and mostly unhealthy looking, with cover of 1.2%. *Astrangia lajollaensis* was common in low lying areas with a cover of 2.2%. *Balanophyllia elegans* was present with a cover of 0.17%. *Lophogorgia chilensis* was common with a density of 0.16/m². *Muricea californica* density was 0.0042/m². No *Muricea fruticosa* was observed at the site.

Strongylocentrotus spp. continued to be moderately abundant, but patchy. *Strongylocentrotus purpuratus* density decreased to a record low of 14/m². *Strongylocentrotus franciscanus* density decreased to a record low of 2.4/m². Only a few juvenile *S. purpuratus* and *S. franciscanus* were observed. *Lytechinus anamesus* remained rare, with densities observed on 1m quadrats and band transects at 0.54/m^2, and 0.038/m², respectively. *Centrostephanus coronatus* was moderately abundant, with both small and large individuals present, at a density of 0.42/m². No sea urchin wasting disease was observed.

Pisaster giganteus densities on 1 m quadrats and 5 m quadrats were similar to last year at 0.13/m² and 0.075/m², respectively. *Pisaster giganteus* individuals were notably large, similar to past years. *Patiria miniata* was common, with all sizes present, at a density of 0.92/m². Several *Pisaster ochraceus* were observed along the transect. *Pachythyone rubra* was more abundant than in past years, but mostly limited to the eastern 15 meters of the transect. Cover was recorded at 1.3%. *Cucumaria* spp. and *Eupentacta* sp. were moderately abundant as well. *Parastichopus parvimensis* was common at a density of 1.1/m², similar to recent years. *Pycnopodia helianthoides* was not observed at the site. No sea star wasting disease was observed.

Crassedoma giganteum was moderately abundant, and had a density of 0.082/m², similar to past years. Most were large, though all sizes were present. *Megathura crenulata* was common with a density of 0.051/m². *Megastraea undosa* was common with a density of 0.17/m². Most were medium sized though some juveniles were present. *Tegula regina* was common and had a density of 0.13/m². *Kelletia kelletii* was common at a density of 0.013/m². *Aplysia californica* was common, and mostly large, with a density of 0.0097/m². *Panulirus interruptus* was common throughout the site at a density of 0.011/m^2. They appeared more abundant than in past years, and many were of legal harvesting size.

Similar to recent years, fish were moderately abundant and diverse. *Coryphopterus nicholsii* decreased to a density of 0.42/m². *Alloclinus holderi* was rare with a density of 0.042/m². *Lythrypnus dalli* had a density of 0.083/m^2, a decrease from last year. *Caulolatilus princeps* was present in a wide range of sizes, from 15 cm to 70 cm. It is rare to see such small individuals at KFM sites. Female *Semicossyphus pulcher* were notably more abundant that in past years. Roving diver fish counts were conducted on September 13th by five divers observing 25 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed. Unfortunately, the UTBI logger that was deployed during the 2008 field season was set to its factory settings to take temperature every second and the logger's data capacity filled up after about two months and stopped recording. Additionally, the Tidbit logger that was deployed at the same time had its battery prematurely fail on May 20, 2009. Thus, we have no data to report between May 20, 2009 and September 2, 2009. Thus, the temperature graphs in this report show data from September 2, 2009 until May 31, 2010 only.

Location: Cavern Point, Santa Cruz Island
Site #28, SCCVP
Year sampling began: 2005
2010 sampling dates: 7/12
2010 status: State of transition

This site continued to change and appeared to have more algae, fish, and encrusting invertebrates than last year. Algae appeared more abundant and diverse. *Macrocystis pyrifera* was more abundant compared to past years, especially from 0-20 meters where small subadult and juvenile plants were abundant. Elsewhere *M. pyrifera* was scattered around or in small patches. Mature adult plants were rare. *Macrocystis pyrifera* plants were observed on 1 m quadrats for the first time since sampling began in 2005, although density was not different from past years. Cover of *M. pyrifera* was 12%, the highest observed cover since sampling began. *Eisenia arborea* was moderately abundant over much of the transect. Density of juvenile *E. arborea* was 3.5/m^2. Adults were not observed on quadrats. Cover was 7.2%. *Laminaria farlowii* was not observed at the site. Adult *Pterygophora californica* density was 0.083/m^2, no juveniles were observed. *Cystoseira* spp. were common and were scattered around the transect, but none were observed on RPCs. *Desmarestia* spp. were rare. *Sargassum horneri* was not present last year, but was abundant this year. Old reproductive plants of *S. horneri* were common and scattered around the transect with a few young, mature plants. High density patches of juvenile plants were observed in these areas as well. Adult and juvenile *S. horneri* were observed on band transects, 1 m quadrats, 5 m quadrats and RPCs (with the exception of adults on 1 m quadrats) with the following juvenile and adult densities and cover respectively: 2.1/m^2, 0.23/m^2, 3.4/m^2, 2.8/m^2, 0.055/m^2,1.7%. Miscellaneous brown algae cover was 5.0%, the highest observed cover since sampling began. Miscellaneous red algae were moderately abundant and diverse with *Rhodymenia* spp. being the most common. Miscellaneous red algae cover was 33%, an increase from last year and also the highest recorded cover at this site. *Gelidium* spp. were common on tops of large rocks. *Gigartina* spp. were mostly small with plants scattered throughout the site. Other green algae were notably abundant and mostly consisted of *Codium setchellii* and a small amount of *Cladophora* sp. Other green algae cover was 4.8%, the highest recorded at this site. Encrusting coralline algae cover was 66%, an increase from last year. Articulate coralline algae cover was 0.83%, similar to last year. Bare substrate cover was 3.2%, a decrease from last year.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was high at 31%, similar to previous years. The most common invertebrates were *Spirobranchus spinosus,* hydroids and barnacles. Tunicates were abundant and diverse. The most abundant tunicate was *Pycnoclavella* spp. Tunicate cover was 15%, an increase from last year. Sponges were moderately abundant and diverse and included a small amount of *Leucosolenia* spp. However, sponges were not observed during RPCs. *Tethya aurantia* was moderately abundant, with all sizes present, at a density of 0.097/m², similar to last year. Miscellaneous bryozoans were moderately abundant with a cover of 13%, the highest recorded for this site. *Diaperoecia californica* was moderately abundant but mostly in small clumps. Cover was 1.0%, similar to last year. *Serpulorbis squamigerus* was common with a cover of 0.50%. *Corynactis californica* was common with a cover of 0.17%, a decrease from last year. *Balanophyllia elegans* remained common with a cover 0.17%. *Astrangia lajollaensis* remained moderately abundant and scattered throughout the site with a cover of 4.2%. *Lophogorgia chilensis* remained moderately abundant, with all sizes observed, at a density of 0.22/m^2. *Muricea californica* remained common with a density of 0.0042/m². *Muricea fruticosa* remained rare with a density of 0.0014/m^2.

Strongylocentrotus purpuratus density decreased slightly from last year to 13/m², the lowest observed density at this site since monitoring began. Juvenile *S. purpuratus* were rare, but adults were moderately abundant in high density patches. The mean size of *S. purpuratus* was 35 mm, the highest observed size at this site. *Strongylocentrotus franciscanus* juveniles were rare whereas adults were common. Density of *S. franciscanus* was 1.4/m², similar to past years. *Centrostephanus coronatus* was moderately abundant in crevice habitat with an overall density of 0.17/m², similar to past years. *Lytechinus anamesus* was rare and scattered throughout the site. Most were small. Density of *L. anamesus* was 0.022/m^2, similar to last year. No sea urchin wasting disease was observed.

Pisaster giganteus were moderately abundant and was observed on 1 m quadrats and 5 m quadrats with densities of 0.17/m² and 0.090/m², respectively, a decrease from last year. A total of 60 *P. giganteus* were measured for size frequencies for a mean of 143 mm. *Patiria miniata* was common with all sizes present and a density of 0.54/m². No *Pycnopodia helianthoides* or *Ophiothrix spiculata* were observed at the site. *Pisaster ochraceus* was unusually common for a subtidal site with at least eight individuals observed. *Parastichopus parvimensis* was moderately abundant with a density of 1.5/m. No sea star wasting disease was observed.

No live *Haliotis* spp. or any fresh shells were observed. *Cypraea spadicea* was common but none were observed on quadrats. Adult and juvenile *Megastraea undosa* were common, with all sizes present, at a density of 0.17/m^2. *Tegula regina* was common with a density of 0.042/m^2. *Kelletia kelletii* was rare with a density of 0.0042/m². *Megathura crenulata* was common although less abundant than last year at 0.040/m². *Crassedoma giganteum* density was similar to last year at 0.11/m² with all sizes present including an abundance of very large individuals. *Aplysia californica* was common and relatively large with a density of 0.036/m². *Panulirus interruptus* was common with most individuals close to legal size and one large individual observed. Density of *P. interruptus* was 0.014/m².

Fish abundance and diversity was high and increased overall from last year. *Coryphopterus nicholsii* was common with a density of 0.88/m², a decrease from last year. *Alloclinus holderi* and *Lythrypnus dalli* were rare with none observed during 1 meter quadrats. Roving diver fish

counts were conducted on July 17th by three divers observing 34 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Little Scorpion, Santa Cruz Island
Site #29, SCLS
Year sampling began: 2005
2010 sampling dates: 6/18, 7/26
2010 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*

This site continued to be dominated by *Strongylocentrotus* spp. and was almost entirely devoid of macroalgae. Similar to last year, there were no *Macrocystis pyrifera, Pterygophora californica, Laminaria farlowii, Cystoseira* spp., *Desmarestia* spp., *Gigartina* spp. or *Gelidium* spp. present. *Eisenia arborea* juveniles were present but rare, and none were observed on RPCs. *Sargassum horneri* was not observed at the site. Green algae were not observed on RPCs. Miscellaneous red algae cover was 12%, an increase from last year. Encrusting coralline algae cover was 51%, similar to last year. Articulated coralline algae were rare and none were observed on RPCs, similar to past years. Miscellaneous plants, consisting of filamentous diatoms, were common at 1.3% cover. Bare substrate cover was 21%, similar to past years.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 32%, an increase from last year. The most dominant miscellaneous invertebrates in this category were barnacles and *Spirobranchus spinosus*. Tunicates were common with a cover of 0.50%. Sponge cover was 0.33%. *Tethya aurantia* density was 0.042/m², and most individuals were cryptic as they were covered with silt and algae. *Diopatra ornata* had 0.17% cover. Miscellaneous bryozoan cover remained similar to last year at 3.7%. *Diaperoecia californica* cover was 0.33%. *Corynactis californica* cover was 1.5%. *Balanophyllia elegans* was common, but not observed during RPCs. *Astrangia lajollaensis* was moderately abundant with a cover of 5.7%. *Lophogorgia chilensis* was abundant, mainly on the offshore side, with a density of 0.13/m², similar to last year. *Muricea fruticosa* and *M. californica* were not observed at the site.

Strongylocentrotus franciscanus and *S. purpuratus* were abundant and moderately abundant and were recorded at densities of 4.8/m² and 13/m², respectively. *Strongylocentrotus franciscanus* and *S. purpuratus* mean sizes were similar to past years at 54 mm and 39 mm, respectively. *Strongylocentrotus* spp. juveniles were rare along the transect. *Lytechinus anamesus* was common, but more abundant offshore of the transect. Density of *L. anamesus* was 0.33/m². *Centrostephanus coronatus* was common, although none were observed in 1 m quadrats. Advanced stages of sea urchin wasting disease in *S. franciscanus* was rare, but many seemed to have some signs of the disease. Less than 1% of *S. purpuratus* were observed with wasting disease.

Patiria miniata was moderately abundant with all sizes present and density remained relatively high at 2.7/m². *Pisaster giganteus* was also moderately abundant with all sizes present and was observed on both 1 m quadrats and 5 m quadrats with densities of 0.33/m² and 0.31/m², respectively, an increase from last year. *Pycnopodia helianthoides* was not observed at the site.

Parastichopus parvimensis was common with a density of 0.33/m², similar to past years. No sea star wasting disease was observed.

No *Haliotis* spp. were observed at the site. *Cypraea spadicea* was rare and was not observed on 1 m quadrats. *Megastraea undosa* density was 0.38/m^2, the highest density recorded since monitoring began at this site in 2005. Adult *Megastraea undosa* were common and juveniles were moderately abundant with an average size of 52 mm. *Tegula regina* was common, and most were large, with a density of 0.083/m², similar to last year. *Kelletia kelletii* was common, and most were large, with a density of 0.013/m². *Megathura crenulata* was abundant with a density of 0.48/m². *Crassedoma giganteum* was common, with all sizes present, at a density of 0.019m², similar to last year. *Aplysia californica* was common with a density of 0.0097/m², similar to last year. Similar to past years, *Panulirus interruptus* was rare at a density of 0.0014/m².

This site continued to have high fish abundance and diversity. *Coryphopterus nicholsii* was notably more abundant than last year with a density of 2.0/m².*Lythrypnus dalli* was abundant with a density of 0.54/m^2. Roving diver fish counts were performed on June 18th, 2010 by four divers observing 21 species of fish. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Pedro Reef, Santa Cruz Island
Site #30, SCPRF
Year sampling began: 2005
2010 sampling dates: 7/13
2010 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*

This site continues to be devoid of macroalgae as it has been since monitoring began in 2005. No *Macrocystis pyrifera*, *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp. or *Gigartina* spp. were observed, similar to past years. *Sargassum horneri* was not observed at the site. *Gelidium* spp. were noticeably rare and not observed during RPCs. Miscellaneous red algae were common at 12% cover, the highest recorded density at this site. *Laurencia pacifica* was the most common red algae species. Miscellaneous green algae were rare and not observed on RPCs, although *Codium fragile* was observed at the site. Miscellaneous plants (i.e. filamentous diatoms) were observed at 0.33% cover, a decrease from last year. Articulated coralline algae cover was 1%. Encrusting coralline algae cover was 36%. Bare substrate cover was 19%, the lowest density recorded for this site.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover increased to 41%, the highest recorded for this site. The most abundant taxa in this category were barnacles, which had a large recent recruitment and covered much of the substrate. Tunicates remained rare at 0.17% cover. *Styela montereyensis* was not observed. Sponges were rare and not observed during RPCs. *Tethya aurantia* was common with a density of 0.18/m². *Diopatra ornata* was rare and not observed on RPCs. *Phragmatopoma californica* and *Serpulorbis squamigerus* were both rare with neither observed during RPCs. Miscellaneous bryozoans were rare and not observed during RPCs. *Diaperoecia californica* were not observed on RPCs. *Corynactis californica* was moderately abundant with a cover of 13%. *Astrangia lajollaensis* and *Balanophyllia elegans*

covers were 2.3% and 0.5%, respectively. *Lophogorgia chilensis* was moderately abundant with a density of 0.27/m², similar to last year. *Muricea californica* density was 0.0056/m², while *M. fruticosa* was not observed.

Strongylocentrotus spp. remained abundant and relatively small. *Strongylocentrotus purpuratus* density was 70/m², with a mean size of 18 mm, similar to last year. *Strongylocentrotus franciscanus* densities were 13/m² with a mean size of 33 mm, similar to last year. *Centrostephanus coronatus* was common with a density of 0.13/m^2. *Lytechinus anamesus* was moderately abundant and was counted on both band transects and 1 m quadrats with densities of 0.68/m² and 1.4/m², respectively. No urchin wasting disease was observed.

Pisaster giganteus was moderately abundant and counted on both 1 m and 5 m quadrats with densities of 0.083/m² and 0.11/m², respectively. *Pisaster ochraceus* was relatively abundant with six observed during 5 m quadrats. Both *P. giganteus* and *P. ochraceus* were observed feeding on barnacles. *Patiria miniata* was common with a density of 0.54/m². *Pycnopodia helianthoides* was rare at a density of 0.0042/m^2. *Parastichopus parvimensis* was common at a density of 0.083/m². No *Pachythyone rubra* were observed. No sea star wasting disease was observed.

No *Haliotis* spp. were observed, although one fresh *H. rufescens* shell was found and measured at 29 mm. *Cypraea spadicea* was common at a density of 0.21/m². *Megastraea undosa* was common with a density of 0.33/m². Juveniles were present. No *Tegula regina* were observed. *Kelletia kelletii* density remained relatively low at 0.0056/m². *Megathura crenulata* was moderately abundant with a density of 0.081/m², similar to last year. *Crassedoma giganteum* were common with a density of 0.017/m². There has been a notable decline in *C. giganteum* density since we began monitoring this site in 2005. *Aplysia californica* was abundant, and medium to large in size, at a density of 0.079/m², the highest recorded at this site. No *Panulirus interruptus* were observed at the site.

Fish had moderate diversity and abundance, similar to last year. *Coryphopterus nicholsii* was common with a density of 1.6/m^2, similar to past years. No *Lythrypnus dalli* or *Alloclinus holderi* were observed on quadrats. Roving diver fish counts were conducted on July 13th by five divers observing 22 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Keyhole, Anacapa Island
Site #31, ANKH
Year sampling began: 2005
2010 sampling dates: 8/31
2010 status: Dominated by *Strongylocentrotus purpuratus*

This site remained dominated by *Strongylocentrotus purpuratus*, although there was notably more macroalgae than last year. Unlike previous years, *Macrocystis pyrifera* formed a canopy that covered an estimated 10% of the transect as well as much of the area inshore of the site. Most adult plants were small and covered by bryozoans. Adult and subadult *M. pyrifera* were common with densities of 0.03/m² and 0.08/m², respectively, both similar to last year. Juveniles were moderately abundant at 0.67/m², the highest density on record. Cover of *M. pyrifera* was

2.5%. *Eisenia arborea* was notably more abundant with adult and juvenile densities at 0.42/m² and 0.46/m², respectively. These are the highest densities observed since sampling began in 2005. Cover of *E. arborea* was 4.2%. *Pterygophora californica* was not observed. *Laminaria farlowii* was rare with adult and juvenile densities of 0.083/m^2, and 0.79/m^2, respectively, an increase from last year. Cover of *L. farlowii* was 0.0%. No *Cystoseira* spp. or *Desmarestia* spp. were recorded during sampling, although *Cystoseira* spp. were observed at the site. Miscellaneous brown algae cover was 8.8%, similar to last year's low, and consisted mainly of *Dictyota/Pachydictyon* spp., *Colpomenia* spp. and *Hydroclathrus clathratus*. This is the first year we have actively monitored for *Sargassum horneri* at all of our KFM sites. Juveniles were observed on 1 m quadrats, 5 m quadrats and band transects with densities of 1.2/m², 1.2/m² and 0.79/m², respectively. *Sargassum horneri* was also observed on RPCs with 1.2% cover. We will continue to monitor the invasion of this non-native species. Green algae cover was 0.17%. Miscellaneous red algae were common at 13%; down from last year's high but similar to recent years. *Gelidium* spp. was rare with 0.17% cover. *Gigartina* spp. was rare, and none was observed on RPCs. Articulated coralline algae cover was 1.0%. Encrusting coralline algae cover was 56%, the highest cover on record. Miscellaneous plants, consisting mostly of filamentous diatoms, had cover of 2.5%. Bare substrate covered 16% of the bottom, similar to recent years.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was low at 15%. The most common taxa in this category were barnacles, hydroids and gorgonians. During a survey dive in December of 2009, we observed significant recruitment of *Balanus* sp. that we estimated to cover at least 25% of the large boulders along the transect. This recruitment event most likely resulted in the observations of large barnacles over much of the site during our August 2010 visit. There was notably more bare substrate in August than in December of last year when most available substrate was covered in small barnacles. Tunicates cover was 0.67%. *Styela montereyensis* was not observed at the site. Sponges were common at 1.8% cover. Tethya *aurantia* was rare with a density of 0.0014/m². *Serpulorbis squamigerus* cover increased to 1.2%. *Diopatra ornata* was common at 1.5% cover. Miscellaneous bryozoan cover was 8.2%, similar to past years, and mostly consisted of *Membranipora* spp. *Diaperoecia californica* was common with a cover of 0.33%. *Corynactis californica* cover was 0.33%, similar to past years. *Astrangia lajollaensis* and *Balanophyllia elegans* were both common with covers of 1.2% and 0.17%, respectively. All three gorgonian species were present at densities similar to past years. *Lophogorgia chilensis* was abundant at 0.25/m². *Muricea californica* was common at 0.026/m². *Muricea fruticosa* was rare at 0.0014/m². *Eugorgia rubens* was abundant, similar to past years, although we do not monitor the density of this species.

Strongylocentrotus purpuratus was notably less abundant and patchier than last year. *Strongylocentrotus purpuratus* density was 32/m², similar to recent years, with mean size of 27 mm. *Strongylocentrotus franciscanus* was common at 3.2/m², and mean size of 51 mm. *Lytechinus anamesus* density was recorded on both 1 m quadrats and band transects at 0.017/m² and 0.33/m², respectively. These were the highest densities recorded of this species on both methods. *Centrostephanus coronatus* was common at a density of 0.46/m² Several juveniles were observed. No sea urchin wasting disease was observed.

Pisaster giganteus density on 1 m and 5 m quadrats was 0.042/m² and 0.05/m², respectively, similar to last year. *Pisaster giganteus* were mostly large in size. *Patiria miniata* was abundant, with all sizes present, with a density of 3.1/m², the highest density at this site. *Pycnopodia*

helianthoides was not observed, similar to previous years. *Ophiothrix spiculata* was rare with none being observed on RPCs. *Parastichopus parvimensis* was common at 1.7/m², the highest density recorded at this site. *Pisaster ochraceus* was abundant and was sampled on 5 m quadrats for a density of 0.19/m². Seventeen *P. ochraceus* were measured for size frequencies for a mean size of 134 mm. This is the most *P. ochraceus* observed at this site. *Linckia columbiae* was abundant as well. No sea star wasting disease was observed.

No *Haliotis* spp. were observed at the site. *Cypraea spadicea* was common with a density of 0.042/m². *Megastraea undosa* was moderately abundant and sizes < 25 mm were common. *Megastraea undosa* density was 0.75/m². Juveniles were present. *Astraea gibberosa* was not observed. *Tegula regina* was moderately abundant at 0.083/m². *Kelletia kelletii* was common at a density of 0.013/m², same as last year. *Megathura crenulata* remained common with a density of 0.014/m². *Crassedoma giganteum* was less abundant than last year at 0.019/m². *Aplysia californica* was observed at 0.050/m². *Panulirus interruptus* density was 0.0014/m², similar to past years.

Fish diversity and abundance was moderate, similar to last year. *Coryphopterus nicholsii* was moderately abundant at a density of 2.3/m². *Alloclinus holderi* density was 0.38/m², similar to last year. *Lythrypnus dalli* had a density of 0.083/m². Roving diver fish counts were conducted on August 31st with six observers counting 26 species of fish. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: East Fish Camp, Anacapa Island
Site #32, ANEFC
Year sampling began: 2005
2010 sampling dates: 7/16, 9/3
2010 status: Dominated by *Strongylocentrotus franciscanus*, *S. purpuratus* and *Ophiothrix spiculata*

This site changed little from last year and continued to be dominated by *Strongylocentrotus* spp. and *Ophiothrix spiculata*. The site remained mostly devoid of macroalgae except for two small *Macrocystis pyrifera* subadults that were growing epiphytically on gorgonians. No *Eisenia arborea, Pterygophora californica, Laminaria farlowii, Cystoseira* spp., *Desmarestia* spp., *Gigartina* spp. or *Gelidium* spp. were observed at the site. *Sargassum horneri* was not observed at the site. Miscellaneous brown algae cover was 0.33%, No miscellaneous green algae was observed on RPCs, though some was present. Miscellaneous plants, consisting mostly of filamentous diatoms, were observed at 2.5% cover. Miscellaneous red algae cover was 7.5%. No articulated coralline algae were observed on RPCs, similar to past years. Encrusting coralline algae were moderately abundant and cover was 34%, similar to past years. Bare substrate covered 36% of the bottom, similar to previous years.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 5.5% with barnacles being the most abundant taxa in this category. Tunicates were rare and none were observed on RPCs. Sponges were common at 0.67% cover. *Tethya aurantia* was common with a density of 0.021/m², similar to last year. *Diopatra ornata* cover was 0.50%, similar to recent years.

Miscellaneous bryozoans and *Diaperoecia californica* were rare with neither being observed on RPCs. *Corynactis californica* was notably abundant compared to recent years with 17% cover. *Balanophyllia elegans* was rare and not observed on RPCs. *Astrangia lajollaensis* was common with cover of 0.67%, similar to recent years. *Lophogorgia chilensis, Muricea californica* and *Muricea fruticosa* were observed with densities of 0.0069/m², 0.0042/m² and 0.0042/m², respectively.

Strongylocentrotus purpuratus was very abundant with a density of 116/m², the highest density recorded for this site. Small *S. purpuratus* were common with moderately high recruitment observed in some areas along the transect. *Strongylocentrotus franciscanus* was also abundant, and mostly small, at 17/m², similar to last year. *Centrostephanus coronatus* was relatively abundant with a density of 0.88/m². *Lytechinus anamesus* was moderately abundant with a density of 0.54/m², similar to last year. In contrast to last year's high incidence of sea urchin wasting disease, none was observed this year.

Pycnopodia helianthoides was rare with a density of 0.0014/m^2. *Patiria miniata* was moderately abundant with a density of 1.5/m², the highest recorded for this site. *Pisaster giganteus* was common, and notably large, with a density of 0.13/m² and 0.055/m^2 for 1 m and 5 m quadrats, respectively, the highest densities observed for this site but similar to last year's density. Mean size of 64 *P. giganteus* was 173 mm. *Pisaster ochraceus* while not one of our indicator species was sampled on 5 m quadrats for a density of 0.025/m^2. *Parastichopus parvimensis* was common at a density of 0.33/m². *Ophiothrix spiculata* was moderately abundant with a cover of 14%, similar to recent years. No sea star wasting disease was observed.

Similar to previous years, no *Haliotis* spp. was observed at the site. *Cypraea spadicea* was common with density of 0.33/m^2, similar to previous years. *Megastraea undosa* was common at 0.38/m², similar to last year. No *Astraea gibberosa* were observed at the site. *Tegula regina* was common but none were observed on 1m quadrats. *Kelletia kelletii* was moderately abundant with a density of 0.029/m², a decrease from last year. *Megathura crenulata* was moderately abundant at 0.17/m², similar to recent years, and with a notable abundance of small juveniles. *Crassedoma giganteum* was rare with a density of 0.017/m², a decrease from last year but similar to past years. *Aplysia californica* was moderately abundant with a density of 0.12/m², however they appeared notably small compared with other sites. No *Panulirus interruptus* were observed at the site.

For an area dominated by echinoderms, fish were diverse and abundant. *Coryphopterus nicholsii* was abundant with a density of 1.8/m². *Alloclinus holderi* was not observed on 1m quadrats. Roving diver fish counts were conducted on July 16th by six divers observing 27 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Black Sea Bass Reef, Anacapa Island
Site #33, ANBSBR
Year sampling began: 2005
2010 sampling dates: 7/15, 8/30
2010 status: Dominated by *Ophiothrix spiculata*

This site continued to be mostly dominated by *Ophiothrix spiculata*. However, at the east end of the site from approximately 0-35 meters there was a notable amount of subadult and small adult *Macrocystis pyrifera* present. During our first visit on 7/15 the *M. pyrifera* appeared healthy, but during our second visit on 8/30 the plants were tattered and covered with bryozoans. Canopy cover was estimated at 2%. Adult and juvenile *M. pyrifera* were rare at densities of 0.010/m^2 and 0.33/m^2, respectively. Subadults were common at 0.150/m^2. Cover of *M. pyrifera* was 1.2%. *Pterygophora californica* was not observed at the site. Several adult *Eisenia arborea* were observed on the tops of the reef, but none were observed on 1 m quadrats or RPCs. Adult and juvenile *Laminaria farlowii* were common, mostly in low-lying areas near the kelp forest, but none were observed on quadrats. No *Cystoseira* spp. or *Desmarestia spp.* were observed at the site. No *Sargassum horneri* was observed at the site. Miscellaneous brown algae cover was 1.0%. Miscellaneous red algae cover was 6.8%, a decrease from last year, and consisted mostly of *Laurencia pacifica*. No *Gelidium* spp. or *Gigartina* spp. were observed during sampling. Green algae were not observed. Miscellaneous plants cover, consisting mostly of filamentous diatoms, was 3.3%. Encrusting coralline algae cover decreased to 61%. Articulated coralline algae were not observed on RPCs. Bare substrate cover increased to 26%. This is likely due to the increase in sand cover from 3.0% last year to 11.3% this year.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 4.7% and consisted mostly of hydroids. Barnacles were rare with notably less cover than at other nearby sites. This may be due to the increased cover of *Ophiothrix spiculata* at this site. Tunicates were rare with 3.8% cover. Sponges were common with a cover of 0.83%. *Tethya aurantia* remained common with a density of 0.068/m^2. Miscellaneous bryozoans were common at 6.7% and consisted mostly of *Membranipora* sp. and *Thalamoporella californica*. *Diaperoecia californica* was common on the rocky outcrops but was not observed on RPCs. *Corynactis californica* was common with a cover of 1.8%. *Astrangia lajollaensis* was common and had a cover of 0.17%. *Balanophyllia elegans* was rare with 0.0% cover. *Lophogorgia chilensis*, *Muricea fruticosa* and *Muricea californica* were present with densities of 0.0083/m^2, 0.0028/m^2 and 0.0014/m^2, respectively, similar to past years. Most of the gorgonians did not appear to be healthy, likely due to *Ophiothrix spiculata* covering many of them. Some of the *L. chilensis* appeared to be senescing, similar to what has been observed here in the past.

Strongylocentrotus franciscanus was common and mostly small, but a few larger ones were present near areas with kelp. Juvenile *S. franciscanus* were relatively abundant. Density of *S. franciscanus* was 2.6/m^2. *Strongylocentrotus purpuratus* adults were abundant and covered most of the transect. Juvenile *S. purpuratus* were common. Density of *S. purpuratus* was 35/m^2, the highest density on record for this site. *Centrostephanus coronatus* was moderately abundant, with all sizes present, at a density of 1.0/m^2, an increase from last year. *Lytechinus anamesus* was rare, and not observed on band transects. No sea urchin wasting disease was observed.

Pisaster giganteus was common and counted on 1 m quadrats and 5 m quadrats with densities of 0.17/m^2 and 0.040/m^2, respectively. *Pisaster giganteus* was mostly large. *Patiria miniata* was

common with a density of 0.13/m². *Ophiothrix spiculata* remained abundant and dominated most of the site with a cover of 75%, an increase over the last two years. *Pycnopodia helianthoides* was not observed at the site. *Parastichopus parvimensis* was moderately abundant and density increased to 2.0/m², the highest density recorded at this site. No sea star wasting disease was observed.

No *Haliotis* spp. were observed at the site. *Cypraea spadicea* density was 0.13/m². *Megastraea undosa* was common and had a density of 0.042/m². *Astraea gibberosa* was not observed. *Tegula regina* had a density of 0.042/m². *Kelletia kelletii* was common but decreased in density to 0.017/m². *Megathura crenulata* was common but decreased in density to 0.015/m². *Crassedoma giganteum* was observed at 0.011/m², similar to last year. *Aplysia californica* was rare at 0.0014/m². *Panulirus interruptus* density was 0.042/m², a decrease from last year's high. Many were of legal harvesting size. The ledge at the east end of the transect on the north side was full with lobster, similar to previous years. However, there appeared to be much suitable *P. interruptus* habitat that was not being occupied.

Fish were abundant and diverse, similar to last year. *Coryphopterus nicholsii* remained abundant with a density of 1.9/m². *Alloclinus holderi* was moderately abundant at 0.25/m². Both medium and large individuals were present. *Lythrypnus dalli* was common, and notably large, with a density of 0.17/m². Several large *Stereolepis gigas* were observed during both visits. Roving diver fish counts were conducted on July 15th by four divers observing up to 24 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Lighthouse, Anacapa Island
Site #34, ANLH
Year sampling began: 2005
2010 sampling dates: 5/20
2010 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*
This site was similar to last year and was mostly devoid of brown macroalgae except for a few *Cystoseira* spp., *Eisenia arborea*, and several juvenile *Macrocystis pyrifera* that were observed growing on the tops of rocks, as well as two *M. pyrifera* subadults growing epiphytically on Gorgonians. No *Desmarestia* spp., *Gelidium* spp., *Gigartina* spp., *Laminaria farlowii*, *Pterygophora californica*, or *Sargassum horneri* were observed at the site. While miscellaneous green algae were rare, and miscellaneous brown algae were found to be common, neither were observed during RPCs. Miscellaneous red algae were common with a cover of 1.8%. Articulated coralline algae had a cover of 0.5%. Encrusting coralline algae cover was 33%, similar to recent years with the exception of 2009's record cover of 59%. Last year's unusually high cover may be due to the below average sand cover, observer difference, or natural variation. Miscellaneous plants, mostly consisting of filamentous diatoms, remained relatively low at 0.5% cover. Bare substrate increased from last year to 31% cover.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was high at 28%, similar to last year. The dominant invertebrates in this category were barnacles, followed by hydroids. Barnacles were notably abundant, possibly due to the large recruitment event that was observed

late in 2009. Tunicates were common and diverse, and had a cover of 1.5%. Sponges were common at 1.2% cover. *Tethya aurantia* were moderately abundant at 0.082/m², similar to recent years. *Phragmatopoma californica* were common and scattered around the transect, and had a cover of 1.2%. *Diopatra ornata* were common but had low cover directly along the transect at 1.7%. Miscellaneous bryozoans were common with a cover of 1.3%. *Diaperoecia californica* were present at the site but not observed on RPCs. There seemed to be a considerable amount of appropriate habitat for this species at the site. *Corynactis californica* had a cover of 4.5%. *Astrangia lajollaensis* was common, and patchy, with a cover of 1.7%. *Balanophyllia elegans* was not observed at the site. All gorgonian species remained abundant with *Muricea californica* being the most abundant at 0.28/m², similar to recent years. *Lophogorgia chilensis* density was 0.096/m², similar to recent years. *Muricea fruticosa* density increased to 0.028/m².

Strongylocentrotus spp. dominated the site, similar to last year. *Strongylocentrotus franciscanus* and *S. purpuratus* densities were 5.1/m² and 55/m², respectively, and similar to recent years. Juvenile *S. franciscanus* were rare and juvenile *S. purpuratus* were common. *Centrostephanus coronatus* was common in crevice habitat, with a density of 0.58/m². Both large and small *Lytechinus anamesus* were common and observed on both band transects and 1m quadrats with densities of 0.06/m² and 0.21/m^2, respectively.

Pisaster giganteus was sampled on 1 m quadrats and 5 m quadrats with densities of 0.042/m² and 0.075/m², respectively. *Patiria miniata* was common at a density of 0.88/m², a decrease from last year. *Parastichopus parvimensis* density was 0.46/m². *Ophiothrix spiculata* was not observed on RPCs. *Pisaster ochraceus* was relatively abundant with at least seven observed, three of which were observed feeding on *Balanus* sp.

No *Haliotis* spp. were observed at the site. *Cypraea spadicea* density was 0.21/m², the highest since record keeping began in 2005. *Megastraea undosa* was common but very patchy, and had a density of 0.0/m². A large patch (~60) was observed at the 100 m onshore side of the transect. *Astraea gibberosa* was not observed at the site. *Tegula regina* was rare, with a density of 0.0/m² and only two found during size frequency measurements. *Kelletia kelletii* was rare with a density of 0.0042/m². *Megathura crenulata* density was 0.078/m², similar to last year. *Crassedoma giganteum* was present in a large range of sizes, and had a density of 0.0069/m², similar to recent years. *Aplysia californica* was moderately abundant. Density of *A. californica* was 0.049/m². *Panulirus interruptus* was not observed at the site.

Fish abundance and diversity were both low. *Coryphopterus nicholsii* density was 0.42/m². Roving diver fish counts were conducted on May 20th by seven divers observing 22 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Webster's Arch, Santa Barbara Island
Site #35, SBWA
Year sampling began: 2005
2010 sampling dates: 5/18
2010 status: Dominated by *Strongylocentrotus purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*.

This site continued to be dominated by *Strongylocentrotus* spp. and *Ophiothrix spiculata*. There have been some changes since last year, most notably being an increase in algae and encrusting invertebrates. Much of the low-lying areas remained devoid of macroalgae and mostly covered by encrusting algae, but there were more algae on the high relief areas than last year. *Macrocystis pyrifera* juveniles were relatively common compared to last year and mostly found on the west end of the transect. Adults remained rare. *Macrocystis pyrifera* juvenile density was observed at 0.083/m^2 while adults were not observed during sampling, nor was any *M. pyrifera* cover recorded on RPCs. Juvenile *Eisenia arborea* were common over much of the transect and adults were rare, being present mostly on the tops of large rocks, similar to past years. Juvenile *E. arborea* density increased from last year and was observed at 0.42/m^2 whereas adults remained absent, similar to past years. *Eisenia arborea* cover was recorded at 0.33%. No *Laminaria farlowii, Pterygophora californica* or *Cystoseira* spp. were observed at the site. *Desmarestia* spp. were relatively abundant and small plants were scattered over much of the site. Percent cover was observed at 0.33%, similar to past years. No *Sargassum horneri* was observed at the site. Miscellaneous brown algae cover was 0.17%. Green algae cover was 6.8%, similar to past years, and consisted mostly of *Codium setchellii/hubbsii*. Miscellaneous red algae cover was 11%, similar to last year. Miscellaneous plant cover, consisting mainly of filamentous diatoms, was observed at 1.0%. Articulated coralline algae cover was 0.17%. Encrusting coralline algae remained abundant at 57% cover, similar to last year. Bare substrate cover remained similar to last year at 11%.

Much of the site that has relief had an abundance of encrusting invertebrates. Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was recorded at 13% and consisted mostly of amphipod tube mats, followed by hydroids. Amphipod tube mats were moderately abundant but were mostly small. Hydroids were moderately abundant and diverse with *Plumaria* spp. being notable on the top of the reef. The worm *Myxicola infundibulum* was notably less abundant along the transect this year, but several small patches were observed, including one with smaller worms, indicative of recent recruitment. Encrusting tunicates were common with cover recorded at 0.67%, similar to last year. Sponges were moderately abundant although none were observed during RPCs. *Tethya aurantia* continued to be rare at 0.0014/m^2. Bryozoans were common and cover remained similar to last year at 2.0%. *Diaperoecia californica* was rare and was not observed on RPCs. *Corynactis californica* was common with a cover of 4.8%, a decrease from last year. *Balanophyllia elegans* cover was 0.17%, a decrease from last year. *Astrangia lajollaensis* was absent, a decrease from last year. *Lophogorgia chilensis* and *Muricea californica* were present with densities of 0.0069/m^2 and 0.0042/m^2, respectively. *Muricea fruticosa* was present, but not observed on band transects.

Strongylocentrotus purpuratus was moderately abundant, but patchy. Most were small in size. Juveniles were uncommon and notably less abundant than at Arch Point, similar to past years. Density of *S. purpuratus* was 43/m^2, the lowest recorded at this site since we began monitoring it in 2005. *Strongylocentrotus franciscanus* was common, but juveniles were rare. Density was

7.5/m². The mean sizes of *S. franciscanus* and *S. purpuratus* were 35 mm and 21 mm, respectively, similar to last year. *Centrostephanus coronatus* was common, and had a density of 0.38/m². One juvenile *C. coronatus* was observed. *Lytechinus anamesus* was rare, with a density of 0.0014/m^2. No sea urchin wasting disease was observed.

Pisaster giganteus was common, and mostly large in size. They were counted on both 1 m quadrats and 5 m quadrats with densities of 0.083/m² and 0.060/m², respectively, a decrease from last year. *Patiria miniata* was common, and large, with a density of 2.1/m². *Pycnopodia helianthoides* was common with a density of 0.0056/m², similar to last year. *Ophiothrix spiculata* was moderately abundant but was thinly dispersed from 0-45 meters. This was an increase from last year's coverage of 0-30 meters. *Ophiothrix spiculata* cover has steadily increased over the last five years, but this year it decreased to 15%. *Parastichopus parvimensis* was common at a density of 0.13/m². No sea star wasting disease was observed.

No *Haliotis* spp. were observed at this site. *Cypraea spadicea* was common at a density of 0.63/m², similar to past years. *Megastraea undosa* was moderately abundant with a density of 0.21/m², a decrease from last year, and had a mean size of 71 mm, an increase from last year. *Astraea gibberosa* was rare with a density of 0.042/m^2. *Tegula regina* was common with a density of 0.46/m². *Kelletia kelletii* was rare with a density of 0.0014/m^2. *Megathura crenulata* was moderately abundant, with all sizes present, at a density of 0.14/m², similar to last year. *Crassedoma giganteum* continued to be rare with a density of 0.0056/m². *Aplysia californica* was abundant at 0.32/m², an increase from last year. Most individuals were small. *Panulirus interruptus* was not observed.

Similar to last year, fish at this site were low in abundance and diversity, except for juvenile *Sebastes mystinus* and *Sebastes serranoides. Alloclinus holderi* density was 0.42/m². Roving diver fish counts were conducted on May 18th by four divers observing 19 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Graveyard Canyon, Santa Barbara Island
Site #36, SBGC
Year sampling began: 2005
2010 sampling dates: 6/1
2010 status: State of transition.

This site has undergone much change since last year. There were noticeably more algae than has been observed at this site before. While still dominated by echinoderms, juvenile and subadult *Macrocystis pyrifera* were common along the entire transect. No adult *M. pyrifera* were observed within the sampling area, however several adults were observed just inshore of the site. Densities for subadult and juvenile *M. pyrifera* both increased to 0.085/m² and 0.042/m², respectively. Cover of *M. pyrifera* was 4.5%. This is the first year *M. pyrifera* have been recorded during these sampling protocols at this site. *Eisenia arborea* adults were not observed, but juveniles were observed on 1 meter quadrats for the first time with a density of 0.042/m². No *Pterygophora californica* or *Laminaria farlowii* were observed, similar to past years. *Desmarestia* spp. were moderately abundant with a cover of 17%. This was the first time *Desmarestia* spp. were

observed on RPCs. *Cystoseira* spp. were rare and were also observed for the first time on RPCs with a cover of 0.17%. Miscellaneous brown algae were common with a cover of 3.0% and consisted mostly of *Dictyota* spp. and *Pachydictyon* spp. *Sargassum horneri* was observed on 1 meter quadrats for a density of 0.042/m². Only one plant was observed at the site. This site marks the first observation of *Sargassum horneri* at Santa Barbara Island. This invasive species of brown algae has been observed in extremely high densities around Santa Catalina Island and patches have been observed on Anacapa and Santa Cruz Islands. It is expected that this algae will spread to other Channel Islands as well. Although there is little that can be done to halt or control the spread of this invasive alga, monitoring the spread of this species and documenting the ecological changes that occur at our sites can give insight into the effects that this species will have on Channel Islands National Park resources. Several *S. muticum* were also observed at the site. Miscellaneous red algae were common with a cover of 3.8% and *Laurencia pacifica* were the most common algae in this category. Several *Gigartina* spp. were observed growing epiphytically on *Muricea californica,* but none were observed during sampling. Miscellaneous plants, consisting of filamentous diatoms, were common at 5.3% cover. Encrusting coralline algae cover was 50% and articulated coralline algae cover was 0.17%, both similar to last year. Bare substrate cover remained high at 41%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata,* cover was 4.3%. The most dominant taxa in this category were gorgonians, followed by sea anemones such as *Tealia coriacea, Sagartia* spp. and *Cactosoma* spp. Tunicate cover was 0.0%, similar to last year. Sponges were common with a cover of 0.33%. T*ethya aurantia* was moderately abundant at 0.09/m², similar to last year. Most *T. aurantia* were covered with algae. *Diopatra ornata* and *Phragmatopoma californica* were present but neither was observed during sampling. Miscellaneous bryozoans were rare with a cover of 0.17%. *Corynactis californica* was common with a cover of 3.5%. Neither *Balanophyllia elegans* nor *Astrangia lajollaensis* were observed. Similar to last year, *Lophogorgia chilensis* and *Muricea californica* were common, with densities of 0.040/m² and 0.028/m², respectively. *Muricea fruticosa* was rare at 0.0028/m².

Strongylocentrotus franciscanus density continued to decrease to 1.8/m². This is the lowest density recorded for this species at this site. *Strongylocentrotus purpuratus* was abundant at 29/m², the highest density recorded at this site. Mean size of *franciscanus* and *S. purpuratus* was 31 mm and 17 mm. Distribution of *S. purpuratus* was patchier than in recent years. Both *S. franciscanus* and *S. purpuratus* juveniles were common. *Centrostephanus coronatus* was common with a density of 0.083/m², similar to recent years. *Lytechinus anamesus* was rare at 0.018/m², a decrease from last year. One *S. franciscanus* was observed with wasting disease.

Pisaster giganteus was common with a density of 0.005/m² on 5 m quadrats while none were observed on 1 m quadrats, similar to last year. Ten mostly large *P. giganteus* were found for size frequency measurements for a mean of 116 mm. *Patiria miniata* was moderately abundant although density decreased this year to 0.21/m². No *Pycnopodia helianthoides* were observed, similar to past years. *Ophiothrix spiculata* was the most dominant invertebrate, specifically between meters 0 to 70 on the transect, with a cover of 26%, similar to recent years. *Parastichopus parvimensis* was common at 0.083/m², same as last year. No sea star wasting disease was observed.

No live *Haliotis* spp. were observed at the site, however one small *H. corrugata* shell measuring 17 mm was found. *Cypraea spadicea* was rare and none were observed during 1 meter quadrats. *Megastraea undosa* was rare at 0.042/m² and most were notably large compared with other sites on Santa Barbara Island. Neither *Tegula regina* nor *Kelletia kelletii* were observed at the site. *Megathura crenulata* was rare at 0.0014/m², similar to last year. *Crassedoma giganteum* was rare with none observed during sampling. *Aplysia californica* was moderately abundant, with a density of 0.011/m², and appeared larger than at other Santa Barbara Island sites. *Panulirus interruptus* was not observed.

Overall, fish at this site increased in both abundance and diversity. *Coryphopterus nicholsii* density was 0.29/m². No *Lythrypnus dalli* were observed, similar to past years. *Alloclinus holderi* was also not observed. The most notable change was a large rockfish recruitment event. The abundance and diversity of rockfish juveniles was greater than had previously been observed at this site. Roving diver fish counts were conducted on June 1st with five divers observing 22 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully.

Location: Southeast Reef, Santa Barbara Island
Site #37, SBSER
Year sampling began: 2005
2010 sampling dates: 6/2, 6/3
2010 status: Half mature kelp forest and half dominated by *Strongylocentrotus* spp.

Similar to other KFM sites on Santa Barbara Island this year, there was a notable increase in macroalgae. With a canopy cover of 75%, *Macrocystis pyrifera* continued to be abundant on the eastern half of the transect, while a notable decrease in sea urchins and an increase in juvenile *M. pyrifera* was observed on the western half. *Macrocystis pyrifera* adults and subadults were moderately abundant, mostly between 0-50 meters, with densities of 0.17/m² and 0.22/m², respectively, and similar to last year. Juvenile *M. pyrifera* were very abundant over the entire site at 11/m², a record high density for this category. Overall cover for *M. pyrifera* was 33%, another record high for this site. Adult and juvenile *Eisenia arborea* were common, both with densities of 0.13/m², and an overall cover of 7.8%. No *Pterygophora californica* or *Laminaria farlowii* were observed at the site. *Desmarestia* spp. and *Cystoseira* spp. were moderately abundant and their coverage both increased to 7.8% and 4.0%, respectively. Miscellaneous brown algae were abundant with a cover of 17%, a record high, which consisted mostly of *Dictyota* spp. and *Pachydictyon* spp. *Sargassum horneri* was not observed at this site, but *S. muticum* was common. Miscellaneous red algae were moderately abundant with a cover of 34%, an increase from last year, with *Plocamium* spp. notably abundant in this category. *Gelidium* spp. were common, although none were observed during sampling. *Gigartina* spp. were rare with a cover of 0.17%. Other green algae were common at 2.8% and consisted mostly of *Codium setchellii*. Miscellaneous plants, consisting of filamentous diatoms, were present with a cover of 0.67%. Encrusting coralline algae cover was high at 50%, similar to last year. Articulated coralline algae cover was 10%. Bare substrate cover remained similar to recent years at 10.7%.

Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 10%, similar to past years. This category consisted mostly of small anemones (probably *Sagartia* spp. and *Cactosoma* spp.) and hydroids. Tunicates were moderately abundant and diverse with 18% cover, the highest density recorded, and included the encrusting tunicate *Aplidium* spp. Sponges were common and increased in cover this year to 2.7%. *Tethya aurantia* remained rare at a density of 0.0042/m², same as last year. *Phragmatopoma californica* was observed on RPCs for the first time with 0.33% cover. *Serpulorbis squamigerus* was common with a cover of 0.17%, similar to last year. *Diopatra ornata* remained common to the low lying areas with a cover of 0.17%, similar to recent years. Miscellaneous bryozoans were abundant with 27% cover, the highest on record at this site, and included *Bugula* spp. as well as encrusting bryozoans. *Diaperoecia californica* was common, but not observed during sampling. *Corynactis californica* remained rare at 0.33%. No *Astrangia lajollaensis* or *Balanophyllia elegans* were observed during sampling. However, *B. elegans* were observed at the site. Gorgonians were common with *Lophogorgia chilensis*, *Muricea californica* and *M. fruticosa* densities at 0.0069/m², 0.0097/m² and 0.0028/m², respectively.

Strongylocentrotus franciscanus was moderately abundant and many were notably large for this island, specifically on the eastern side of the transect. Juveniles were common. Density of *S. franciscanus* was 6.7/m², similar to last year, and a mean size of 62 mm was observed for size frequencies, the highest mean recorded at this site. Mean size of *S. franciscanus* has been gradually increasing over the past six years. *Strongylocentrotus purpuratus* was common, although densities have notably dropped in recent years to 2.5/m², the lowest density recorded at this site. Mean size for *S. purpuratus* continued to decrease to 20 mm, the lowest mean observed for this species at this site. Most *S. purpuratus* were confined to crevices. *Centrostephanus coronatus* was moderately abundant at 0.71/m². *Lytechinus anamesus* was rare at 0.013/m² and most were small. No sea urchin wasting disease was observed.

Pisaster giganteus was common, and mostly large, with densities on 1 m quadrats and 5 m quadrats of 0.17/m² and 0.09/m², respectively. These densities were higher than last year, but similar to past years. The mean size of *P. giganteus* was 129 mm, similar to last year. *Patiria miniata* was not observed at the site. *Pycnopodia helianthoides* was not observed, similar to previous years. There was notably more *Parastichopus parvimensis* at this site than elsewhere around the island and most were large with a few small individuals observed. Density of *P. parvimensis* increased to 1.3/m². *Ophiothrix spiculata* and *Pachythyone rubra* were not observed at the site. No sea star wasting disease was observed.

No live *Haliotis* spp. were observed. *Cypraea spadicea* was common, similar to past years, with a density of 0.042/m². *Megastraea undosa* was also common at 0.083/m², but not as common as in recent years, and all sizes were present. *Tegula regina* was moderately abundant between meters 50 – 75 and were observed on 1 m quadrats at a density of 0.042/m², similar to past years. *Kelletia kelletii* was not observed. *Megathura crenulata* was rare, similar to other sites around the island, with a density of 0.006/m². *Crassedoma giganteum* was rare at 0.0069/m². *Aplysia californica* density was 0.079/m², similar to past years, but they appeared less common than at other Santa Barbara Island sites. *Panulirus interruptus* was common at a density of 0.0056/m² and most were well above legal size. One live *Pteria sterna* was observed growing epiphytically on a *Muricea californica.*

Fish diversity and abundance were similar to last year and notably higher than at our other Santa Barbara Island sites. *Coryphopterus nicholsii* had a density of 0.042/m² Roving diver fish counts were performed on June 2nd with four divers observing 23 species. Figures summarizing RDFC data can be found in Appendix H.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successful.

Appendix B. Quadrat Data

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Macrocystis pyrifera Ad.(>1m)	0.9167	0.7017	12
Macrocystis pyrifera Juvenile (<1m)	0.3750	0.5276	12
Macrocystis pyrifera Stipes for Plants > 1m	6.6250	7.1259	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	1.0833	1.0624	12
Pterygophora californica juvenile	0.8750	2.1651	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.1667	0.3257	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	2.2917	1.5442	12
Pisaster giganteus	0.0417	0.1443	12
Strongylocentrotus franciscanus	0.2500	0.7230	12
Strongylocentrotus purpuratus	0.4583	1.1172	12
Parastichopus parvimensis	0.1250	0.2261	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.1250	0.3108	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0417	0.1443	12
Alloclinus holderi	0.0000	0.0000	12
San Miguel Island - Hare Rock			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.2083	0.3965	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.6250	0.8823	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	5.5417	3.7747	12
Pisaster giganteus	0.0417	0.1443	12
Strongylocentrotus franciscanus	8.2917	2.8241	12
Strongylocentrotus purpuratus	0.0000	0.0000	12
Parastichopus parvimensis	0.0000	0.0000	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.7500	0.8394	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee North			
Macrocystis pyrifera Ad.(>1m)	0.7083	0.7821	12
Macrocystis pyrifera Juvenile (<1m)	0.1667	0.5774	12
Macrocystis pyrifera Stipes for Plants > 1m	6.7500	8.1142	12
Eisenia arborea adult	0.0417	0.1443	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.3333	0.4924	12
Pterygophora californica juvenile	0.0833	0.1946	12
Laminaria farlowii adult	0.6667	1.0075	12
Laminaria farlowii juvenile	0.0833	0.1946	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.2917	0.4981	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	2.2083	1.0326	12
Pisaster giganteus	0.3333	0.4924	12
Strongylocentrotus franciscanus	2.4583	4.7600	12
Strongylocentrotus purpuratus	1.1667	1.7233	12
Parastichopus parvimensis	0.0417	0.1443	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	5.1250	2.3944	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0417	0.1443	12
Alloclinus holderi	0.0417	0.1443	12
Santa Rosa Island - Johnson's Lee South			
Macrocystis pyrifera Ad.(>1m)	0.1250	0.2261	12
Macrocystis pyrifera Juvenile (<1m)	0.2500	0.6216	12
Macrocystis pyrifera Stipes for Plants > 1m	1.3333	2.9259	12
Eisenia arborea adult	0.0417	0.1443	12
Eisenia arborea juvenile	0.0833	0.1946	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.2917	0.6201	12
Laminaria farlowii juvenile	0.5417	1.4687	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.6667	1.0517	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	4.6667	2.5346	12
Pisaster giganteus	0.2500	0.5839	12
Strongylocentrotus franciscanus	0.6250	1.0028	12
Strongylocentrotus purpuratus	4.3333	7.1202	12
Parastichopus parvimensis	0.0000	0.0000	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	3.6667	3.2075	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.0833	1.2939	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Rodes Reef			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.5000	0.7687	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	6.5000	4.3849	12
Pisaster giganteus	0.2500	0.4523	12
Strongylocentrotus franciscanus	5.9167	4.5768	12
Strongylocentrotus purpuratus	0.0833	0.1946	12
Parastichopus parvimensis	0.0417	0.1443	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.1250	0.2261	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0000	0.0000	12
Alloclinus holderi	0.0000	0.0000	12
Santa Cruz Island - Gull Island South			
Macrocystis pyrifera Ad.(>1m)	0.2083	0.3965	12
Macrocystis pyrifera Juvenile (<1m)	2.6667	2.3290	12
Macrocystis pyrifera Stipes for Plants > 1m	1.9167	3.5728	12
Eisenia arborea adult	0.2083	0.4502	12
Eisenia arborea juvenile	0.7083	1.0544	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0417	0.1443	12
Laminaria farlowii adult	0.0417	0.1443	12
Laminaria farlowii juvenile	0.1250	0.2261	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.1667	0.3257	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	3.2500	1.8402	12
Pisaster giganteus	0.3333	0.5365	12
Strongylocentrotus franciscanus	1.2500	2.3209	12
Strongylocentrotus purpuratus	5.7500	6.9984	12
Parastichopus parvimensis	0.2500	0.3371	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0833	0.1946	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.2500	0.3371	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Fry's Harbor			
Macrocystis pyrifera Ad.(>1m)	0.2917	0.3343	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	4.5833	6.5638	12
Eisenia arborea adult	1.9167	1.5349	12
Eisenia arborea juvenile	0.1667	0.4438	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.5000	0.9770	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	2.2083	1.4994	12
Pisaster giganteus	0.5417	0.6557	12
Strongylocentrotus franciscanus	0.2917	0.7525	12
Strongylocentrotus purpuratus	0.2917	0.5823	12
Parastichopus parvimensis	0.1250	0.2261	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.1667	0.3892	12
Coryphopterus nicholsii	0.8333	0.6155	12
Alloclinus holderi	0.0833	0.1946	12
Santa Cruz Island - Pelican Bay			
Macrocystis pyrifera Ad.(>1m)	0.3333	0.3257	12
Macrocystis pyrifera Juvenile (<1m)	0.4167	0.7638	12
Macrocystis pyrifera Stipes for Plants > 1m	3.9167	4.4304	12
Eisenia arborea adult	0.2500	0.3371	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	0.2917	0.3965	12
Pisaster giganteus	0.0833	0.1946	12
Strongylocentrotus franciscanus	2.3750	3.4120	12
Strongylocentrotus purpuratus	18.5833	23.7839	12
Parastichopus parvimensis	0.1250	0.2261	12
Centrostephanus coronatus	0.0417	0.1443	12
Styela montereyensis	0.0417	0.1443	12
Lythrypnus dalli	0.0417	0.1443	12
Coryphopterus nicholsii	0.8750	1.1506	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Scorpion Anchorage			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0833	0.2887	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0417	0.1443	12
Megastraea undosa	0.1667	0.3257	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	0.4167	0.4687	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	3.8750	2.8930	12
Strongylocentrotus purpuratus	35.4583	12.2687	12
Parastichopus parvimensis	0.9167	0.7017	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.6667	0.6513	12
Alloclinus holderi	0.0000	0.0000	12
Santa Cruz Island - Yellow Banks			
Macrocystis pyrifera Ad.(>1m)	0.6667	0.9129	12
Macrocystis pyrifera Juvenile (<1m)	5.1250	4.7055	12
Macrocystis pyrifera Stipes for Plants > 1m	6.4583	11.4683	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0417	0.1443	12
Pterygophora californica adult	0.4167	0.7638	12
Pterygophora californica juvenile	3.1667	4.1194	12
Laminaria farlowii adult	0.0417	0.1443	12
Laminaria farlowii juvenile	0.1667	0.3257	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0417	0.1443	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	2.0833	0.9003	12
Pisaster giganteus	0.2917	0.5823	12
Lytechinus anamesus	0.0833	0.1946	12
Strongylocentrotus franciscanus	1.0417	1.4687	12
Strongylocentrotus purpuratus	10.0833	12.8219	12
Parastichopus parvimensis	0.0000	0.0000	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.1667	1.0299	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Admiral's Reef			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0833	0.1946	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0417	0.1443	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	2.2500	1.3734	12
Pisaster giganteus	0.0833	0.1946	12
Strongylocentrotus franciscanus	7.7500	5.7228	12
Strongylocentrotus purpuratus	5.5000	3.5355	12
Parastichopus parvimensis	0.7083	0.6557	12
Centrostephanus coronatus	0.7500	0.9170	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.1250	0.8013	12
Alloclinus holderi	0.0417	0.1443	12
Anacapa Island - Cathedral Cove			
Macrocystis pyrifera Ad.(>1m)	0.8333	0.9129	12
Macrocystis pyrifera Juvenile (<1m)	37.3333	45.3829	12
Macrocystis pyrifera Stipes for Plants > 1m	8.0833	10.1126	12
Eisenia arborea adult	0.2083	0.4502	12
Eisenia arborea juvenile	0.1667	0.4438	12
Pterygophora californica adult	0.0833	0.1946	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	4.9167	4.4916	12
Laminaria farlowii juvenile	25.0000	21.2443	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0833	0.2887	12
Megastraea undosa	0.1667	0.5774	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	0.0000	0.0000	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	4.1667	3.2497	12
Strongylocentrotus purpuratus	1.8333	2.5346	12
Parastichopus parvimensis	1.5000	1.2792	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.1667	0.3257	12
Alloclinus holderi	0.1667	0.2462	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Landing Cove			
Macrocystis pyrifera Ad.(>1m)	0.1250	0.4330	12
Macrocystis pyrifera Juvenile (<1m)	51.6250	44.3653	12
Macrocystis pyrifera Stipes for Plants > 1m	0.2917	1.0104	12
Eisenia arborea adult	1.7083	1.7381	12
Eisenia arborea juvenile	0.8333	1.1934	12
Pterygophora californica adult	0.7083	1.0326	12
Pterygophora californica juvenile	19.8750	28.4718	12
Laminaria farlowii adult	4.6667	4.5892	12
Laminaria farlowii juvenile	34.2083	54.6840	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.1250	0.3108	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	0.0833	0.2887	12
Pisaster giganteus	0.0417	0.1443	12
Strongylocentrotus franciscanus	2.7917	2.7091	12
Strongylocentrotus purpuratus	4.0000	5.5473	12
Parastichopus parvimensis	0.3333	0.3892	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.1667	0.3257	12
Alloclinus holderi	0.0000	0.0000	12
Santa Barbara Island - SE Sea Lion Rookery			
Macrocystis pyrifera Ad.(>1m)	0.0417	0.1443	12
Macrocystis pyrifera Juvenile (<1m)	1.2083	1.6440	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0833	0.2887	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0833	0.1946	12
Patiria miniata	0.5000	0.7977	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	6.6250	7.4594	12
Strongylocentrotus purpuratus	15.9167	11.0430	12
Parastichopus parvimensis	0.1250	0.2261	12
Centrostephanus coronatus	0.6250	0.9564	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.4167	0.5149	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Barbara Island - Arch Point			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.2083	0.5823	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0833	0.2887	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.2917	0.5823	12
Patiria miniata	1.2500	0.8919	12
Pisaster giganteus	0.0417	0.1443	12
Lytechinus anamesus	0.2083	0.3965	12
Strongylocentrotus franciscanus	6.7083	4.8872	12
Strongylocentrotus purpuratus	131.5000	48.0222	12
Parastichopus parvimensis	0.1667	0.2462	12
Centrostephanus coronatus	0.0833	0.1946	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.1250	0.3108	12
Alloclinus holderi	0.0000	0.0000	12
Santa Barbara Island - Cat Canyon			
Macrocystis pyrifera Ad.(>1m)	1.0417	1.8397	12
Macrocystis pyrifera Juvenile (<1m)	5.7083	7.8493	12
Macrocystis pyrifera Stipes for Plants > 1m	2.1250	3.5299	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.8750	1.1702	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.3750	1.1506	12
Patiria miniata	0.2500	0.3989	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	7.4583	5.2243	12
Strongylocentrotus purpuratus	35.4583	31.1189	12
Parastichopus parvimensis	0.2500	0.5000	12
Centrostephanus coronatus	0.0417	0.1443	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.3333	0.4924	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
San Miguel Island - Miracle Mile			
Macrocystis pyrifera Ad.(>1m)	0.5000	0.4767	12
Macrocystis pyrifera Juvenile (<1m)	0.4583	0.7525	12
Macrocystis pyrifera Stipes for Plants > 1m	9.4167	11.9655	12
Eisenia arborea adult	0.1250	0.2261	12
Eisenia arborea juvenile	0.1250	0.2261	12
Pterygophora californica adult	0.2083	0.2575	12
Pterygophora californica juvenile	0.5833	1.1044	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Haliotis rufescens	0.2917	0.3343	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.4167	0.5967	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	3.0833	2.1302	12
Pisaster giganteus	0.4167	0.9252	12
Strongylocentrotus franciscanus	2.5833	4.0330	12
Strongylocentrotus purpuratus	0.1250	0.3108	12
Parastichopus parvimensis	0.2500	0.2611	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.1667	0.3257	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0417	0.1443	12
Alloclinus holderi	0.0000	0.0000	12
Santa Rosa Island - Cluster Point			
Macrocystis pyrifera Ad.(>1m)	0.0833	0.1946	12
Macrocystis pyrifera Juvenile (<1m)	0.4167	1.0188	12
Macrocystis pyrifera Stipes for Plants > 1m	0.7500	2.3012	12
Eisenia arborea adult	0.2500	0.5839	12
Eisenia arborea juvenile	0.0833	0.2887	12
Pterygophora californica adult	2.0000	2.7052	12
Pterygophora californica juvenile	0.2083	0.2575	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.1667	0.3257	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	2.2500	1.2340	12
Pisaster giganteus	0.2083	0.3343	12
Strongylocentrotus franciscanus	4.2500	6.6486	12
Strongylocentrotus purpuratus	6.4167	10.4921	12
Parastichopus parvimensis	0.2917	0.4981	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.4583	0.6895	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0417	0.1443	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Trancion Canyon			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	1.6667	2.0375	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0833	0.1946	12
Pterygophora californica adult	0.1667	0.3892	12
Pterygophora californica juvenile	0.7083	1.9124	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.4167	0.3589	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	3.0000	1.4616	12
Pisaster giganteus	0.5417	0.4981	12
Strongylocentrotus franciscanus	11.2500	6.4685	12
Strongylocentrotus purpuratus	21.2917	23.5685	12
Parastichopus parvimensis	0.5417	0.7821	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.2083	0.5823	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.5000	0.4767	12
Alloclinus holderi	0.0000	0.0000	12
Santa Rosa Island - Chickasaw			
Macrocystis pyrifera Ad.(>1m)	0.0833	0.1946	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	1.7917	4.1966	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.5000	1.2968	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.3750	0.7424	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	1.8333	1.7364	12
Pisaster giganteus	0.2917	0.3965	12
Strongylocentrotus franciscanus	2.4583	3.6210	12
Strongylocentrotus purpuratus	2.3750	3.5428	12
Parastichopus parvimensis	0.1667	0.3257	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.5000	0.8528	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0417	0.1443	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - South Point			
Macrocystis pyrifera Ad.(>1m)	0.5417	0.3343	12
Macrocystis pyrifera Juvenile (<1m)	0.0833	0.1946	12
Macrocystis pyrifera Stipes for Plants > 1m	9.3333	8.0180	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.7500	0.7230	12
Pterygophora californica juvenile	0.5833	0.7638	12
Laminaria farlowii adult	0.5417	0.6201	12
Laminaria farlowii juvenile	0.5000	0.7071	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.1667	0.4438	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	2.9167	1.7944	12
Pisaster giganteus	0.0833	0.1946	12
Strongylocentrotus franciscanus	1.4583	4.5898	12
Strongylocentrotus purpuratus	8.7500	11.8600	12
Parastichopus parvimensis	0.0833	0.1946	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	3.1667	2.4246	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.1667	0.3257	12
Alloclinus holderi	0.0000	0.0000	12
Santa Cruz Island - Devil's Peak Member			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0417	0.1443	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0833	0.2887	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0417	0.1443	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0417	0.1443	12
Patiria miniata	0.4167	0.5149	12
Pisaster giganteus	0.2083	0.3343	12
Strongylocentrotus franciscanus	2.4583	2.5268	12
Strongylocentrotus purpuratus	14.2083	8.0494	12
Parastichopus parvimensis	0.4167	0.4174	12
Centrostephanus coronatus	0.1667	0.4438	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.6667	0.6513	12
Alloclinus holderi	0.0833	0.1946	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Potato Pasture			
Macrocystis pyrifera Ad.(>1m)	0.1667	0.3257	12
Macrocystis pyrifera Juvenile (<1m)	0.7500	1.6167	12
Macrocystis pyrifera Stipes for Plants > 1m	0.4167	1.0188	12
Eisenia arborea adult	0.1250	0.2261	12
Eisenia arborea juvenile	1.7500	2.6242	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.1667	0.3257	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.1250	0.2261	12
Patiria miniata	0.9167	0.8483	12
Pisaster giganteus	0.1250	0.3108	12
Strongylocentrotus franciscanus	2.3750	2.9858	12
Strongylocentrotus purpuratus	13.7500	8.6563	12
Parastichopus parvimensis	1.1250	0.8013	12
Centrostephanus coronatus	0.4167	0.5149	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0833	0.2887	12
Coryphopterus nicholsii	0.4167	0.5149	12
Alloclinus holderi	0.0417	0.1443	12
Santa Cruz Island - Cavern Point			
Macrocystis pyrifera Ad.(>1m)	1.1667	3.4597	12
Macrocystis pyrifera Juvenile (<1m)	4.5417	10.3033	12
Macrocystis pyrifera Stipes for Plants > 1m	2.2500	6.6350	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	3.5000	4.1231	12
Pterygophora californica adult	0.0833	0.2887	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	3.4167	7.6629	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.1667	0.3257	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0417	0.1443	12
Patiria miniata	0.5417	0.9160	12
Pisaster giganteus	0.1667	0.2462	12
Lytechinus anamesus	0.1667	0.2462	12
Strongylocentrotus franciscanus	1.3750	1.1506	12
Strongylocentrotus purpuratus	12.9583	6.7772	12
Parastichopus parvimensis	1.4583	0.8107	12
Centrostephanus coronatus	0.1667	0.2462	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.8750	1.0897	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Little Scorpion			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.3750	0.5691	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0833	0.1946	12
Patiria miniata	2.7083	1.2695	12
Pisaster giganteus	0.3333	0.4924	12
Strongylocentrotus franciscanus	4.7917	2.1998	12
Strongylocentrotus purpuratus	13.3750	14.1279	12
Parastichopus parvimensis	0.3333	0.3257	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.5417	1.4375	12
Coryphopterus nicholsii	2.0417	1.6020	12
Alloclinus holderi	0.0000	0.0000	12
Santa Cruz Island - Pedro Reef			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.2083	0.5823	12
Megastraea undosa	0.3333	0.7487	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	0.5417	0.9405	12
Pisaster giganteus	0.0833	0.1946	12
Lytechinus anamesus	1.3750	1.5685	12
Strongylocentrotus franciscanus	12.5833	7.1822	12
Strongylocentrotus purpuratus	69.4583	36.4139	12
Parastichopus parvimensis	0.0833	0.1946	12
Centrostephanus coronatus	0.1250	0.3108	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.6250	1.0252	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Keyhole			
Macrocystis pyrifera Ad.(>1m)	0.2917	0.8649	12
Macrocystis pyrifera Juvenile (<1m)	0.6667	0.9614	12
Macrocystis pyrifera Stipes for Plants > 1m	1.4167	4.6015	12
Eisenia arborea adult	0.4167	1.1645	12
Eisenia arborea juvenile	0.4583	1.5877	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0833	0.1946	12
Laminaria farlowii juvenile	0.7917	1.2515	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	1.2083	2.1262	12
Cypraea spadicea	0.0417	0.1443	12
Megastraea undosa	0.7500	0.9653	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0833	0.1946	12
Patiria miniata	3.1250	2.2876	12
Pisaster giganteus	0.0417	0.1443	12
Lytechinus anamesus	0.1667	0.3892	12
Strongylocentrotus franciscanus	3.1667	1.5859	12
Strongylocentrotus purpuratus	32.2917	18.7161	12
Parastichopus parvimensis	1.6667	1.2309	12
Centrostephanus coronatus	0.4583	0.4981	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0833	0.1946	12
Coryphopterus nicholsii	2.3333	1.7364	12
Alloclinus holderi	0.3750	0.4827	12
Anacapa Island - East Fish Camp			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.3333	0.4924	12
Megastraea undosa	0.3750	0.4330	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	1.4583	0.8908	12
Pisaster giganteus	0.1250	0.3108	12
Lytechinus anamesus	0.5417	0.8382	12
Strongylocentrotus franciscanus	16.7083	7.4421	12
Strongylocentrotus purpuratus	116.3750	39.9409	12
Parastichopus parvimensis	0.3333	0.4438	12
Centrostephanus coronatus	0.8750	0.6784	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.8333	1.1146	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Black Sea Bass Reef			
Macrocystis pyrifera Ad.(>1m)	0.2083	0.5823	12
Macrocystis pyrifera Juvenile (<1m)	0.3333	0.7785	12
Macrocystis pyrifera Stipes for Plants > 1m	0.6250	1.4943	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.1250	0.2261	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0417	0.1443	12
Patiria miniata	0.1250	0.3108	12
Pisaster giganteus	0.1667	0.3257	12
Strongylocentrotus franciscanus	2.6250	2.2067	12
Strongylocentrotus purpuratus	34.7917	16.7311	12
Parastichopus parvimensis	2.0000	1.4924	12
Centrostephanus coronatus	1.0417	1.1766	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.1667	0.4438	12
Coryphopterus nicholsii	1.8750	0.8823	12
Alloclinus holderi	0.2500	0.2611	12
Anacapa Island - Lighthouse			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0417	0.1443	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.2083	0.4981	12
Megastraea undosa	0.0000	0.0000	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	0.8750	0.7424	12
Pisaster giganteus	0.0417	0.1443	12
Lytechinus anamesus	0.2083	0.3343	12
Strongylocentrotus franciscanus	5.0833	2.2946	12
Strongylocentrotus purpuratus	54.7500	19.3408	12
Parastichopus parvimensis	0.4583	0.4981	12
Centrostephanus coronatus	0.5833	0.8747	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.4167	0.5967	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Barbara Island - Webster's Arch			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0833	0.2887	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.4167	0.5967	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.6250	0.9324	12
Megastraea undosa	0.2083	0.2575	12
Astraea gibberosa	0.0417	0.1443	12
Tegula regina	0.4583	0.9405	12
Patiria miniata	2.1250	1.5393	12
Pisaster giganteus	0.0833	0.1946	12
Strongylocentrotus franciscanus	7.4583	3.5449	12
Strongylocentrotus purpuratus	42.9583	33.6860	12
Parastichopus parvimensis	0.1250	0.3108	12
Centrostephanus coronatus	0.3750	0.7424	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0000	0.0000	12
Alloclinus holderi	0.0417	0.1443	12
Santa Barbara Island - Graveyard Canyon			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	1.0417	2.0611	12
Macrocystis pyrifera Stipes for Plants > 1m	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0417	0.1443	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0417	0.1443	12
Cypraea spadicea	0.0000	0.0000	12
Megastraea undosa	0.0417	0.1443	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0000	0.0000	12
Patiria miniata	0.2083	0.2575	12
Pisaster giganteus	0.0000	0.0000	12
Lytechinus anamesus	0.0833	0.2887	12
Strongylocentrotus franciscanus	1.8333	1.8257	12
Strongylocentrotus purpuratus	28.8333	25.6261	12
Parastichopus parvimensis	0.0833	0.1946	12
Centrostephanus coronatus	0.0833	0.2887	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.2917	0.3965	12
Alloclinus holderi	0.0000	0.0000	12

2010 QUADRAT DATA: MEAN NUMBER PER M²

Santa Barbara Island - Southeast Reef

Species	Mean	Std. Dev.	n
Macrocystis pyrifera Ad.(>1m)	0.1250	0.2261	12
Macrocystis pyrifera Juvenile (<1m)	11.4583	10.9616	12
Macrocystis pyrifera Stipes for Plants > 1m	0.7917	1.9005	12
Eisenia arborea adult	0.1250	0.4330	12
Eisenia arborea juvenile	0.1250	0.3108	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Cypraea spadicea	0.0417	0.1443	12
Megastraea undosa	0.0833	0.1946	12
Astraea gibberosa	0.0000	0.0000	12
Tegula regina	0.0417	0.1443	12
Patiria miniata	0.0000	0.0000	12
Pisaster giganteus	0.1667	0.3257	12
Strongylocentrotus franciscanus	6.6667	5.3866	12
Strongylocentrotus purpuratus	2.5000	2.7716	12
Parastichopus parvimensis	1.2917	1.0544	12
Centrostephanus coronatus	0.7083	1.1572	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0417	0.1443	12
Alloclinus holderi	0.0000	0.0000	12

Appendix C. 5 Meter Quadrat Data

2010 5 - METER QUADRAT DATA: MEAN NUMBER PER M²

NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary
***Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dicotomy**

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Macrocystis pyrifera Adult	0.2400	0.2182	40
Macrocystis pyrifera Subadult	0.4850	0.4638	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0300	0.0723	40
San Miguel Island - Hare Rock			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.2300	0.3777	40
Santa Rosa Island - Johnson's Lee North			
Macrocystis pyrifera Adult	0.5000	0.3762	40
Macrocystis pyrifera Subadult	0.0150	0.0533	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1350	0.2237	40
Santa Rosa Island - Johnson's Lee South			
Macrocystis pyrifera Adult	0.2550	0.2864	40
Macrocystis pyrifera Subadult	0.0300	0.0853	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1050	0.2124	40
Santa Rosa Island - Rodes Reef			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0050	0.0316	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1500	0.2386	40

2010 5 - METER QUADRAT DATA: MEAN NUMBER PER M²

NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary
***Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dicotomy**

Species	Mean	Std. Dev.	n
Santa Cruz Island - Gull Island South			
Macrocystis pyrifera Adult	0.1000	0.1502	40
Macrocystis pyrifera Subadult	0.0950	0.1197	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.2150	0.3017	40
Santa Cruz Island - Fry's Harbor			
Macrocystis pyrifera Adult	0.1600	0.1932	40
Macrocystis pyrifera Subadult	0.0800	0.1682	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.3200	0.3729	40
Santa Cruz Island - Pelican Bay			
Macrocystis pyrifera Adult	0.4400	0.3629	40
Macrocystis pyrifera Subadult	0.2000	0.2265	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0450	0.0846	40
Santa Cruz Island - Scorpion Anchorage			
Macrocystis pyrifera Adult	0.0050	0.0316	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1050	0.1501	40
Santa Cruz Island - Yellow Banks			
Macrocystis pyrifera Adult	0.1100	0.1630	40
Macrocystis pyrifera Subadult	0.6650	0.5736	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0600	0.1128	40
Anacapa Island - Admiral's Reef			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0550	0.1108	40

2010 5 - METER QUADRAT DATA: MEAN NUMBER PER M²

NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary
***Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dicotomy**

Species	Mean	Std. Dev.	n
Anacapa Island - Cathedral Cove			
Macrocystis pyrifera Adult	0.2950	0.2640	40
Macrocystis pyrifera Subadult	0.4500	0.3889	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0100	0.0441	40
Anacapa Island - Landing Cove			
Macrocystis pyrifera Adult	0.0300	0.0853	40
Macrocystis pyrifera Subadult	0.1600	0.2762	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0050	0.0316	40
Santa Barbara Island - SE Sea Lion Rookery			
Macrocystis pyrifera Adult	0.0100	0.0632	40
Macrocystis pyrifera Subadult	0.0200	0.0992	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0050	0.0316	40
Pisaster giganteus	0.0150	0.0533	40
Santa Barbara Island - Arch Point			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1450	0.2124	40
Santa Barbara Island - Cat Canyon			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.6600	0.9106	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0450	0.0959	40
San Miguel Island - Miracle Mile			
Macrocystis pyrifera Adult	0.2250	0.2871	40
Macrocystis pyrifera Subadult	0.0300	0.1067	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.3450	0.3922	40

2010 5 - METER QUADRAT DATA: MEAN NUMBER PER M²

NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary
***Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dicotomy**

Species	Mean	Std. Dev.	n
Santa Rosa Island - Cluster Point			
Macrocystis pyrifera Adult	0.1100	0.1630	40
Macrocystis pyrifera Subadult	0.0100	0.0441	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1300	0.2003	40
Santa Rosa Island - Trancion Canyon			
Macrocystis pyrifera Adult	0.0400	0.1215	40
Macrocystis pyrifera Subadult	0.0150	0.0533	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.3600	0.3514	40
Santa Rosa Island - Chickasaw			
Macrocystis pyrifera Adult	0.3300	0.2919	40
Macrocystis pyrifera Subadult	0.0200	0.0758	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1600	0.2489	40
Santa Rosa Island - South Point			
Macrocystis pyrifera Adult	0.2950	0.2171	40
Macrocystis pyrifera Subadult	0.0050	0.0316	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0800	0.1265	40
Santa Cruz Island - Devil's Peak Member			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.3350	0.2769	40
Santa Cruz Island - Potato Pasture			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.2750	0.8457	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0750	0.1613	40

2010 5 - METER QUADRAT DATA: MEAN NUMBER PER M²

NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary
***Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dicotomy**

Species	Mean	Std. Dev.	n
Santa Cruz Island - Cavern Point			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.7000	1.4760	40
Sargassum horneri adult (>0.5 m)	0.0550	0.1431	40
Sargassum horneri juvenile (< 0.5)	2.8100	6.8514	40
Pisaster giganteus	0.0900	0.1566	40
Santa Cruz Island - Little Scorpion			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.3100	0.2753	40
Santa Cruz Island - Pedro Reef			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.1100	0.1429	40
Anacapa Island - Keyhole			
Macrocystis pyrifera Adult	0.0250	0.0809	40
Macrocystis pyrifera Subadult	0.0750	0.1410	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	1.1700	3.1893	40
Pisaster giganteus	0.0500	0.1086	40
Anacapa Island - East Fish Camp			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0550	0.1108	40
Anacapa Island - Black Sea Bass Reef			
Macrocystis pyrifera Adult	0.0100	0.0441	40
Macrocystis pyrifera Subadult	0.1500	0.4218	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0400	0.0928	40

2010 5 - METER QUADRAT DATA: MEAN NUMBER PER M²

NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary
***Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dicotomy**

Species	Mean	Std. Dev.	n
Anacapa Island - Lighthouse			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0750	0.1410	40
Santa Barbara Island - Webster's Arch			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0600	0.1033	40
Santa Barbara Island - Graveyard Canyon			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0850	0.1626	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0050	0.0316	40
Santa Barbara Island - Southeast Reef			
Macrocystis pyrifera Adult	0.1700	0.2103	40
Macrocystis pyrifera Subadult	0.2150	0.3718	40
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	40
Sargassum horneri juvenile (< 0.5)	0.0000	0.0000	40
Pisaster giganteus	0.0900	0.1277	40

Appendix D. Band Transect Data

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.1611	0.0746	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.2486	0.1550	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0431	0.0524	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.2028	0.1302	12
Megathura crenulata	0.0014	0.0048	12
Crassedoma giganteum	0.0000	0.0000	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0083	0.0112	12
Lytechinus anamesus	0.0000	0.0000	12
San Miguel Island - Hare Rock			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0542	0.0477	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0181	0.0261	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0042	0.0144	12
Megathura crenulata	0.0000	0.0000	12
Crassedoma giganteum	0.0111	0.0130	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0931	0.0691	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Johnson's Lee North			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.1639	0.0674	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0264	0.0337	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0194	0.0300	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0014	0.0048	12
Megathura crenulata	0.0125	0.0144	12
Crassedoma giganteum	0.0278	0.0416	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.1083	0.0592	12
Lytechinus anamesus	0.0000	0.0000	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee South			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.4319	0.0833	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.1556	0.1264	12
Lophogorgia chilensis	0.0556	0.0304	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0014	0.0048	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0069	0.0111	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0278	0.0358	12
Megathura crenulata	0.0069	0.0194	12
Crassedoma giganteum	0.0222	0.0239	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.1792	0.1115	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Rodes Reef			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.2222	0.0925	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0583	0.0423	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0375	0.0334	12
Megathura crenulata	0.0292	0.0384	12
Crassedoma giganteum	0.0125	0.0144	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.1000	0.0607	12
Lytechinus anamesus	0.0014	0.0048	12
Santa Cruz Island - Gull Island South			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.3625	0.1649	12
Stylaster californica	0.1056	0.1545	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0389	0.0304	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0028	0.0065	12
Megathura crenulata	0.0056	0.0148	12
Crassedoma giganteum	0.0319	0.0219	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0153	0.0181	12
Lytechinus anamesus	0.0097	0.0337	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Fry's Harbor			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.2097	0.0687	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2000	0.1677	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0014	0.0048	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0056	0.0082	12
Megathura crenulata	0.0403	0.0479	12
Crassedoma giganteum	0.0069	0.0111	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0278	0.0228	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Cruz Island - Pelican Bay			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0403	0.0515	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1319	0.1192	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0056	0.0130	12
Megathura crenulata	0.0139	0.0211	12
Crassedoma giganteum	0.0042	0.0104	12
Aplysia californica	0.0611	0.0930	12
Pycnopodia helianthoides	0.0097	0.0132	12
Lytechinus anamesus	0.0278	0.0416	12
Santa Cruz Island - Scorpion Anchorage			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0556	0.0736	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0028	0.0065	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0111	0.0082	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.2000	0.0873	12
Crassedoma giganteum	0.0222	0.0312	12
Aplysia californica	0.0319	0.0379	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Yellow Banks			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.2236	0.0657	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0444	0.0328	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0153	0.0207	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0319	0.0379	12
Megathura crenulata	0.0069	0.0086	12
Crassedoma giganteum	0.0042	0.0104	12
Aplysia californica	0.0194	0.0283	12
Pycnopodia helianthoides	0.0069	0.0111	12
Lytechinus anamesus	0.1361	0.2231	12
Anacapa Island - Admiral's Reef			
Sargassum horneri adult (>0.5 m)	0.0292	0.1010	12
Sargassum horneri juvenile (< 0.5 m)	0.0667	0.2207	12
Tethya aurantia	0.0639	0.0568	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0653	0.0366	12
Muricea fruticosa	0.0069	0.0150	12
Muricea californica	0.0444	0.0365	12
Panulirus interruptus	0.0042	0.0144	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0347	0.0417	12
Megathura crenulata	0.1083	0.0730	12
Crassedoma giganteum	0.0181	0.0166	12
Aplysia californica	0.0194	0.0223	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0028	0.0096	12
Anacapa Island - Cathedral Cove			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0014	0.0048	12
Tethya aurantia	0.0083	0.0167	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0250	0.0613	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0028	0.0065	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0069	0.0166	12
Megathura crenulata	0.0000	0.0000	12
Crassedoma giganteum	0.0139	0.0199	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Landing Cove			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0028	0.0065	12
Tethya aurantia	0.0111	0.0179	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0028	0.0065	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0139	0.0199	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0028	0.0096	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0167	0.0275	12
Megathura crenulata	0.0083	0.0112	12
Crassedoma giganteum	0.0681	0.0351	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Barbara Island - SE Sea Lion Rookery			
Sargassum horneri adult (>0.5 m)	0.0014	0.0048	12
Sargassum horneri juvenile (< 0.5 m)	0.0014	0.0048	12
Tethya aurantia	0.1708	0.0732	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1306	0.0517	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0264	0.0230	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0000	0.0000	12
Crassedoma giganteum	0.0069	0.0111	12
Aplysia californica	0.1000	0.0704	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0167	0.0432	12
Santa Barbara Island - Arch Point			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0000	0.0000	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0014	0.0048	12
Panulirus interruptus	0.0014	0.0048	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0056	0.0109	12
Crassedoma giganteum	0.0069	0.0086	12
Aplysia californica	0.3208	0.1069	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0389	0.0533	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Barbara Island - Cat Canyon			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0000	0.0000	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0028	0.0096	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0028	0.0096	12
Megathura crenulata	0.0000	0.0000	12
Crassedoma giganteum	0.0056	0.0082	12
Aplysia californica	0.3806	0.1683	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12
San Miguel Island - Miracle Mile			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.2000	0.1318	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.1736	0.1043	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.5625	0.2463	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0083	0.0112	12
Megathura crenulata	0.0167	0.0123	12
Crassedoma giganteum	0.0000	0.0000	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0181	0.0166	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Cluster Point			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.4125	0.1622	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0778	0.0422	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0014	0.0048	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0486	0.0468	12
Megathura crenulata	0.0208	0.0144	12
Crassedoma giganteum	0.0361	0.0292	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0139	0.0156	12
Lytechinus anamesus	0.0000	0.0000	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Trancion Canyon			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.2736	0.1074	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.1625	0.0927	12
Lophogorgia chilensis	0.0014	0.0048	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0042	0.0075	12
Megathura crenulata	0.0375	0.0334	12
Crassedoma giganteum	0.0125	0.0126	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0264	0.0132	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Chickasaw			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.1569	0.0737	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.1083	0.0495	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0139	0.0156	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0069	0.0111	12
Crassedoma giganteum	0.0306	0.0255	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0056	0.0109	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - South Point			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.1347	0.0575	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0361	0.0388	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0722	0.0499	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0014	0.0048	12
Megathura crenulata	0.0056	0.0082	12
Crassedoma giganteum	0.0014	0.0048	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0111	0.0109	12
Lytechinus anamesus	0.0000	0.0000	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Devil's Peak Member			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.1250	0.1024	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1167	0.1874	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0056	0.0082	12
Panulirus interruptus	0.0014	0.0048	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.6417	0.2312	12
Crassedoma giganteum	0.0347	0.0279	12
Aplysia californica	0.0028	0.0065	12
Pycnopodia helianthoides	0.0014	0.0048	12
Lytechinus anamesus	0.0042	0.0075	12
Santa Cruz Island - Potato Pasture			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.1333	0.0527	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1583	0.1167	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0042	0.0075	12
Panulirus interruptus	0.0111	0.0192	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0125	0.0144	12
Megathura crenulata	0.0514	0.0529	12
Crassedoma giganteum	0.0819	0.0637	12
Aplysia californica	0.0097	0.0194	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0375	0.0591	12
Santa Cruz Island - Cavern Point			
Sargassum horneri adult (>0.5 m)	0.2278	0.3692	12
Sargassum horneri juvenile (< 0.5 m)	2.1014	4.9588	12
Tethya aurantia	0.0972	0.0486	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2194	0.1965	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0042	0.0104	12
Panulirus interruptus	0.0139	0.0172	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0042	0.0104	12
Megathura crenulata	0.0403	0.0500	12
Crassedoma giganteum	0.1139	0.0745	12
Aplysia californica	0.0361	0.0283	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0222	0.0566	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Little Scorpion			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0417	0.0306	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1292	0.1099	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0014	0.0048	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0125	0.0203	12
Megathura crenulata	0.4806	0.2547	12
Crassedoma giganteum	0.0194	0.0274	12
Aplysia californica	0.0097	0.0166	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.3333	0.5858	12
Santa Cruz Island - Pedro Reef			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.1764	0.1623	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2736	0.1715	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0056	0.0130	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0056	0.0192	12
Megathura crenulata	0.0806	0.0966	12
Crassedoma giganteum	0.0167	0.0201	12
Aplysia californica	0.0792	0.0532	12
Pycnopodia helianthoides	0.0042	0.0075	12
Lytechinus anamesus	0.6833	0.6619	12
Anacapa Island - Keyhole			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.7944	1.0277	12
Tethya aurantia	0.0014	0.0048	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2528	0.0735	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0264	0.0241	12
Panulirus interruptus	0.0014	0.0048	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0125	0.0104	12
Megathura crenulata	0.0139	0.0199	12
Crassedoma giganteum	0.0194	0.0120	12
Aplysia californica	0.0500	0.0537	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.3319	0.3737	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - East Fish Camp			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0208	0.0342	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0069	0.0194	12
Muricea fruticosa	0.0042	0.0104	12
Muricea californica	0.0042	0.0075	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0292	0.0247	12
Megathura crenulata	0.1708	0.1202	12
Crassedoma giganteum	0.0167	0.0188	12
Aplysia californica	0.1181	0.1236	12
Pycnopodia helianthoides	0.0014	0.0048	12
Lytechinus anamesus	0.3319	0.2137	12
Anacapa Island - Black Sea Bass Reef			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0681	0.0321	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0083	0.0167	12
Muricea fruticosa	0.0028	0.0065	12
Muricea californica	0.0014	0.0048	12
Panulirus interruptus	0.0417	0.0529	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0167	0.0213	12
Megathura crenulata	0.0153	0.0111	12
Crassedoma giganteum	0.0111	0.0164	12
Aplysia californica	0.0014	0.0048	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12
Anacapa Island - Lighthouse			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0819	0.0633	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0958	0.0574	12
Muricea fruticosa	0.0278	0.0228	12
Muricea californica	0.2778	0.1097	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0042	0.0075	12
Megathura crenulata	0.0778	0.0468	12
Crassedoma giganteum	0.0069	0.0111	12
Aplysia californica	0.0486	0.0230	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0597	0.0337	12

2010 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Barbara Island - Webster's Arch			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0014	0.0048	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0069	0.0111	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0042	0.0075	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0014	0.0048	12
Megathura crenulata	0.1403	0.0733	12
Crassedoma giganteum	0.0056	0.0109	12
Aplysia californica	0.3236	0.1730	12
Pycnopodia helianthoides	0.0056	0.0082	12
Lytechinus anamesus	0.0014	0.0048	12
Santa Barbara Island - Graveyard Canyon			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0931	0.0723	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0389	0.0351	12
Muricea fruticosa	0.0028	0.0096	12
Muricea californica	0.0278	0.0278	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0014	0.0048	12
Crassedoma giganteum	0.0000	0.0000	12
Aplysia californica	0.1125	0.0888	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0181	0.0372	12
Santa Barbara Island - Southeast Reef			
Sargassum horneri adult (>0.5 m)	0.0000	0.0000	12
Sargassum horneri juvenile (< 0.5 m)	0.0000	0.0000	12
Tethya aurantia	0.0042	0.0075	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0069	0.0111	12
Muricea fruticosa	0.0028	0.0065	12
Muricea californica	0.0097	0.0150	12
Panulirus interruptus	0.0056	0.0148	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0056	0.0109	12
Crassedoma giganteum	0.0069	0.0150	12
Aplysia californica	0.0792	0.0962	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0125	0.0433	12

Appendix E. Random Point Contact Data

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

San Miguel Island - Wyckoff Ledge

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	11.333	11.3730	15
Desmarestia spp.	0.667	2.5820	15
Cystoseira spp.	2.000	3.9188	15
Macrocystis pyrifera All	25.333	25.0511	15
Eisenia arborea All	0.833	3.2275	15
Pterygophora californica All	15.333	14.6039	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	44.833	20.7120	15
Articulated Coralline Algae	14.167	17.8952	15
Encrusting Coralline Algae	10.333	6.0405	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.167	0.6455	15
Miscellaneous Plants (ie: Diatoms)	0.167	0.6455	15
Sponges	1.167	1.2910	15
Corynactis californica	0.167	0.6455	15
Balanophyllia elegans	0.500	1.0351	15
Astrangia lajollaensis	0.333	1.2910	15
Diopatra ornata	9.000	9.0040	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	19.500	10.0977	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.833	1.5430	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	22.000	15.5609	15
Bare Substrate	42.000	26.0014	15
Rock	64.167	32.5777	15
Cobble	1.833	4.2748	15
Sand	34.000	29.9970	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

San Miguel Island - Hare Rock

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	2.167	3.6433	15
Articulated Coralline Algae	0.167	0.6455	15
Encrusting Coralline Algae	71.000	17.9483	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.167	0.6455	15
Sponges	0.000	0.0000	15
Corynactis californica	3.500	6.0356	15
Balanophyllia elegans	2.333	3.7161	15
Astrangia lajollaensis	0.833	1.5430	15
Diopatra ornata	0.333	1.2910	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.333	1.2910	15
Miscellaneous Bryozoans	0.167	0.6455	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	14.500	10.7404	15
Bare Substrate	18.667	21.1472	15
Rock	82.000	26.8461	15
Cobble	12.667	21.9266	15
Sand	5.333	7.7843	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Rosa Island - Johnson's Lee North

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.667	1.4840	15
Macrocystis pyrifera All	38.500	16.7385	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	6.167	8.1759	15
Laminaria farlowii All	5.500	7.2086	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	42.000	13.8293	15
Articulated Coralline Algae	5.500	5.0178	15
Encrusting Coralline Algae	10.667	6.4411	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	5.500	6.3527	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	6.500	5.4116	15
Corynactis californica	1.500	3.2459	15
Balanophyllia elegans	2.000	3.4330	15
Astrangia lajollaensis	0.667	1.4840	15
Diopatra ornata	1.667	3.0861	15
Phragmatopoma californica	14.333	7.2866	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	36.667	12.7008	15
Diaperoecia californica	0.333	0.8797	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	20.000	11.4174	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	17.333	7.3477	15
Bare Substrate	5.500	5.8401	15
Rock	92.833	7.9545	15
Cobble	1.667	2.4398	15
Sand	5.500	7.4522	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Rosa Island - Johnson's Lee South

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.500	1.4015	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	5.333	6.3994	15
Eisenia arborea All	1.333	2.4761	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	4.833	6.1577	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	44.667	16.9523	15
Articulated Coralline Algae	8.333	9.3382	15
Encrusting Coralline Algae	18.167	12.5167	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	5.333	6.9351	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	1.833	2.4029	15
Corynactis californica	4.000	7.1838	15
Balanophyllia elegans	1.333	1.5999	15
Astrangia lajollaensis	1.167	2.8137	15
Diopatra ornata	14.000	14.8745	15
Phragmatopoma californica	0.667	1.4840	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	38.000	10.7819	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	15.500	10.2731	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	20.500	7.8034	15
Bare Substrate	9.833	10.8342	15
Rock	80.500	20.4241	15
Cobble	0.667	1.7593	15
Sand	18.833	20.3072	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Rosa Island - Rodes Reef

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	1.667	3.4932	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	11.500	10.2120	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	58.333	13.9087	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	0.833	1.5430	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	1.167	1.8581	15
Astrangia lajollaensis	7.500	10.0000	15
Diopatra ornata	0.833	1.8094	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	1.000	1.8420	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.167	0.6455	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	14.333	12.4092	15
Bare Substrate	10.333	10.6010	15
Rock	85.500	17.1183	15
Cobble	13.500	15.6924	15
Sand	1.000	2.2756	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Gull Island South

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	1.167	2.4761	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.667	1.7593	15
Macrocystis pyrifera All	6.167	6.6726	15
Eisenia arborea All	3.333	5.5635	15
Pterygophora californica All	0.333	1.2910	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	53.667	16.5526	15
Articulated Coralline Algae	2.000	3.1623	15
Encrusting Coralline Algae	12.500	8.9642	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.167	0.6455	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	2.000	2.3528	15
Corynactis californica	2.500	3.2733	15
Balanophyllia elegans	2.000	3.0178	15
Astrangia lajollaensis	0.333	1.2910	15
Diopatra ornata	4.167	8.0549	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	23.667	15.3782	15
Diaperoecia californica	0.667	1.1443	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	3.167	3.0570	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	11.000	6.0356	15
Bare Substrate	9.333	8.7355	15
Rock	94.167	9.2421	15
Cobble	1.167	1.8581	15
Sand	4.667	8.8573	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Fry's Harbor

Species	Mean	Std. Dev.	n
Green Algae	0.500	1.0351	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	13.167	14.6832	15
Eisenia arborea All	24.500	29.2953	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	20.167	19.1439	15
Articulated Coralline Algae	0.500	1.4015	15
Encrusting Coralline Algae	29.333	9.6115	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.667	2.5820	15
Miscellaneous Plants (ie: Diatoms)	0.500	1.4015	15
Sponges	0.000	0.0000	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	9.000	6.3246	15
Diopatra ornata	2.833	5.7373	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	38.833	10.3452	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.667	1.1443	15
Tunicates	6.333	4.6162	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	17.167	7.1256	15
Bare Substrate	7.333	5.7061	15
Rock	89.167	10.5926	15
Cobble	5.000	5.8248	15
Sand	5.833	10.1624	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Pelican Bay

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	11.500	12.7405	15
Eisenia arborea All	0.167	0.6455	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	0.500	1.4015	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	33.167	21.9672	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	4.000	8.3345	15
Sponges	0.167	0.6455	15
Corynactis californica	0.167	0.6455	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	12.667	8.0438	15
Diopatra ornata	9.833	8.4233	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	8.500	6.1091	15
Diaperoecia californica	2.167	2.2887	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	3.000	3.1623	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	13.833	8.3915	15
Bare Substrate	29.500	22.8192	15
Rock	55.667	27.1153	15
Cobble	32.167	24.0696	15
Sand	12.167	12.1327	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Scorpion Anchorage

Species	Mean	Std. Dev.	n
Green Algae	1.667	3.3630	15
Miscellaneous Brown Algae	5.000	12.3924	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.500	1.4015	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	2.667	3.0570	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	41.833	25.2216	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	3.833	5.3341	15
Sponges	0.000	0.0000	15
Corynactis californica	0.500	1.0351	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.500	1.4015	15
Diopatra ornata	0.667	1.1443	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.500	1.0351	15
Miscellaneous Bryozoans	0.000	0.0000	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.833	2.6163	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	14.500	13.2692	15
Bare Substrate	39.500	24.2237	15
Rock	73.500	28.1545	15
Cobble	0.667	1.4840	15
Sand	25.833	28.5930	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Yellow Banks

Species	Mean	Std. Dev.	n
Green Algae	0.333	0.8797	15
Miscellaneous Brown Algae	0.667	1.1443	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	2.000	3.6839	15
Macrocystis pyrifera All	9.000	7.4881	15
Eisenia arborea All	0.667	1.9970	15
Pterygophora californica All	2.833	4.1043	15
Laminaria farlowii All	2.167	5.0768	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	26.500	14.9940	15
Articulated Coralline Algae	3.667	3.2550	15
Encrusting Coralline Algae	41.500	10.0357	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.667	1.4840	15
Sponges	0.500	1.0351	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.667	1.9970	15
Astrangia lajollaensis	1.667	2.4398	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	2.667	2.4029	15
Diaperoecia californica	0.333	0.8797	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.167	0.6455	15
Tunicates	1.500	1.8420	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	4.167	4.6930	15
Bare Substrate	25.667	17.0469	15
Rock	74.667	25.3875	15
Cobble	24.833	24.7211	15
Sand	0.500	1.0351	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Admiral's Reef

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.167	0.6455	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	9.167	8.9974	15
Articulated Coralline Algae	0.500	1.0351	15
Encrusting Coralline Algae	73.000	16.2074	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	8.167	9.0862	15
Sponges	1.167	1.5999	15
Corynactis californica	2.667	4.1690	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.500	1.0351	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	1.000	1.8420	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	43.667	29.8189	15
Tunicates	0.667	1.1443	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	22.500	13.9834	15
Bare Substrate	9.333	9.2807	15
Rock	82.333	17.5119	15
Cobble	13.333	13.0133	15
Sand	4.333	6.9093	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Cathedral Cove

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	2.500	3.5355	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	18.500	18.3906	15
Macrocystis pyrifera All	33.500	17.5967	15
Eisenia arborea All	2.500	5.0885	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	42.833	16.7136	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	17.500	15.6696	15
Articulated Coralline Algae	25.500	12.5428	15
Encrusting Coralline Algae	24.000	14.6629	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.167	0.6455	15
Sponges	2.167	2.8137	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.167	0.6455	15
Diopatra ornata	8.000	10.2731	15
Phragmatopoma californica	5.667	6.7126	15
Serpulorbis squamigerus	0.667	1.4840	15
Miscellaneous Bryozoans	25.333	11.7210	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.333	0.8797	15
Tunicates	13.333	10.2062	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	15.667	5.5474	15
Bare Substrate	8.833	12.2061	15
Rock	71.500	23.1994	15
Cobble	17.167	12.3153	15
Sand	11.333	15.1441	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Landing Cove

Species	Mean	Std. Dev.	n
Green Algae	0.333	0.8797	15
Miscellaneous Brown Algae	1.167	2.0845	15
Desmarestia spp.	0.167	0.6455	15
Cystoseira spp.	1.000	1.5811	15
Macrocystis pyrifera All	9.500	10.8644	15
Eisenia arborea All	16.667	20.7594	15
Pterygophora californica All	11.500	16.8449	15
Laminaria farlowii All	18.000	12.2183	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	34.833	12.0069	15
Articulated Coralline Algae	14.500	8.1941	15
Encrusting Coralline Algae	14.000	8.2267	15
Gelidium spp.	20.167	27.9104	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	1.000	1.8420	15
Corynactis californica	0.667	1.9970	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	0.167	0.6455	15
Diopatra ornata	0.833	2.2493	15
Phragmatopoma californica	0.833	1.8094	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	8.500	10.6402	15
Diaperoecia californica	1.667	2.7817	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	3.667	6.3293	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	15.667	18.9799	15
Bare Substrate	20.667	20.2984	15
Rock	74.167	32.6051	15
Cobble	15.000	18.5405	15
Sand	10.833	15.9706	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Barbara Island - SE Sea Lion Rookery

Species	Mean	Std. Dev.	n
Green Algae	1.000	1.5811	15
Miscellaneous Brown Algae	2.167	3.6433	15
Desmarestia spp.	29.000	25.7183	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	1.000	1.8420	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	2.167	2.2887	15
Articulated Coralline Algae	0.167	0.6455	15
Encrusting Coralline Algae	79.167	18.3631	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	2.167	2.8137	15
Sponges	0.000	0.0000	15
Corynactis californica	2.000	2.7058	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.167	0.6455	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	48.167	18.5998	15
Tunicates	0.667	1.1443	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	3.333	3.6187	15
Bare Substrate	11.833	17.6389	15
Rock	84.167	22.3740	15
Cobble	6.833	12.6937	15
Sand	9.000	16.6851	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Barbara Island - Arch Point

Species	Mean	Std. Dev.	n
Green Algae	0.833	1.5430	15
Miscellaneous Brown Algae	3.667	9.0073	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.833	2.6163	15
Eisenia arborea All	0.667	1.4840	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	16.000	10.0357	15
Articulated Coralline Algae	0.667	1.9970	15
Encrusting Coralline Algae	47.167	10.7681	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	3.333	4.3983	15
Sponges	0.000	0.0000	15
Corynactis californica	6.500	5.4116	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.833	1.5430	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	2.000	4.1404	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.667	1.1443	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	14.333	5.5474	15
Bare Substrate	26.833	14.3448	15
Rock	90.333	8.2844	15
Cobble	9.000	8.0067	15
Sand	0.667	2.5820	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Barbara Island - Cat Canyon

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	42.500	38.6491	15
Desmarestia spp.	1.833	4.0606	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	41.667	36.6775	15
Eisenia arborea All	0.500	1.9365	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	16.500	14.5713	15
Articulated Coralline Algae	0.667	1.1443	15
Encrusting Coralline Algae	68.167	12.3732	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	14.000	12.2766	15
Sponges	0.000	0.0000	15
Corynactis californica	0.500	1.0351	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.667	1.9970	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	3.667	5.1640	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.667	1.1443	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	5.833	4.9701	15
Bare Substrate	20.000	9.1124	15
Rock	94.667	5.7373	15
Cobble	1.167	2.2887	15
Sand	4.167	5.8757	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

San Miguel Island - Miracle Mile

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	1.000	2.8031	15
Desmarestia spp.	0.167	0.6455	15
Cystoseira spp.	2.500	4.1188	15
Macrocystis pyrifera All	14.500	15.4168	15
Eisenia arborea All	13.333	16.6011	15
Pterygophora californica All	2.167	4.4186	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	61.500	26.6726	15
Articulated Coralline Algae	30.833	19.2879	15
Encrusting Coralline Algae	43.167	15.7963	15
Gelidium spp.	0.333	1.2910	15
Gigartina spp.	6.167	7.1880	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	6.333	5.4989	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	1.000	1.5811	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	0.333	0.8797	15
Phragmatopoma californica	2.000	2.7058	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	9.667	8.4445	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	14.667	12.6373	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	7.167	7.6103	15
Bare Substrate	14.500	23.5509	15
Rock	84.000	23.9568	15
Cobble	6.167	9.7681	15
Sand	9.833	19.8536	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Rosa Island - Cluster Point

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	1.667	2.4398	15
Desmarestia spp.	0.167	0.6455	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	14.000	20.3496	15
Eisenia arborea All	12.667	17.7650	15
Pterygophora californica All	34.833	30.8288	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	51.667	25.8890	15
Articulated Coralline Algae	5.000	7.0711	15
Encrusting Coralline Algae	40.833	11.4434	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.167	0.6455	15
Sponges	3.000	5.9161	15
Corynactis californica	0.500	1.4015	15
Balanophyllia elegans	1.667	2.0412	15
Astrangia lajollaensis	0.667	1.4840	15
Diopatra ornata	2.833	5.9662	15
Phragmatopoma californica	0.333	0.8797	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	10.333	8.1211	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	10.667	7.8755	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	19.500	12.3996	15
Bare Substrate	13.667	20.4168	15
Rock	84.667	26.6402	15
Cobble	9.333	19.4447	15
Sand	6.000	10.5982	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Rosa Island - Trancion Canyon

Species	Mean	Std. Dev.	n
Green Algae	0.333	0.8797	15
Miscellaneous Brown Algae	0.667	2.5820	15
Desmarestia spp.	0.333	0.8797	15
Cystoseira spp.	0.333	0.8797	15
Macrocystis pyrifera All	1.000	3.2459	15
Eisenia arborea All	1.500	3.9866	15
Pterygophora californica All	6.667	15.1677	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	27.833	22.5370	15
Articulated Coralline Algae	4.167	6.0257	15
Encrusting Coralline Algae	31.000	19.9060	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	1.000	1.8420	15
Miscellaneous Plants (ie: Diatoms)	0.667	1.7593	15
Sponges	4.000	4.4118	15
Corynactis californica	1.333	2.6502	15
Balanophyllia elegans	3.167	4.1690	15
Astrangia lajollaensis	1.167	2.0845	15
Diopatra ornata	11.833	13.7408	15
Phragmatopoma californica	1.167	1.5999	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	3.000	3.0178	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	4.667	5.2497	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	21.667	10.8425	15
Bare Substrate	16.333	21.1049	15
Rock	77.333	24.4304	15
Cobble	6.000	8.1723	15
Sand	16.667	23.6354	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Rosa Island - Chickasaw

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	2.000	4.8366	15
Macrocystis pyrifera All	9.500	10.2295	15
Eisenia arborea All	0.333	1.2910	15
Pterygophora californica All	1.500	2.2756	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	31.667	15.9706	15
Articulated Coralline Algae	7.667	7.9881	15
Encrusting Coralline Algae	21.833	11.9323	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.167	0.6455	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	2.333	2.7495	15
Corynactis californica	0.833	2.6163	15
Balanophyllia elegans	0.333	0.8797	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	10.833	11.3652	15
Phragmatopoma californica	11.333	9.5369	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	30.167	15.2499	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	16.667	11.3652	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	6.667	5.1467	15
Bare Substrate	9.500	11.8472	15
Rock	85.667	17.4353	15
Cobble	0.000	0.0000	15
Sand	14.333	17.4353	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Rosa Island - South Point

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	3.500	3.5102	15
Macrocystis pyrifera All	17.667	11.8573	15
Eisenia arborea All	0.333	1.2910	15
Pterygophora californica All	12.667	9.7498	15
Laminaria farlowii All	6.333	6.3293	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	33.167	14.2511	15
Articulated Coralline Algae	14.500	11.0680	15
Encrusting Coralline Algae	14.167	7.1130	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	2.167	2.4761	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	5.333	3.1149	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	7.500	9.7285	15
Phragmatopoma californica	13.000	8.5670	15
Serpulorbis squamigerus	0.333	0.8797	15
Miscellaneous Bryozoans	25.167	5.6273	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.167	0.6455	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	9.333	6.2297	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	33.667	18.7290	15
Bare Substrate	6.500	5.4116	15
Rock	89.167	13.5510	15
Cobble	1.667	3.2275	15
Sand	9.167	12.4164	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Devil's Peak Member

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.333	0.8797	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	18.833	8.3915	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	58.833	11.0545	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	4.500	3.9188	15
Sponges	1.000	1.2677	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	3.500	2.4640	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	10.667	6.9093	15
Diaperoecia californica	1.500	3.2459	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	4.333	3.4675	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	29.833	7.5868	15
Bare Substrate	3.833	4.3164	15
Rock	97.167	3.6433	15
Cobble	1.667	3.0861	15
Sand	1.167	2.2887	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Potato Pasture

Species	Mean	Std. Dev.	n
Green Algae	0.833	3.2275	15
Miscellaneous Brown Algae	1.500	3.1053	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	2.167	5.3341	15
Eisenia arborea All	2.500	7.7344	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	11.667	8.7966	15
Articulated Coralline Algae	0.500	1.4015	15
Encrusting Coralline Algae	51.667	12.3804	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	4.833	4.6739	15
Sponges	0.333	0.8797	15
Corynactis californica	1.167	1.5999	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	2.167	2.8137	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	7.167	5.3341	15
Diaperoecia californica	2.000	2.7058	15
Pachythyone rubra	1.333	3.6433	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	6.000	5.6537	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	20.667	9.8863	15
Bare Substrate	15.000	19.1330	15
Rock	86.500	19.7032	15
Cobble	10.167	16.6762	15
Sand	3.333	5.1467	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Cavern Point

Species	Mean	Std. Dev.	n
Green Algae	4.833	8.9376	15
Miscellaneous Brown Algae	5.000	7.6765	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	12.167	22.5766	15
Eisenia arborea All	7.167	7.1880	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	1.667	3.4932	15
Miscellaneous Red Algae	32.500	13.2288	15
Articulated Coralline Algae	0.833	2.6163	15
Encrusting Coralline Algae	66.000	14.7842	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	5.500	5.1060	15
Sponges	0.000	0.0000	15
Corynactis californica	0.167	0.6455	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	4.167	3.9716	15
Diopatra ornata	0.333	1.2910	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.500	1.4015	15
Miscellaneous Bryozoans	13.167	8.3702	15
Diaperoecia californica	1.000	3.8730	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	14.500	9.5525	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	30.667	10.7515	15
Bare Substrate	3.167	5.9362	15
Rock	93.333	10.6346	15
Cobble	4.167	4.6930	15
Sand	2.500	7.3800	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Little Scorpion

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	11.833	4.7684	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	51.333	13.4916	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	1.333	1.8581	15
Sponges	0.333	0.8797	15
Corynactis californica	1.500	2.2756	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	5.667	5.3005	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	3.667	3.6433	15
Diaperoecia californica	0.333	0.8797	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.500	1.4015	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	31.833	12.1180	15
Bare Substrate	21.333	13.8508	15
Rock	76.833	16.4606	15
Cobble	18.167	12.9376	15
Sand	5.000	5.8248	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Cruz Island - Pedro Reef

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	12.167	8.5496	15
Articulated Coralline Algae	1.000	2.0702	15
Encrusting Coralline Algae	36.000	17.7985	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.333	0.8797	15
Sponges	0.000	0.0000	15
Corynactis californica	12.500	11.0195	15
Balanophyllia elegans	0.500	1.0351	15
Astrangia lajollaensis	2.333	4.6739	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.000	0.0000	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.167	0.6455	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	40.667	15.7397	15
Bare Substrate	19.167	8.4339	15
Rock	93.167	9.9762	15
Cobble	2.333	3.5940	15
Sand	4.500	7.0837	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Keyhole

Species	Mean	Std. Dev.	n
Green Algae	0.167	0.6455	15
Miscellaneous Brown Algae	8.833	12.5309	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	2.500	2.9881	15
Eisenia arborea All	4.167	10.8836	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	1.167	3.2550	15
Miscellaneous Red Algae	13.333	11.3652	15
Articulated Coralline Algae	1.000	1.5811	15
Encrusting Coralline Algae	55.667	13.5774	15
Gelidium spp.	0.167	0.6455	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	2.500	4.0089	15
Sponges	1.833	3.0570	15
Corynactis californica	0.333	0.8797	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	1.167	1.5999	15
Diopatra ornata	1.500	2.6390	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	1.167	2.0845	15
Miscellaneous Bryozoans	8.167	10.8754	15
Diaperoecia californica	0.333	1.2910	15
Pachythyone rubra	0.333	1.2910	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	0.667	1.1443	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	14.833	6.0109	15
Bare Substrate	16.333	17.5221	15
Rock	77.500	19.8431	15
Cobble	11.833	11.8196	15
Sand	10.667	11.3179	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - East Fish Camp

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.333	0.8797	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	7.500	6.3387	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	34.333	9.1840	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	2.500	4.4320	15
Sponges	0.667	1.1443	15
Corynactis californica	17.333	13.8056	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.667	1.4840	15
Diopatra ornata	0.500	1.4015	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.000	0.0000	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	14.167	13.5510	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	5.500	4.1404	15
Bare Substrate	36.000	12.3491	15
Rock	88.667	13.9151	15
Cobble	2.667	4.2748	15
Sand	8.667	12.3876	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Black Sea Bass Reef

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	1.000	2.6390	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	1.167	4.5185	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	6.833	12.9376	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	60.833	20.7163	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	3.333	8.9476	15
Sponges	0.833	2.6163	15
Corynactis californica	1.833	3.1997	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.167	0.6455	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	6.667	10.8425	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	75.167	24.9905	15
Tunicates	3.833	9.6763	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	4.667	6.6054	15
Bare Substrate	26.000	15.8340	15
Rock	79.333	17.9649	15
Cobble	9.333	9.7498	15
Sand	11.333	10.5164	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Lighthouse

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia spp.	0.000	0.0000	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	1.833	3.0570	15
Articulated Coralline Algae	0.500	1.4015	15
Encrusting Coralline Algae	33.167	10.4140	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.333	1.2910	15
Miscellaneous Plants (ie: Diatoms)	0.500	1.0351	15
Sponges	1.167	1.5999	15
Corynactis californica	4.500	8.6706	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	1.667	2.0412	15
Diopatra ornata	1.667	2.2493	15
Phragmatopoma californica	1.167	1.8581	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	1.333	1.8581	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	1.500	2.8031	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	27.833	8.7560	15
Bare Substrate	31.167	13.7538	15
Rock	72.000	15.0949	15
Cobble	16.500	8.4937	15
Sand	11.500	10.2120	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Barbara Island - Webster's Arch

Species	Mean	Std. Dev.	n
Green Algae	6.833	6.3714	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia spp.	0.333	1.2910	15
Cystoseira spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.333	0.8797	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	10.833	7.5986	15
Articulated Coralline Algae	0.167	0.6455	15
Encrusting Coralline Algae	56.500	16.2514	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	1.000	2.2756	15
Sponges	0.000	0.0000	15
Corynactis californica	4.833	4.3780	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	2.000	2.3528	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	14.667	12.2061	15
Tunicates	0.667	1.4840	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	12.833	6.5374	15
Bare Substrate	10.500	5.9161	15
Rock	97.667	3.5940	15
Cobble	2.333	3.5940	15
Sand	0.000	0.0000	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Barbara Island - Graveyard Canyon

Species	Mean	Std. Dev.	n
Green Algae	1.000	2.0702	15
Miscellaneous Brown Algae	3.000	5.9161	15
Desmarestia spp.	17.000	29.7789	15
Cystoseira spp.	0.167	0.6455	15
Macrocystis pyrifera All	4.500	10.5729	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	3.833	6.5374	15
Articulated Coralline Algae	0.167	0.6455	15
Encrusting Coralline Algae	50.500	25.3933	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	5.333	6.0405	15
Sponges	0.333	0.8797	15
Corynactis californica	3.500	4.4118	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.167	0.6455	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	26.167	27.1876	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	4.333	5.4663	15
Bare Substrate	40.667	28.1175	15
Rock	62.167	29.8488	15
Cobble	3.500	6.3948	15
Sand	34.333	30.9300	15

2010 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Santa Barbara Island - Southeast Reef

Species	Mean	Std. Dev.	n
Green Algae	2.833	3.7639	15
Miscellaneous Brown Algae	17.000	19.7575	15
Desmarestia spp.	7.833	11.9846	15
Cystoseira spp.	4.000	8.4410	15
Macrocystis pyrifera All	33.333	21.1640	15
Eisenia arborea All	7.833	11.6445	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Sargassum horneri All	0.000	0.0000	15
Miscellaneous Red Algae	33.667	15.6943	15
Articulated Coralline Algae	10.000	7.4402	15
Encrusting Coralline Algae	49.833	20.9265	15
Gelidium spp.	0.000	0.0000	15
Gigartina spp.	0.167	0.6455	15
Miscellaneous Plants (ie: Diatoms)	0.667	1.1443	15
Sponges	2.667	3.1997	15
Corynactis californica	0.333	0.8797	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.333	0.8797	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	27.333	9.7498	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Ophiothrix spiculata	0.000	0.0000	15
Tunicates	17.500	14.2365	15
Miscellaneous Invertebrates excluding *Ophiothrix spiculata*	10.333	7.3111	15
Bare Substrate	3.833	7.3111	15
Rock	94.500	10.0534	15
Cobble	2.667	4.6739	15
Sand	2.833	6.1866	15

Appendix F. Fish Transect Data

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge				
Chromis punctipinnis Adult	7/29/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	7/29/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/29/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	7/29/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/29/2010	0.5000	1.0000	4
Sebastes mystinus Juvenile	7/29/2010	2.2500	1.7078	4
Sebastes serranoides Adult	7/29/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/29/2010	20.2500	18.5719	4
Sebastes atrovirens Adult	7/29/2010	0.2500	0.5000	4
Sebastes atrovirens Juvenile	7/29/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/29/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/29/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/29/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	7/29/2010	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	7/29/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/29/2010	0.2500	0.5000	4
Embiotoca jacksoni Juvenile	7/29/2010	0.2500	0.5000	4
Embiotoca lateralis Adult	7/29/2010	0.7500	0.9574	4
Embiotoca lateralis Juvenile	7/29/2010	1.0000	0.0000	4
Damalichthys vacca Adult	7/29/2010	1.0000	0.0000	4
Damalichthys vacca Juvenile	7/29/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/29/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/29/2010	0.0000	0.0000	4
Girella nigricans Adult	7/29/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/29/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/29/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/29/2010	0.0000	0.0000	4
San Miguel Island - Hare Rock				
Chromis punctipinnis Adult	9/14/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	9/14/2010	0.0000	0.0000	4
Oxyjulis californica Adult	9/14/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	9/14/2010	0.0000	0.0000	4
Sebastes mystinus Adult	9/14/2010	0.7500	0.9574	4
Sebastes mystinus Juvenile	9/14/2010	0.0000	0.0000	4
Sebastes serranoides Adult	9/14/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	9/14/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	9/14/2010	0.2500	0.5000	4
Sebastes atrovirens Juvenile	9/14/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	9/14/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	9/14/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	9/14/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	9/14/2010	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	9/14/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	9/14/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	9/14/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	9/14/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	9/14/2010	0.0000	0.0000	4
Damalichthys vacca Adult	9/14/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	9/14/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	9/14/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	9/14/2010	0.0000	0.0000	4
Girella nigricans Adult	9/14/2010	0.0000	0.0000	4
Girella nigricans Juvenile	9/14/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	9/14/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	9/14/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee North				
Chromis punctipinnis Adult	8/19/2010	0.7500	1.5000	4
Chromis punctipinnis Juvenile	8/19/2010	0.0000	0.0000	4
Oxyjulis californica Adult	8/19/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/19/2010	0.0000	0.0000	4
Sebastes mystinus Adult	8/19/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	8/19/2010	1.2500	1.5000	4
Sebastes serranoides Adult	8/19/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/19/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	8/19/2010	1.7500	2.0616	4
Sebastes atrovirens Juvenile	8/19/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	8/19/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/19/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	8/19/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	8/19/2010	1.0000	0.8165	4
Semicossyphus pulcher Juvenile	8/19/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/19/2010	3.0000	0.8165	4
Embiotoca jacksoni Juvenile	8/19/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	8/19/2010	0.7500	0.9574	4
Embiotoca lateralis Juvenile	8/19/2010	0.2500	0.5000	4
Damalichthys vacca Adult	8/19/2010	1.2500	1.2583	4
Damalichthys vacca Juvenile	8/19/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/19/2010	0.2500	0.5000	4
Hypsypops rubicundus Juvenile	8/19/2010	0.0000	0.0000	4
Girella nigricans Adult	8/19/2010	0.0000	0.0000	4
Girella nigricans Juvenile	8/19/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	8/19/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	8/19/2010	0.0000	0.0000	4
Santa Rosa Island - Johnson's Lee South				
Chromis punctipinnis Adult	7/1/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	7/1/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/1/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	7/1/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/1/2010	0.5000	0.5774	4
Sebastes mystinus Juvenile	7/1/2010	1.5000	0.5774	4
Sebastes serranoides Adult	7/1/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/1/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	7/1/2010	0.7500	0.9574	4
Sebastes atrovirens Juvenile	7/1/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/1/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/1/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/1/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	7/1/2010	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	7/1/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/1/2010	0.7500	0.5000	4
Embiotoca jacksoni Juvenile	7/1/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	7/1/2010	3.7500	3.5940	4
Embiotoca lateralis Juvenile	7/1/2010	0.0000	0.0000	4
Damalichthys vacca Adult	7/1/2010	1.7500	2.3629	4
Damalichthys vacca Juvenile	7/1/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/1/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/1/2010	0.0000	0.0000	4
Girella nigricans Adult	7/1/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/1/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/1/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/1/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Rosa Island - Rodes Reef				
Chromis punctipinnis Adult	6/28/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	6/28/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/28/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	6/28/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/28/2010	0.2500	0.5000	4
Sebastes mystinus Juvenile	6/28/2010	0.7500	0.9574	4
Sebastes serranoides Adult	6/28/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/28/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	6/28/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	6/28/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/28/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	6/28/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/28/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	6/28/2010	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	6/28/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/28/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	6/28/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/28/2010	0.2500	0.5000	4
Embiotoca lateralis Juvenile	6/28/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/28/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/28/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/28/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	6/28/2010	0.0000	0.0000	4
Girella nigricans Adult	6/28/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/28/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/28/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	6/28/2010	0.0000	0.0000	4
Santa Cruz Island - Gull Island South				
Chromis punctipinnis Adult	7/27/2010	0.5000	1.0000	4
Chromis punctipinnis Juvenile	7/27/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/27/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	7/27/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/27/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/27/2010	109.5000	66.4555	4
Sebastes serranoides Adult	7/27/2010	0.5000	1.0000	4
Sebastes serranoides Juvenile	7/27/2010	0.2500	0.5000	4
Sebastes atrovirens Adult	7/27/2010	0.7500	0.5000	4
Sebastes atrovirens Juvenile	7/27/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/27/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/27/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/27/2010	1.0000	0.8165	4
Semicossyphus pulcher Female	7/27/2010	2.5000	0.5774	4
Semicossyphus pulcher Juvenile	7/27/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/27/2010	0.5000	1.0000	4
Embiotoca jacksoni Juvenile	7/27/2010	0.2500	0.5000	4
Embiotoca lateralis Adult	7/27/2010	0.2500	0.5000	4
Embiotoca lateralis Juvenile	7/27/2010	0.2500	0.5000	4
Damalichthys vacca Adult	7/27/2010	0.5000	1.0000	4
Damalichthys vacca Juvenile	7/27/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/27/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/27/2010	0.0000	0.0000	4
Girella nigricans Adult	7/27/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/27/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/27/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/27/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Cruz Island - Fry's Harbor				
Chromis punctipinnis Adult	6/16/2010	26.2500	18.7861	4
Chromis punctipinnis Juvenile	6/16/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/16/2010	6.2500	2.8723	4
Oxyjulis californica Juvenile	6/16/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/16/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/16/2010	20.5000	14.4799	4
Sebastes serranoides Adult	6/16/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/16/2010	1.2500	1.5000	4
Sebastes atrovirens Adult	6/16/2010	1.0000	0.8165	4
Sebastes atrovirens Juvenile	6/16/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/16/2010	1.0000	0.8165	4
Paralabrax clathratus Juvenile	6/16/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/16/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	6/16/2010	1.5000	0.5774	4
Semicossyphus pulcher Juvenile	6/16/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/16/2010	0.5000	0.5774	4
Embiotoca jacksoni Juvenile	6/16/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/16/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/16/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/16/2010	1.0000	0.8165	4
Damalichthys vacca Juvenile	6/16/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/16/2010	0.5000	0.5774	4
Hypsypops rubicundus Juvenile	6/16/2010	0.0000	0.0000	4
Girella nigricans Adult	6/16/2010	0.2500	0.5000	4
Girella nigricans Juvenile	6/16/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/16/2010	0.2500	0.5000	4
Halichoeres semicinctus Female	6/16/2010	0.0000	0.0000	4
Santa Cruz Island - Pelican Bay				
Chromis punctipinnis Adult	9/1/2010	3.7500	4.5000	4
Chromis punctipinnis Juvenile	9/1/2010	0.0000	0.0000	4
Oxyjulis californica Adult	9/1/2010	1.7500	2.3629	4
Oxyjulis californica Juvenile	9/1/2010	0.0000	0.0000	4
Sebastes mystinus Adult	9/1/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	9/1/2010	0.0000	0.0000	4
Sebastes serranoides Adult	9/1/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	9/1/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	9/1/2010	0.2500	0.5000	4
Sebastes atrovirens Juvenile	9/1/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	9/1/2010	3.0000	1.1547	4
Paralabrax clathratus Juvenile	9/1/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	9/1/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	9/1/2010	1.0000	0.8165	4
Semicossyphus pulcher Juvenile	9/1/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	9/1/2010	2.5000	1.2910	4
Embiotoca jacksoni Juvenile	9/1/2010	1.5000	1.0000	4
Embiotoca lateralis Adult	9/1/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	9/1/2010	0.0000	0.0000	4
Damalichthys vacca Adult	9/1/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	9/1/2010	0.2500	0.5000	4
Hypsypops rubicundus Adult	9/1/2010	1.2500	1.2583	4
Hypsypops rubicundus Juvenile	9/1/2010	0.0000	0.0000	4
Girella nigricans Adult	9/1/2010	0.2500	0.5000	4
Girella nigricans Juvenile	9/1/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	9/1/2010	0.7500	1.5000	4
Halichoeres semicinctus Female	9/1/2010	0.5000	0.5774	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Cruz Island - Scorpion Anchorage				
Chromis punctipinnis Adult	7/13/2010	7.7500	5.6789	4
Chromis punctipinnis Adult	8/16/2010	3.2500	6.5000	4
Chromis punctipinnis Juvenile	7/13/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/16/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/13/2010	1.0000	0.8165	4
Oxyjulis californica Adult	8/16/2010	1.0000	0.8165	4
Oxyjulis californica Juvenile	7/13/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/16/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/13/2010	0.0000	0.0000	4
Sebastes mystinus Adult	8/16/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/13/2010	0.5000	1.0000	4
Sebastes mystinus Juvenile	8/16/2010	2.2500	2.8723	4
Sebastes serranoides Adult	7/13/2010	0.0000	0.0000	4
Sebastes serranoides Adult	8/16/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/13/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/16/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	7/13/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	8/16/2010	0.2500	0.5000	4
Sebastes atrovirens Juvenile	7/13/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/16/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/13/2010	0.2500	0.5000	4
Paralabrax clathratus Adult	8/16/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/13/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/16/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/13/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	8/16/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	7/13/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	8/16/2010	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	7/13/2010	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/16/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/13/2010	0.2500	0.5000	4
Embiotoca jacksoni Adult	8/16/2010	1.2500	0.5000	4
Embiotoca jacksoni Juvenile	7/13/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/16/2010	0.5000	1.0000	4
Embiotoca lateralis Adult	7/13/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	8/16/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	7/13/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/16/2010	0.0000	0.0000	4
Damalichthys vacca Adult	7/13/2010	0.0000	0.0000	4
Damalichthys vacca Adult	8/16/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	7/13/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/16/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/13/2010	0.5000	0.5774	4
Hypsypops rubicundus Adult	8/16/2010	1.0000	0.8165	4
Hypsypops rubicundus Juvenile	7/13/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/16/2010	0.0000	0.0000	4
Girella nigricans Adult	7/13/2010	0.0000	0.0000	4
Girella nigricans Adult	8/16/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/13/2010	0.0000	0.0000	4
Girella nigricans Juvenile	8/16/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/13/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	8/16/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/13/2010	0.2500	0.5000	4
Halichoeres semicinctus Female	8/16/2010	0.2500	0.5000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Cruz Island - Yellow Banks				
Chromis punctipinnis Adult	7/14/2010	0.5000	1.0000	4
Chromis punctipinnis Juvenile	7/14/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/14/2010	1.7500	1.2583	4
Oxyjulis californica Juvenile	7/14/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/14/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/14/2010	0.2500	0.5000	4
Sebastes serranoides Adult	7/14/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/14/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	7/14/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	7/14/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/14/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/14/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/14/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	7/14/2010	0.7500	1.5000	4
Semicossyphus pulcher Juvenile	7/14/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/14/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	7/14/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	7/14/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	7/14/2010	0.0000	0.0000	4
Damalichthys vacca Adult	7/14/2010	0.2500	0.5000	4
Damalichthys vacca Juvenile	7/14/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/14/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/14/2010	0.0000	0.0000	4
Girella nigricans Adult	7/14/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/14/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/14/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/14/2010	0.5000	0.5774	4
Anacapa Island - Admiral's Reef				
Chromis punctipinnis Adult	6/15/2010	31.2500	8.0984	4
Chromis punctipinnis Juvenile	6/15/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/15/2010	3.7500	2.8723	4
Oxyjulis californica Juvenile	6/15/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/15/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/15/2010	5.7500	5.1235	4
Sebastes serranoides Adult	6/15/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/15/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	6/15/2010	0.2500	0.5000	4
Sebastes atrovirens Juvenile	6/15/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/15/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	6/15/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/15/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	6/15/2010	3.2500	1.2583	4
Semicossyphus pulcher Juvenile	6/15/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/15/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	6/15/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/15/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/15/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/15/2010	0.2500	0.5000	4
Damalichthys vacca Juvenile	6/15/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/15/2010	0.2500	0.5000	4
Hypsypops rubicundus Juvenile	6/15/2010	0.0000	0.0000	4
Girella nigricans Adult	6/15/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/15/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/15/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	6/15/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Anacapa Island - Cathedral Cove				
Chromis punctipinnis Adult	6/14/2010	7.7500	7.5000	4
Chromis punctipinnis Juvenile	6/14/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/14/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	6/14/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/14/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/14/2010	2.7500	4.8563	4
Sebastes serranoides Adult	6/14/2010	0.2500	0.5000	4
Sebastes serranoides Juvenile	6/14/2010	0.2500	0.5000	4
Sebastes atrovirens Adult	6/14/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	6/14/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/14/2010	0.7500	0.9574	4
Paralabrax clathratus Juvenile	6/14/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/14/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	6/14/2010	2.2500	2.2174	4
Semicossyphus pulcher Juvenile	6/14/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/14/2010	0.7500	0.9574	4
Embiotoca jacksoni Juvenile	6/14/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/14/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/14/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/14/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/14/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/14/2010	0.7500	1.5000	4
Hypsypops rubicundus Juvenile	6/14/2010	0.0000	0.0000	4
Girella nigricans Adult	6/14/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/14/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/14/2010	0.2500	0.5000	4
Halichoeres semicinctus Female	6/14/2010	0.5000	0.5774	4
Anacapa Island - Landing Cove				
Chromis punctipinnis Adult	6/4/2010	17.5000	8.3467	4
Chromis punctipinnis Juvenile	6/4/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/4/2010	7.5000	10.6615	4
Oxyjulis californica Juvenile	6/4/2010	1.0000	2.0000	4
Sebastes mystinus Adult	6/4/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/4/2010	0.0000	0.0000	4
Sebastes serranoides Adult	6/4/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/4/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	6/4/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	6/4/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/4/2010	0.2500	0.5000	4
Paralabrax clathratus Juvenile	6/4/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/4/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	6/4/2010	0.7500	0.5000	4
Semicossyphus pulcher Juvenile	6/4/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/4/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	6/4/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/4/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/4/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/4/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/4/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/4/2010	0.7500	0.9574	4
Hypsypops rubicundus Juvenile	6/4/2010	0.0000	0.0000	4
Girella nigricans Adult	6/4/2010	0.7500	0.9574	4
Girella nigricans Juvenile	6/4/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/4/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	6/4/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Barbara Island - SE Sea Lion				
Chromis punctipinnis Adult	6/2/2010	0.2500	0.5000	4
Chromis punctipinnis Juvenile	6/2/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/2/2010	14.0000	26.0384	4
Oxyjulis californica Juvenile	6/2/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/2/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/2/2010	0.5000	0.5774	4
Sebastes serranoides Adult	6/2/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/2/2010	1.5000	2.3805	4
Sebastes atrovirens Adult	6/2/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	6/2/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/2/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	6/2/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/2/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	6/2/2010	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	6/2/2010	0.2500	0.5000	4
Embiotoca jacksoni Adult	6/2/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	6/2/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/2/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/2/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/2/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/2/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/2/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	6/2/2010	0.0000	0.0000	4
Girella nigricans Adult	6/2/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/2/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/2/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	6/2/2010	0.0000	0.0000	4
Santa Barbara Island - Arch Point				
Chromis punctipinnis Adult	5/17/2010	13.5000	9.4692	4
Chromis punctipinnis Juvenile	5/17/2010	0.0000	0.0000	4
Oxyjulis californica Adult	5/17/2010	6.5000	8.5829	4
Oxyjulis californica Juvenile	5/17/2010	0.0000	0.0000	4
Sebastes mystinus Adult	5/17/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	5/17/2010	0.0000	0.0000	4
Sebastes serranoides Adult	5/17/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	5/17/2010	1.7500	1.7078	4
Sebastes atrovirens Adult	5/17/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	5/17/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	5/17/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	5/17/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	5/17/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	5/17/2010	1.2500	0.5000	4
Semicossyphus pulcher Juvenile	5/17/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	5/17/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	5/17/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	5/17/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	5/17/2010	0.0000	0.0000	4
Damalichthys vacca Adult	5/17/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	5/17/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	5/17/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	5/17/2010	0.7500	0.9574	4
Girella nigricans Adult	5/17/2010	0.0000	0.0000	4
Girella nigricans Juvenile	5/17/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	5/17/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	5/17/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Barbara Island - Cat Canyon				
Chromis punctipinnis Adult	5/19/2010	8.7500	4.5735	4
Chromis punctipinnis Juvenile	5/19/2010	0.0000	0.0000	4
Oxyjulis californica Adult	5/19/2010	3.2500	2.0616	4
Oxyjulis californica Juvenile	5/19/2010	1.5000	3.0000	4
Sebastes mystinus Adult	5/19/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	5/19/2010	0.0000	0.0000	4
Sebastes serranoides Adult	5/19/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	5/19/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	5/19/2010	0.5000	0.5774	4
Sebastes atrovirens Juvenile	5/19/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	5/19/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	5/19/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	5/19/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	5/19/2010	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	5/19/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	5/19/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	5/19/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	5/19/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	5/19/2010	0.0000	0.0000	4
Damalichthys vacca Adult	5/19/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	5/19/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	5/19/2010	0.7500	0.9574	4
Hypsypops rubicundus Juvenile	5/19/2010	0.0000	0.0000	4
Girella nigricans Adult	5/19/2010	0.2500	0.5000	4
Girella nigricans Juvenile	5/19/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	5/19/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	5/19/2010	0.0000	0.0000	4
San Miguel Island - Miracle Mile				
Chromis punctipinnis Adult	7/28/2010	0.0000	0.0000	8
Chromis punctipinnis Juvenile	7/28/2010	0.0000	0.0000	8
Oxyjulis californica Adult	7/28/2010	0.0000	0.0000	8
Oxyjulis californica Juvenile	7/28/2010	0.0000	0.0000	8
Sebastes mystinus Adult	7/28/2010	0.0000	0.0000	8
Sebastes mystinus Juvenile	7/28/2010	0.2500	0.7071	8
Sebastes serranoides Adult	7/28/2010	0.0000	0.0000	8
Sebastes serranoides Juvenile	7/28/2010	0.0000	0.0000	8
Sebastes atrovirens Adult	7/28/2010	0.3750	0.5175	8
Sebastes atrovirens Juvenile	7/28/2010	0.0000	0.0000	8
Paralabrax clathratus Adult	7/28/2010	0.0000	0.0000	8
Paralabrax clathratus Juvenile	7/28/2010	0.0000	0.0000	8
Semicossyphus pulcher Male	7/28/2010	0.0000	0.0000	8
Semicossyphus pulcher Female	7/28/2010	0.1250	0.3536	8
Semicossyphus pulcher Juvenile	7/28/2010	0.0000	0.0000	8
Embiotoca jacksoni Adult	7/28/2010	0.5000	0.9258	8
Embiotoca jacksoni Juvenile	7/28/2010	0.0000	0.0000	8
Embiotoca lateralis Adult	7/28/2010	1.0000	1.6036	8
Embiotoca lateralis Juvenile	7/28/2010	0.2500	0.7071	8
Damalichthys vacca Adult	7/28/2010	0.1250	0.3536	8
Damalichthys vacca Juvenile	7/28/2010	0.0000	0.0000	8
Hypsypops rubicundus Adult	7/28/2010	0.0000	0.0000	8
Hypsypops rubicundus Juvenile	7/28/2010	0.0000	0.0000	8
Girella nigricans Adult	7/28/2010	0.0000	0.0000	8
Girella nigricans Juvenile	7/28/2010	0.0000	0.0000	8
Halichoeres semicinctus Male	7/28/2010	0.0000	0.0000	8
Halichoeres semicinctus Female	7/28/2010	0.0000	0.0000	8

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Rosa Island - Cluster Point				
Chromis punctipinnis Adult	6/30/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	6/30/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/30/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	6/30/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/30/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/30/2010	2.5000	3.0000	4
Sebastes serranoides Adult	6/30/2010	0.2500	0.5000	4
Sebastes serranoides Juvenile	6/30/2010	1.7500	2.0616	4
Sebastes atrovirens Adult	6/30/2010	0.7500	0.5000	4
Sebastes atrovirens Juvenile	6/30/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/30/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	6/30/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/30/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	6/30/2010	0.5000	1.0000	4
Semicossyphus pulcher Juvenile	6/30/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/30/2010	0.2500	0.5000	4
Embiotoca jacksoni Juvenile	6/30/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/30/2010	1.5000	1.7321	4
Embiotoca lateralis Juvenile	6/30/2010	0.2500	0.5000	4
Damalichthys vacca Adult	6/30/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/30/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/30/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	6/30/2010	0.0000	0.0000	4
Girella nigricans Adult	6/30/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/30/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/30/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	6/30/2010	0.0000	0.0000	4
Santa Rosa Island - Trancion Canyon				
Chromis punctipinnis Adult	6/29/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	6/29/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/29/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	6/29/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/29/2010	0.2500	0.5000	4
Sebastes mystinus Juvenile	6/29/2010	13.5000	4.3589	4
Sebastes serranoides Adult	6/29/2010	0.2500	0.5000	4
Sebastes serranoides Juvenile	6/29/2010	1.5000	2.3805	4
Sebastes atrovirens Adult	6/29/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	6/29/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/29/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	6/29/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/29/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	6/29/2010	0.5000	0.5774	4
Semicossyphus pulcher Juvenile	6/29/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/29/2010	1.0000	1.4142	4
Embiotoca jacksoni Juvenile	6/29/2010	0.2500	0.5000	4
Embiotoca lateralis Adult	6/29/2010	2.0000	1.6330	4
Embiotoca lateralis Juvenile	6/29/2010	1.2500	2.5000	4
Damalichthys vacca Adult	6/29/2010	0.5000	0.5774	4
Damalichthys vacca Juvenile	6/29/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/29/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	6/29/2010	0.0000	0.0000	4
Girella nigricans Adult	6/29/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/29/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/29/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	6/29/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Rosa Island - Chickasaw				
Chromis punctipinnis Adult	8/18/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/18/2010	0.0000	0.0000	4
Oxyjulis californica Adult	8/18/2010	0.7500	0.9574	4
Oxyjulis californica Juvenile	8/18/2010	0.0000	0.0000	4
Sebastes mystinus Adult	8/18/2010	0.5000	1.0000	4
Sebastes mystinus Juvenile	8/18/2010	13.2500	12.1484	4
Sebastes serranoides Adult	8/18/2010	1.0000	1.4142	4
Sebastes serranoides Juvenile	8/18/2010	1.7500	1.2583	4
Sebastes atrovirens Adult	8/18/2010	0.5000	1.0000	4
Sebastes atrovirens Juvenile	8/18/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	8/18/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/18/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	8/18/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	8/18/2010	0.5000	0.5774	4
Semicossyphus pulcher Juvenile	8/18/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/18/2010	1.5000	1.0000	4
Embiotoca jacksoni Juvenile	8/18/2010	0.5000	1.0000	4
Embiotoca lateralis Adult	8/18/2010	1.0000	2.0000	4
Embiotoca lateralis Juvenile	8/18/2010	0.5000	0.5774	4
Damalichthys vacca Adult	8/18/2010	0.2500	0.5000	4
Damalichthys vacca Juvenile	8/18/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/18/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/18/2010	0.0000	0.0000	4
Girella nigricans Adult	8/18/2010	0.0000	0.0000	4
Girella nigricans Juvenile	8/18/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	8/18/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	8/18/2010	0.0000	0.0000	4
Santa Rosa Island - South Point				
Chromis punctipinnis Adult	8/17/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/17/2010	0.0000	0.0000	4
Oxyjulis californica Adult	8/17/2010	0.5000	1.0000	4
Oxyjulis californica Juvenile	8/17/2010	0.0000	0.0000	4
Sebastes mystinus Adult	8/17/2010	0.5000	1.0000	4
Sebastes mystinus Juvenile	8/17/2010	0.7500	1.5000	4
Sebastes serranoides Adult	8/17/2010	0.5000	1.0000	4
Sebastes serranoides Juvenile	8/17/2010	1.7500	2.8723	4
Sebastes atrovirens Adult	8/17/2010	0.5000	1.0000	4
Sebastes atrovirens Juvenile	8/17/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	8/17/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/17/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	8/17/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	8/17/2010	1.0000	1.4142	4
Semicossyphus pulcher Juvenile	8/17/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/17/2010	0.5000	0.5774	4
Embiotoca jacksoni Juvenile	8/17/2010	0.5000	0.5774	4
Embiotoca lateralis Adult	8/17/2010	0.5000	0.5774	4
Embiotoca lateralis Juvenile	8/17/2010	0.0000	0.0000	4
Damalichthys vacca Adult	8/17/2010	1.0000	1.1547	4
Damalichthys vacca Juvenile	8/17/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/17/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/17/2010	0.0000	0.0000	4
Girella nigricans Adult	8/17/2010	0.0000	0.0000	4
Girella nigricans Juvenile	8/17/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	8/17/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	8/17/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Cruz Island - Devil's Peak Member				
Chromis punctipinnis Adult	6/17/2010	46.7500	17.6328	4
Chromis punctipinnis Juvenile	6/17/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/17/2010	5.7500	2.0616	4
Oxyjulis californica Juvenile	6/17/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/17/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/17/2010	6.2500	2.5000	4
Sebastes serranoides Adult	6/17/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/17/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	6/17/2010	0.2500	0.5000	4
Sebastes atrovirens Juvenile	6/17/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/17/2010	0.7500	0.5000	4
Paralabrax clathratus Juvenile	6/17/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/17/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	6/17/2010	0.7500	0.5000	4
Semicossyphus pulcher Juvenile	6/17/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/17/2010	0.7500	0.5000	4
Embiotoca jacksoni Juvenile	6/17/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/17/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/17/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/17/2010	0.5000	1.0000	4
Damalichthys vacca Juvenile	6/17/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/17/2010	1.0000	1.4142	4
Hypsypops rubicundus Juvenile	6/17/2010	0.0000	0.0000	4
Girella nigricans Adult	6/17/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/17/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/17/2010	0.2500	0.5000	4
Halichoeres semicinctus Female	6/17/2010	0.5000	0.5774	4
Santa Cruz Island - Potato Pasture				
Chromis punctipinnis Adult	9/13/2010	5.0000	2.1602	4
Chromis punctipinnis Juvenile	9/13/2010	0.0000	0.0000	4
Oxyjulis californica Adult	9/13/2010	4.2500	2.2174	4
Oxyjulis californica Juvenile	9/13/2010	0.0000	0.0000	4
Sebastes mystinus Adult	9/13/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	9/13/2010	1.0000	1.4142	4
Sebastes serranoides Adult	9/13/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	9/13/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	9/13/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	9/13/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	9/13/2010	1.0000	0.8165	4
Paralabrax clathratus Juvenile	9/13/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	9/13/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	9/13/2010	1.5000	1.2910	4
Semicossyphus pulcher Juvenile	9/13/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	9/13/2010	1.7500	2.8723	4
Embiotoca jacksoni Juvenile	9/13/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	9/13/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	9/13/2010	0.0000	0.0000	4
Damalichthys vacca Adult	9/13/2010	2.0000	2.8284	4
Damalichthys vacca Juvenile	9/13/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	9/13/2010	0.7500	0.9574	4
Hypsypops rubicundus Juvenile	9/13/2010	0.0000	0.0000	4
Girella nigricans Adult	9/13/2010	1.2500	1.5000	4
Girella nigricans Juvenile	9/13/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	9/13/2010	0.2500	0.5000	4
Halichoeres semicinctus Female	9/13/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Cruz Island - Cavern Point				
Chromis punctipinnis Adult	7/12/2010	33.0000	19.2700	4
Chromis punctipinnis Juvenile	7/12/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/12/2010	9.0000	6.6332	4
Oxyjulis californica Juvenile	7/12/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/12/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/12/2010	2.5000	1.2910	4
Sebastes serranoides Adult	7/12/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/12/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	7/12/2010	0.5000	1.0000	4
Sebastes atrovirens Juvenile	7/12/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/12/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/12/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/12/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	7/12/2010	1.0000	0.8165	4
Semicossyphus pulcher Juvenile	7/12/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/12/2010	2.2500	1.7078	4
Embiotoca jacksoni Juvenile	7/12/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	7/12/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	7/12/2010	0.0000	0.0000	4
Damalichthys vacca Adult	7/12/2010	0.7500	0.5000	4
Damalichthys vacca Juvenile	7/12/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/12/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/12/2010	0.0000	0.0000	4
Girella nigricans Adult	7/12/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/12/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/12/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/12/2010	0.0000	0.0000	4
Santa Cruz Island - Little Scorpion				
Chromis punctipinnis Adult	6/18/2010	35.3750	22.8907	8
Chromis punctipinnis Juvenile	6/18/2010	0.0000	0.0000	8
Oxyjulis californica Adult	6/18/2010	6.5000	8.8479	8
Oxyjulis californica Juvenile	6/18/2010	0.0000	0.0000	8
Sebastes mystinus Adult	6/18/2010	0.0000	0.0000	8
Sebastes mystinus Juvenile	6/18/2010	3.7500	2.6049	8
Sebastes serranoides Adult	6/18/2010	0.0000	0.0000	8
Sebastes serranoides Juvenile	6/18/2010	0.1250	0.3536	8
Sebastes atrovirens Adult	6/18/2010	0.3750	0.5175	8
Sebastes atrovirens Juvenile	6/18/2010	0.0000	0.0000	8
Paralabrax clathratus Adult	6/18/2010	0.1250	0.3536	8
Paralabrax clathratus Juvenile	6/18/2010	0.0000	0.0000	8
Semicossyphus pulcher Male	6/18/2010	0.0000	0.0000	8
Semicossyphus pulcher Female	6/18/2010	0.5000	0.5345	8
Semicossyphus pulcher Juvenile	6/18/2010	0.0000	0.0000	8
Embiotoca jacksoni Adult	6/18/2010	0.2500	0.7071	8
Embiotoca jacksoni Juvenile	6/18/2010	0.0000	0.0000	8
Embiotoca lateralis Adult	6/18/2010	0.0000	0.0000	8
Embiotoca lateralis Juvenile	6/18/2010	0.0000	0.0000	8
Damalichthys vacca Adult	6/18/2010	0.2500	0.4629	8
Damalichthys vacca Juvenile	6/18/2010	0.0000	0.0000	8
Hypsypops rubicundus Adult	6/18/2010	1.2500	1.0351	8
Hypsypops rubicundus Juvenile	6/18/2010	0.0000	0.0000	8
Girella nigricans Adult	6/18/2010	0.0000	0.0000	8
Girella nigricans Juvenile	6/18/2010	0.0000	0.0000	8
Halichoeres semicinctus Male	6/18/2010	0.1250	0.3536	8
Halichoeres semicinctus Female	6/18/2010	0.2500	0.4629	8

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Cruz Island - Pedro Reef				
Chromis punctipinnis Adult	7/13/2010	56.5000	19.8914	4
Chromis punctipinnis Juvenile	7/13/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/13/2010	9.5000	4.9329	4
Oxyjulis californica Juvenile	7/13/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/13/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/13/2010	14.7500	17.0171	4
Sebastes serranoides Adult	7/13/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/13/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	7/13/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	7/13/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/13/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/13/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/13/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	7/13/2010	1.0000	0.8165	4
Semicossyphus pulcher Juvenile	7/13/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/13/2010	0.2500	0.5000	4
Embiotoca jacksoni Juvenile	7/13/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	7/13/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	7/13/2010	0.0000	0.0000	4
Damalichthys vacca Adult	7/13/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	7/13/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/13/2010	0.2500	0.5000	4
Hypsypops rubicundus Juvenile	7/13/2010	0.0000	0.0000	4
Girella nigricans Adult	7/13/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/13/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/13/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/13/2010	0.5000	0.5774	4
Anacapa Island - Keyhole				
Chromis punctipinnis Adult	8/31/2010	0.2500	0.5000	4
Chromis punctipinnis Juvenile	8/31/2010	0.0000	0.0000	4
Oxyjulis californica Adult	8/31/2010	3.2500	0.9574	4
Oxyjulis californica Juvenile	8/31/2010	0.0000	0.0000	4
Sebastes mystinus Adult	8/31/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	8/31/2010	9.0000	4.3970	4
Sebastes serranoides Adult	8/31/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/31/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	8/31/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/31/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	8/31/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/31/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	8/31/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	8/31/2010	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	8/31/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/31/2010	1.0000	1.4142	4
Embiotoca jacksoni Juvenile	8/31/2010	0.7500	0.5000	4
Embiotoca lateralis Adult	8/31/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/31/2010	0.0000	0.0000	4
Damalichthys vacca Adult	8/31/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/31/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/31/2010	0.7500	0.9574	4
Hypsypops rubicundus Juvenile	8/31/2010	0.0000	0.0000	4
Girella nigricans Adult	8/31/2010	0.0000	0.0000	4
Girella nigricans Juvenile	8/31/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	8/31/2010	0.7500	0.9574	4
Halichoeres semicinctus Female	8/31/2010	0.2500	0.5000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Anacapa Island - East Fish Camp				
Chromis punctipinnis Adult	7/16/2010	36.0000	9.6362	8
Chromis punctipinnis Juvenile	7/16/2010	0.0000	0.0000	8
Oxyjulis californica Adult	7/16/2010	0.7500	1.1650	8
Oxyjulis californica Juvenile	7/16/2010	0.0000	0.0000	8
Sebastes mystinus Adult	7/16/2010	8.5000	10.4471	8
Sebastes mystinus Juvenile	7/16/2010	10.7500	13.8435	8
Sebastes serranoides Adult	7/16/2010	0.0000	0.0000	8
Sebastes serranoides Juvenile	7/16/2010	0.0000	0.0000	8
Sebastes atrovirens Adult	7/16/2010	0.0000	0.0000	8
Sebastes atrovirens Juvenile	7/16/2010	0.0000	0.0000	8
Paralabrax clathratus Adult	7/16/2010	0.0000	0.0000	8
Paralabrax clathratus Juvenile	7/16/2010	0.0000	0.0000	8
Semicossyphus pulcher Male	7/16/2010	0.0000	0.0000	8
Semicossyphus pulcher Female	7/16/2010	0.5000	0.7559	8
Semicossyphus pulcher Juvenile	7/16/2010	0.0000	0.0000	8
Embiotoca jacksoni Adult	7/16/2010	0.0000	0.0000	8
Embiotoca jacksoni Juvenile	7/16/2010	0.0000	0.0000	8
Embiotoca lateralis Adult	7/16/2010	0.0000	0.0000	8
Embiotoca lateralis Juvenile	7/16/2010	0.0000	0.0000	8
Damalichthys vacca Adult	7/16/2010	0.0000	0.0000	8
Damalichthys vacca Juvenile	7/16/2010	0.0000	0.0000	8
Hypsypops rubicundus Adult	7/16/2010	1.1250	0.9910	8
Hypsypops rubicundus Juvenile	7/16/2010	0.0000	0.0000	8
Girella nigricans Adult	7/16/2010	0.1250	0.3536	8
Girella nigricans Juvenile	7/16/2010	0.0000	0.0000	8
Halichoeres semicinctus Male	7/16/2010	0.1250	0.3536	8
Halichoeres semicinctus Female	7/16/2010	0.0000	0.0000	8
Anacapa Island - Black Sea Bass Reef				
Chromis punctipinnis Adult	7/15/2010	38.5000	29.9611	4
Chromis punctipinnis Juvenile	7/15/2010	0.0000	0.0000	4
Oxyjulis californica Adult	7/15/2010	7.0000	5.4772	4
Oxyjulis californica Juvenile	7/15/2010	0.0000	0.0000	4
Sebastes mystinus Adult	7/15/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/15/2010	10.0000	8.0416	4
Sebastes serranoides Adult	7/15/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/15/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	7/15/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	7/15/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	7/15/2010	2.5000	1.9149	4
Paralabrax clathratus Juvenile	7/15/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	7/15/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	7/15/2010	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	7/15/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/15/2010	0.7500	0.9574	4
Embiotoca jacksoni Juvenile	7/15/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	7/15/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	7/15/2010	0.0000	0.0000	4
Damalichthys vacca Adult	7/15/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	7/15/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/15/2010	0.5000	1.0000	4
Hypsypops rubicundus Juvenile	7/15/2010	0.0000	0.0000	4
Girella nigricans Adult	7/15/2010	0.0000	0.0000	4
Girella nigricans Juvenile	7/15/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	7/15/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	7/15/2010	0.2500	0.5000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Anacapa Island - Lighthouse				
Chromis punctipinnis Adult	5/20/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	5/20/2010	0.0000	0.0000	4
Oxyjulis californica Adult	5/20/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	5/20/2010	0.0000	0.0000	4
Sebastes mystinus Adult	5/20/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	5/20/2010	0.0000	0.0000	4
Sebastes serranoides Adult	5/20/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	5/20/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	5/20/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	5/20/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	5/20/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	5/20/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	5/20/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	5/20/2010	1.2500	1.2583	4
Semicossyphus pulcher Juvenile	5/20/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	5/20/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	5/20/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	5/20/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	5/20/2010	0.0000	0.0000	4
Damalichthys vacca Adult	5/20/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	5/20/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	5/20/2010	1.2500	0.9574	4
Hypsypops rubicundus Juvenile	5/20/2010	0.0000	0.0000	4
Girella nigricans Adult	5/20/2010	0.0000	0.0000	4
Girella nigricans Juvenile	5/20/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	5/20/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	5/20/2010	0.0000	0.0000	4
Santa Barbara Island - Webster's Arch				
Chromis punctipinnis Adult	5/18/2010	26.7500	20.4022	4
Chromis punctipinnis Juvenile	5/18/2010	0.0000	0.0000	4
Oxyjulis californica Adult	5/18/2010	0.0000	0.0000	4
Oxyjulis californica Juvenile	5/18/2010	0.0000	0.0000	4
Sebastes mystinus Adult	5/18/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	5/18/2010	0.0000	0.0000	4
Sebastes serranoides Adult	5/18/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	5/18/2010	0.0000	0.0000	4
Sebastes atrovirens Adult	5/18/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	5/18/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	5/18/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	5/18/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	5/18/2010	0.2500	0.5000	4
Semicossyphus pulcher Female	5/18/2010	1.5000	1.0000	4
Semicossyphus pulcher Juvenile	5/18/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	5/18/2010	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	5/18/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	5/18/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	5/18/2010	0.0000	0.0000	4
Damalichthys vacca Adult	5/18/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	5/18/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	5/18/2010	0.5000	0.5774	4
Hypsypops rubicundus Juvenile	5/18/2010	0.0000	0.0000	4
Girella nigricans Adult	5/18/2010	0.0000	0.0000	4
Girella nigricans Juvenile	5/18/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	5/18/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	5/18/2010	0.0000	0.0000	4

2010 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

	Date	Mean	Std. Dev.	n
Santa Barbara Island - Graveyard Canyon				
Chromis punctipinnis Adult	6/1/2010	0.0000	0.0000	4
Chromis punctipinnis Juvenile	6/1/2010	0.0000	0.0000	4
Oxyjulis californica Adult	6/1/2010	61.5000	34.7707	4
Oxyjulis californica Juvenile	6/1/2010	0.0000	0.0000	4
Sebastes mystinus Adult	6/1/2010	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/1/2010	0.0000	0.0000	4
Sebastes serranoides Adult	6/1/2010	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/1/2010	1.0000	1.1547	4
Sebastes atrovirens Adult	6/1/2010	0.0000	0.0000	4
Sebastes atrovirens Juvenile	6/1/2010	0.0000	0.0000	4
Paralabrax clathratus Adult	6/1/2010	0.0000	0.0000	4
Paralabrax clathratus Juvenile	6/1/2010	0.0000	0.0000	4
Semicossyphus pulcher Male	6/1/2010	0.0000	0.0000	4
Semicossyphus pulcher Female	6/1/2010	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	6/1/2010	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/1/2010	0.2500	0.5000	4
Embiotoca jacksoni Juvenile	6/1/2010	0.0000	0.0000	4
Embiotoca lateralis Adult	6/1/2010	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/1/2010	0.0000	0.0000	4
Damalichthys vacca Adult	6/1/2010	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/1/2010	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/1/2010	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	6/1/2010	0.0000	0.0000	4
Girella nigricans Adult	6/1/2010	0.0000	0.0000	4
Girella nigricans Juvenile	6/1/2010	0.0000	0.0000	4
Halichoeres semicinctus Male	6/1/2010	0.0000	0.0000	4
Halichoeres semicinctus Female	6/1/2010	0.0000	0.0000	4
Santa Barbara Island - Southeast Reef				
Chromis punctipinnis Adult	6/2/2010	100.5000	51.8707	8
Chromis punctipinnis Juvenile	6/2/2010	0.0000	0.0000	8
Oxyjulis californica Adult	6/2/2010	9.6250	5.9746	8
Oxyjulis californica Juvenile	6/2/2010	0.0000	0.0000	8
Sebastes mystinus Adult	6/2/2010	0.0000	0.0000	8
Sebastes mystinus Juvenile	6/2/2010	0.0000	0.0000	8
Sebastes serranoides Adult	6/2/2010	0.1250	0.3536	8
Sebastes serranoides Juvenile	6/2/2010	0.0000	0.0000	8
Sebastes atrovirens Adult	6/2/2010	0.0000	0.0000	8
Sebastes atrovirens Juvenile	6/2/2010	0.0000	0.0000	8
Paralabrax clathratus Adult	6/2/2010	0.0000	0.0000	8
Paralabrax clathratus Juvenile	6/2/2010	0.0000	0.0000	8
Semicossyphus pulcher Male	6/2/2010	0.2500	0.4629	8
Semicossyphus pulcher Female	6/2/2010	2.5000	1.1952	8
Semicossyphus pulcher Juvenile	6/2/2010	0.0000	0.0000	8
Embiotoca jacksoni Adult	6/2/2010	0.7500	0.7071	8
Embiotoca jacksoni Juvenile	6/2/2010	0.0000	0.0000	8
Embiotoca lateralis Adult	6/2/2010	0.0000	0.0000	8
Embiotoca lateralis Juvenile	6/2/2010	0.0000	0.0000	8
Damalichthys vacca Adult	6/2/2010	0.0000	0.0000	8
Damalichthys vacca Juvenile	6/2/2010	0.0000	0.0000	8
Hypsypops rubicundus Adult	6/2/2010	2.5000	1.6036	8
Hypsypops rubicundus Juvenile	6/2/2010	0.0000	0.0000	8
Girella nigricans Adult	6/2/2010	0.0000	0.0000	8
Girella nigricans Juvenile	6/2/2010	0.0000	0.0000	8
Halichoeres semicinctus Male	6/2/2010	0.0000	0.0000	8
Halichoeres semicinctus Female	6/2/2010	0.0000	0.0000	8

Appendix G. Roving Diver Fish Count

2010 ROVING DIVER FISH COUNT

Island	Site Name	Date	Number of Observers	Number of Spp. Observed
San Miguel	Wyckoff Ledge	7/29/2010	4	28
San Miguel	Hare Rock	9/14/2010	4	23
Santa Rosa	Johnson's Lee North	8/19/2010	5	34
Santa Rosa	Johnson's Lee South	7/1/2010	4	29
Santa Rosa	Rodes Reef	6/28/2010	5	24
Santa Cruz	Gull Island South	7/27/2010	6	29
Santa Cruz	Fry's Harbor	6/16/2010	4	32
Santa Cruz	Pelican Bay	9/1/2010	6	28
Santa Cruz	Scorpion Anchorage	7/13/2010	6	25
Santa Cruz	Scorpion Anchorage	8/16/2010	6	27
Santa Cruz	Yellow Banks	7/14/2010	3	27
Anacapa	Admiral's Reef	6/15/2010	5	24
Anacapa	Cathedral Cove	6/14/2010	6	26
Anacapa	Landing Cove	6/4/2010	6	34
Santa Barbara	SE Sea Lion Rookery	6/2/2010	6	20
Santa Barbara	Arch Point	5/17/2010	6	22
Santa Barbara	Cat Canyon	5/19/2010	5	21
San Miguel	Miracle Mile	7/28/2010	5	22
Santa Rosa	Cluster Point	6/30/2010	4	28
Santa Rosa	Trancion Canyon	6/29/2010	4	25
Santa Rosa	Chickasaw	8/18/2010	6	27
Santa Rosa	South Point	8/17/2010	6	24
Santa Cruz	Devil's Peak Member	6/17/2010	4	28
Santa Cruz	Potato Pasture	9/13/2010	5	25
Santa Cruz	Cavern Point	7/12/2010	4	35
Santa Cruz	Little Scorpion	6/18/2010	4	26
Santa Cruz	Pedro Reef	7/13/2010	5	23
Anacapa	Keyhole	8/31/2010	6	25
Anacapa	East Fish Camp	7/16/2010	6	28
Anacapa	Black Sea Bass Reef	7/15/2010	4	26
Anacapa	Lighthouse	5/20/2010	7	23
Santa Barbara	Webster's Arch	5/18/2010	4	22
Santa Barbara	Graveyard Canyon	6/1/2010	5	23
Santa Barbara	Southeast Reef	6/2/2010	4	23

2010 ROVING DIVER FISH COUNT
San Miguel Island - Wyckoff Ledge

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow/gopher rockfish,	7/29/2010	4	1	9.00		1.00		1.00	
black surfperch, adult	7/29/2010	4	4	9.00	1.41	0.75	0.96	1.50	2.38
black surfperch, all	7/29/2010	4	4	9.50	0.71	1.00	1.15	2.25	2.63
black surfperch, juvenile	7/29/2010	4	4	9.00		0.50	1.00	0.75	1.50
blackeye goby	7/29/2010	4	4	7.50	1.29	1.50	0.58	2.00	1.15
blacksmith, adult	7/29/2010	4	4			0.00	0.00	0.00	0.00
blacksmith, all	7/29/2010	4	4			0.00	0.00	0.00	0.00
blacksmith, juvenile	7/29/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	7/29/2010	4	4	8.33	0.58	1.25	0.96	2.25	2.22
blue rockfish, all	7/29/2010	4	4	9.50	0.58	3.25	0.50	67.00	46.57
blue rockfish, juvenile	7/29/2010	4	4	9.50	0.58	3.25	0.50	64.75	44.92
blue-banded goby	7/29/2010	4	4			0.00	0.00	0.00	0.00
bocaccio, juvenile	7/29/2010	4	1	10.00		2.00		3.00	
California sheephead, female	7/29/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, juvenile	7/29/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	7/29/2010	4	4	7.00		0.25	0.50	0.25	0.50
copper rockfish	7/29/2010	4	2	9.00	1.41	2.00	0.00	2.00	0.00
copper rockfish, juvenile	7/29/2010	4	1	10.00		2.00		2.00	
garibaldi, adult	7/29/2010	4	4			0.00	0.00	0.00	0.00
garibaldi, juvenile	7/29/2010	4	4			0.00	0.00	0.00	0.00
gopher rockfish	7/29/2010	4	1	8.00		1.00		1.00	
island kelpfish	7/29/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, adult	7/29/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	7/29/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, juvenile	7/29/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/29/2010	4	4	9.00	0.00	1.50	1.00	2.75	2.22
kelp rockfish, all	7/29/2010	4	4	9.33	0.58	1.50	1.00	3.00	2.16
kelp rockfish, juvenile	7/29/2010	4	4	10.00		0.25	0.50	0.25	0.50
kelp surfperch	7/29/2010	4	2	10.00	0.00	1.50	0.71	1.50	0.71
kelp/gopher/copper rockfish,	7/29/2010	4	4	9.50	0.58	2.00	0.82	11.75	19.52
kelpfish spp.	7/29/2010	4	1	8.00		1.00		1.00	
lingcod	7/29/2010	4	1	6.00		1.00		1.00	
olive rockfish, adult	7/29/2010	4	4			0.00	0.00	0.00	0.00
olive rockfish, all	7/29/2010	4	4	9.75	0.50	3.75	0.50	145.75	84.92
olive/yellowtail rockfish, juvenile	7/29/2010	4	4	9.75	0.50	3.75	0.50	145.75	84.92
opaleye, adult	7/29/2010	4	4			0.00	0.00	0.00	0.00
painted greenling	7/29/2010	4	4	9.50	0.58	2.00	0.00	6.25	1.50
pile surfperch, adult	7/29/2010	4	4	6.00		0.50	1.00	0.75	1.50
pile surfperch, all	7/29/2010	4	4	6.00		0.50	1.00	0.75	1.50
pile surfperch, juvenile	7/29/2010	4	4			0.00	0.00	0.00	0.00
rainbow surfperch	7/29/2010	4	3	8.67	0.58	2.00	0.00	2.67	0.58
rock wrasse, female	7/29/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, juvenile	7/29/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	7/29/2010	4	4			0.00	0.00	0.00	0.00
rockfish spp., juvenile	7/29/2010	4	2	9.00	0.00	2.00	0.00	7.00	2.83
senorita, adult	7/29/2010	4	4	7.67	1.15	2.00	1.41	16.50	15.78
senorita, all	7/29/2010	4	4	7.67	1.15	2.00	1.41	17.25	15.17
senorita, juvenile	7/29/2010	4	4			0.00	0.00	0.00	0.00
sharpnose surfperch	7/29/2010	4	1	9.00		2.00		2.00	
snubnose sculpin	7/29/2010	4	1	8.00		2.00		3.00	
speckled sanddab	7/29/2010	4	1	8.00		3.00		12.00	
striped surfperch, adult	7/29/2010	4	4	9.00	1.41	2.00	0.00	5.50	3.11
striped surfperch, all	7/29/2010	4	4	9.00	1.41	2.50	0.58	9.00	5.29
striped surfperch, juvenile	7/29/2010	4	4	9.00	1.00	1.50	1.00	3.50	2.38

2010 ROVING DIVER FISH COUNT

surfperch spp., juvenile	7/29/2010	4	1	8.00		3.00		14.00	
treefish, adult	7/29/2010	4	4	7.00	2.65	1.00	0.82	1.00	0.82
treefish, juvenile	7/29/2010	4	4	6.00		0.25	0.50	0.25	0.50
tubesnout	7/29/2010	4	1	10.00		2.00		2.00	
vermillion rockfish	7/29/2010	4	1	5.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
San Miguel Island - Hare Rock

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	9/14/2010	4	4	8.50	2.12	1.25	1.50	7.00	12.70
black surfperch, all	9/14/2010	4	4	8.50	2.12	1.25	1.50	7.00	12.70
black surfperch, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
blackeye goby	9/14/2010	4	4	10.00	0.00	4.00	0.00	157.50	41.93
blacksmith, adult	9/14/2010	4	4	8.00		0.50	1.00	0.50	1.00
blacksmith, all	9/14/2010	4	4	8.00		0.50	1.00	0.50	1.00
blacksmith, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	9/14/2010	4	4	9.75	0.50	2.75	0.50	16.25	10.01
blue rockfish, all	9/14/2010	4	4	9.75	0.50	2.75	0.50	22.00	14.94
blue rockfish, juvenile	9/14/2010	4	4	8.33	2.89	1.50	1.29	5.75	6.55
blue-banded goby	9/14/2010	4	4			0.00	0.00	0.00	0.00
cabezon	9/14/2010	4	4	7.50	1.73	1.00	0.00	1.00	0.00
California sheephead, female	9/14/2010	4	4	10.00	0.00	0.50	0.58	0.50	0.58
California sheephead, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	9/14/2010	4	4	10.00		0.25	0.50	0.25	0.50
copper rockfish	9/14/2010	4	3	7.67	2.52	2.00	0.00	5.00	4.36
copper rockfish, juvenile	9/14/2010	4	1	10.00		1.00		1.00	
coralline sculpin	9/14/2010	4	2	7.50	3.54	2.00	0.00	5.00	1.41
fringehead spp.	9/14/2010	4	1	10.00		1.00		1.00	
garibaldi, adult	9/14/2010	4	4			0.00	0.00	0.00	0.00
garibaldi, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
gopher rockfish	9/14/2010	4	2	7.00	2.83	1.00	0.00	1.00	0.00
island kelpfish	9/14/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, adult	9/14/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	9/14/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	9/14/2010	4	4	9.75	0.50	2.25	0.50	9.50	1.73
kelp rockfish, all	9/14/2010	4	4	9.75	0.50	2.25	0.50	9.50	1.73
kelp rockfish, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	9/14/2010	4	4	9.25	0.96	2.25	0.50	8.50	3.00
lingcod	9/14/2010	4	4	9.50	0.58	2.00	0.00	3.50	1.00
northern anchovy	9/14/2010	4	1	6.00		4.00		320.00	
olive rockfish, adult	9/14/2010	4	4	8.33	2.08	1.50	1.00	2.00	1.41
olive rockfish, all	9/14/2010	4	4	9.67	0.58	1.75	1.26	4.50	5.80
olive/yellowtail rockfish, juvenile	9/14/2010	4	4	10.00		0.50	1.00	2.50	5.00
opaleye, adult	9/14/2010	4	4			0.00	0.00	0.00	0.00
painted greenling	9/14/2010	4	4	9.75	0.50	2.75	0.50	18.75	8.26
pile surfperch, adult	9/14/2010	4	4			0.00	0.00	0.00	0.00
pile surfperch, all	9/14/2010	4	4			0.00	0.00	0.00	0.00
pile surfperch, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, female	9/14/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	9/14/2010	4	4			0.00	0.00	0.00	0.00
rockfish spp., juvenile	9/14/2010	4	1	10.00		2.00		3.00	
senorita, adult	9/14/2010	4	4			0.00	0.00	0.00	0.00
senorita, all	9/14/2010	4	4			0.00	0.00	0.00	0.00
senorita, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
snubnose sculpin	9/14/2010	4	3	8.33	1.53	2.00	0.00	4.67	2.89
striped surfperch, adult	9/14/2010	4	4	9.00	1.41	2.25	0.50	6.50	4.51
striped surfperch, all	9/14/2010	4	4	9.00	1.41	2.25	0.50	7.00	4.08
striped surfperch, juvenile	9/14/2010	4	4	10.00		0.50	1.00	0.50	1.00
treefish, adult	9/14/2010	4	4	9.33	0.58	1.50	1.00	3.00	2.94
treefish, juvenile	9/14/2010	4	4			0.00	0.00	0.00	0.00
tubesnout	9/14/2010	4	1	7.00		3.00		31.00	
vermillion rockfish, juvenile	9/14/2010	4	3	9.33	1.15	2.33	0.58	6.00	5.20

2010 ROVING DIVER FISH COUNT
Santa Rosa Island - Johnson's Lee North

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
bat ray	8/19/2010	5	2	7.50	3.54	1.00	0.00	1.00	0.00
black and yellow/gopher rockfish,	8/19/2010	5	4	9.00	1.41	2.00	0.00	4.75	2.99
black surfperch, adult	8/19/2010	5	5	10.00	0.00	3.00	0.00	31.00	8.80
black surfperch, all	8/19/2010	5	5	10.00	0.00	3.00	0.00	46.20	14.86
black surfperch, juvenile	8/19/2010	5	5	10.00	0.00	2.40	0.55	15.20	9.52
blackeye goby	8/19/2010	5	5	8.60	1.52	2.40	0.55	9.20	4.66
blacksmith, adult	8/19/2010	5	5	8.40	2.30	2.40	0.55	12.60	10.76
blacksmith, all	8/19/2010	5	5	8.40	2.30	2.40	0.55	12.60	10.76
blacksmith, juvenile	8/19/2010	5	5			0.00	0.00	0.00	0.00
blue rockfish, adult	8/19/2010	5	5			0.00	0.00	0.00	0.00
blue rockfish, all	8/19/2010	5	5	10.00	0.00	3.40	0.55	90.80	19.33
blue rockfish, juvenile	8/19/2010	5	5	10.00	0.00	3.40	0.55	90.80	19.33
blue-banded goby	8/19/2010	5	5			0.00	0.00	0.00	0.00
bocaccio, juvenile	8/19/2010	5	1	10.00		4.00		120.00	
California sheephead, female	8/19/2010	5	5	8.60	1.14	2.00	0.00	7.80	1.30
California sheephead, juvenile	8/19/2010	5	5			0.00	0.00	0.00	0.00
California sheephead, male	8/19/2010	5	5			0.00	0.00	0.00	0.00
canary rockfish, juvenile	8/19/2010	5	1	8.00		1.00		1.00	
c-o turbot	8/19/2010	5	1	8.00		1.00		1.00	
copper rockfish, juvenile	8/19/2010	5	1	10.00		1.00		1.00	
garibaldi, adult	8/19/2010	5	5	8.80	1.10	2.00	0.00	5.20	1.79
garibaldi, juvenile	8/19/2010	5	5			0.00	0.00	0.00	0.00
giant kelpfish	8/19/2010	5	1	8.00		1.00		1.00	
gopher rockfish	8/19/2010	5	1	7.00		2.00		3.00	
island kelpfish	8/19/2010	5	5			0.00	0.00	0.00	0.00
jack mackerel	8/19/2010	5	1	10.00		1.00		1.00	
kelp bass, adult	8/19/2010	5	5	8.50	2.12	0.60	0.89	0.80	1.30
kelp bass, calico bass, all	8/19/2010	5	5	8.50	2.12	0.60	0.89	0.80	1.30
kelp bass, juvenile	8/19/2010	5	5			0.00	0.00	0.00	0.00
kelp rockfish, adult	8/19/2010	5	5	9.80	0.45	3.00	0.00	37.60	9.07
kelp rockfish, all	8/19/2010	5	5	9.80	0.45	3.00	0.00	39.00	10.32
kelp rockfish, juvenile	8/19/2010	5	5	9.33	1.15	1.20	1.10	1.40	1.34
kelp surfperch	8/19/2010	5	3	10.00	0.00	2.33	0.58	11.67	13.28
kelp/gopher/copper rockfish,	8/19/2010	5	2	9.00	0.00	1.50	0.71	3.50	3.54
kelpfish spp.	8/19/2010	5	1	5.00		1.00		1.00	
lavender sculpin	8/19/2010	5	2	7.50	3.54	1.00	0.00	1.00	0.00
lingcod	8/19/2010	5	3	8.67	1.53	1.33	0.58	1.33	0.58
olive rockfish, adult	8/19/2010	5	5	6.80	1.48	1.60	0.55	2.40	1.34
olive rockfish, all	8/19/2010	5	5	9.00	1.00	2.80	0.84	32.80	50.61
olive/yellowtail rockfish, juvenile	8/19/2010	5	5	9.00	1.00	2.60	0.89	30.40	50.22
opaleye, adult	8/19/2010	5	5	8.20	2.05	1.80	0.45	4.40	3.36
painted greenling	8/19/2010	5	5	10.00	0.00	3.00	0.00	40.60	13.59
pile surfperch, adult	8/19/2010	5	5	9.20	1.30	3.00	0.00	18.20	4.60
pile surfperch, all	8/19/2010	5	5	9.20	1.30	3.00	0.00	19.80	5.54
pile surfperch, juvenile	8/19/2010	5	5	9.00	2.00	1.40	0.89	1.60	1.14
rainbow surfperch	8/19/2010	5	5	9.80	0.45	2.40	0.55	11.40	3.51
rock wrasse, female	8/19/2010	5	5	10.00		0.20	0.45	0.20	0.45
rock wrasse, juvenile	8/19/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	8/19/2010	5	5	8.00	1.41	0.60	0.89	0.60	0.89
rubberlip surfperch	8/19/2010	5	3	8.33	1.53	1.67	0.58	2.67	1.53
senorita, adult	8/19/2010	5	5	9.80	0.45	2.40	0.55	9.20	4.21
senorita, all	8/19/2010	5	5	9.80	0.45	2.40	0.55	9.20	4.21
senorita, juvenile	8/19/2010	5	5			0.00	0.00	0.00	0.00
snubnose sculpin	8/19/2010	5	3	7.00	2.00	1.33	0.58	3.33	4.04

2010 ROVING DIVER FISH COUNT

striped surfperch, adult	8/19/2010	5	5	10.00	0.00	3.00	0.00	25.40	4.83
striped surfperch, all	8/19/2010	5	5	10.00	0.00	3.00	0.00	37.40	5.27
striped surfperch, juvenile	8/19/2010	5	5	9.80	0.45	2.60	0.55	12.00	4.90
treefish, adult	8/19/2010	5	5	7.80	1.48	1.80	0.45	2.80	1.92
treefish, juvenile	8/19/2010	5	5	8.80	1.30	2.00	0.00	6.00	2.55

2010 ROVING DIVER FISH COUNT
Santa Rosa Island - Johnson's Lee South

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	7/1/2010	4	4	10.00	0.00	2.00	0.00	6.33	1.53
black surfperch, adult	7/1/2010	4	3	10.00	0.00	2.33	0.58	10.00	3.61
black surfperch, all	7/1/2010	4	4	10.00	0.00	1.75	1.26	11.33	4.16
black surfperch, juvenile	7/1/2010	4	3	7.00	1.00	1.33	0.58	1.33	0.58
blackeye goby	7/1/2010	4	4	10.00	0.00	2.75	0.50	24.00	14.53
blacksmith, adult	7/1/2010	4	3	8.00	1.00	2.00	0.00	4.33	2.08
blacksmith, all	7/1/2010	4	4	7.75	0.96	2.00	0.00	4.33	2.08
blacksmith, juvenile	7/1/2010	4	3			0.00	0.00	0.00	0.00
blue rockfish, adult	7/1/2010	4	3	10.00	0.00	3.00	0.00	65.67	22.23
blue rockfish, all	7/1/2010	4	4	10.00	0.00	4.00	0.00	569.67	209.94
blue rockfish, juvenile	7/1/2010	4	3	10.00	0.00	4.00	0.00	504.00	187.83
blue-banded goby	7/1/2010	4	4			0.00	0.00	0.00	0.00
bocaccio, juvenile	7/1/2010	4	1	6.00		2.00		10.00	
Cabezon	7/1/2010	4	1	8.00		2.00		2.00	
California sheephead, female	7/1/2010	4	4	9.75	0.50	2.00	0.00	6.33	2.52
California sheephead, juvenile	7/1/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	7/1/2010	4	4	9.25	1.50	1.75	0.50	2.67	1.53
copper rockfish	7/1/2010	4	4	9.00	0.82	1.25	0.50	1.33	0.58
copper rockfish, juvenile	7/1/2010	4	2	8.50	0.71	2.00	0.00	6.50	2.12
coralline sculpin	7/1/2010	4	2	5.50	0.71	1.00	0.00	1.00	
garibaldi, adult	7/1/2010	4	4			0.00	0.00	0.00	0.00
garibaldi, juvenile	7/1/2010	4	4			0.00	0.00	0.00	0.00
gopher rockfish	7/1/2010	4	2	7.00	0.00	1.00	0.00	1.00	
halfbanded rockfish, juvenile	7/1/2010	4	2	7.00	1.41	2.50	0.71	11.00	8.49
island kelpfish	7/1/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, adult	7/1/2010	4	3	8.00		0.33	0.58	0.33	0.58
kelp bass, calico bass, all	7/1/2010	4	4	8.00		0.25	0.50	0.33	0.58
kelp bass, juvenile	7/1/2010	4	3			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/1/2010	4	3	10.00	0.00	2.67	0.58	22.00	11.27
kelp rockfish, all	7/1/2010	4	4	10.00	0.00	3.00	0.00	23.67	8.39
kelp rockfish, juvenile	7/1/2010	4	3	9.00		0.67	1.15	1.67	2.89
kelp/gopher/copper rockfish,	7/1/2010	4	4	8.25	1.26	2.75	0.50	15.00	7.94
lingcod	7/1/2010	4	4	7.75	1.50	1.25	0.50	1.00	0.00
ocean whitefish	7/1/2010	4	2	6.50	0.71	1.50	0.71	1.50	0.71
olive rockfish, adult	7/1/2010	4	3	10.00	0.00	2.00	0.00	4.67	0.58
olive rockfish, all	7/1/2010	4	4	10.00	0.00	3.50	0.58	152.67	87.09
olive/yellowtail rockfish, juvenile	7/1/2010	4	3	10.00	0.00	3.67	0.58	148.00	86.53
opaleye, adult	7/1/2010	4	4	7.00		0.25	0.50	0.33	0.58
painted greenling	7/1/2010	4	4	10.00	0.00	3.00	0.00	24.00	12.12
pile surfperch, adult	7/1/2010	4	3	10.00	0.00	3.00	0.00	33.00	10.44
pile surfperch, all	7/1/2010	4	4	10.00	0.00	3.00	0.00	34.00	10.58
pile surfperch, juvenile	7/1/2010	4	3	8.00	1.41	1.00	1.00	1.00	1.00
rock wrasse, female	7/1/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, juvenile	7/1/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	7/1/2010	4	4			0.00	0.00	0.00	0.00
rockfish spp., juvenile	7/1/2010	4	4	7.25	0.96	1.50	0.58	5.33	3.79
rubberlip surfperch	7/1/2010	4	3	9.00	1.73	2.67	0.58	19.00	15.72
senorita, adult	7/1/2010	4	3	7.67	2.52	1.67	0.58	2.33	1.15
senorita, all	7/1/2010	4	4	8.00	2.16	2.25	0.50	6.33	4.93
senorita, juvenile	7/1/2010	4	3	6.50	2.12	1.33	1.53	4.00	6.08
striped surfperch, adult	7/1/2010	4	3	10.00	0.00	3.00	0.00	41.00	13.11
striped surfperch, all	7/1/2010	4	4	10.00	0.00	3.00	0.00	43.00	12.00
striped surfperch, juvenile	7/1/2010	4	3	9.00	0.00	1.33	1.15	2.00	2.00
stripetail rockfish, juvenile	7/1/2010	4	2	7.00	1.41	2.00	0.00	3.00	0.00

2010 ROVING DIVER FISH COUNT

swell shark	7/1/2010	4	1	5.00		1.00		1.00	
treefish, adult	7/1/2010	4	4	10.00	0.00	0.75	0.50	0.67	0.58
treefish, juvenile	7/1/2010	4	4	7.00	0.82	1.50	0.58	1.67	0.58

2010 ROVING DIVER FISH COUNT
Santa Rosa Island - Rodes Reef

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/28/2010	5	2	8.00	2.83	1.50	0.71	1.50	0.71
black rockfish	6/28/2010	5	1	6.00		1.00		1.00	
black surfperch, adult	6/28/2010	5	4	9.75	0.50	1.75	0.50	2.00	0.82
black surfperch, all	6/28/2010	5	5	9.75	0.50	1.40	0.89	2.50	1.73
black surfperch, juvenile	6/28/2010	5	4	10.00		0.50	1.00	0.50	1.00
blackeye goby	6/28/2010	5	5	8.20	1.79	1.80	0.45	2.50	1.29
blacksmith, adult	6/28/2010	5	4	7.00	1.41	0.75	0.96	1.00	1.41
blacksmith, all	6/28/2010	5	5	7.00	1.41	0.60	0.89	1.00	1.41
blacksmith, juvenile	6/28/2010	5	4			0.00	0.00	0.00	0.00
blue rockfish, adult	6/28/2010	5	4	10.00	0.00	2.00	0.00	3.25	1.89
blue rockfish, all	6/28/2010	5	5	10.00	0.00	3.20	0.45	35.75	5.12
blue rockfish, juvenile	6/28/2010	5	4	10.00	0.00	3.00	0.00	32.50	3.42
blue-banded goby	6/28/2010	5	5			0.00	0.00	0.00	0.00
cabezon, juvenile	6/28/2010	5	1	6.00		1.00		1.00	
California sheephead, female	6/28/2010	5	5	10.00	0.00	0.80	1.10	1.00	1.15
California sheephead, juvenile	6/28/2010	5	5			0.00	0.00	0.00	0.00
California sheephead, male	6/28/2010	5	5	9.80	0.45	1.80	0.45	1.75	0.50
copper rockfish	6/28/2010	5	4	10.00	0.00	1.75	0.50	2.67	0.58
coralline sculpin	6/28/2010	5	3	9.00	1.00	1.67	0.58	1.50	0.71
garibaldi, adult	6/28/2010	5	5			0.00	0.00	0.00	0.00
garibaldi, juvenile	6/28/2010	5	5			0.00	0.00	0.00	0.00
island kelpfish	6/28/2010	5	5			0.00	0.00	0.00	0.00
kelp bass, adult	6/28/2010	5	4	9.50	0.71	1.00	1.15	1.00	1.15
kelp bass, calico bass, all	6/28/2010	5	5	9.33	0.58	1.00	1.00	1.00	1.15
kelp bass, juvenile	6/28/2010	5	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/28/2010	5	4	10.00	0.00	2.50	0.58	8.25	3.86
kelp rockfish, all	6/28/2010	5	5	10.00	0.00	2.00	1.22	8.25	3.86
kelp rockfish, juvenile	6/28/2010	5	4			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	6/28/2010	5	4	7.25	1.26	1.50	0.58	2.33	1.53
ocean whitefish	6/28/2010	5	1	8.00		1.00		1.00	
olive rockfish, adult	6/28/2010	5	4	8.00	1.00	1.00	0.82	1.00	0.82
olive rockfish, all	6/28/2010	5	5	8.00	1.00	1.40	0.55	1.75	0.96
olive/yellowtail rockfish, juvenile	6/28/2010	5	4	7.33	1.53	0.75	0.50	0.75	0.50
opaleye, adult	6/28/2010	5	5			0.00	0.00	0.00	0.00
painted greenling	6/28/2010	5	5	10.00	0.00	3.20	0.45	27.50	7.05
pile surfperch, adult	6/28/2010	5	4	9.00		0.25	0.50	0.25	0.50
pile surfperch, all	6/28/2010	5	5	9.00		0.20	0.45	0.25	0.50
pile surfperch, juvenile	6/28/2010	5	4			0.00	0.00	0.00	0.00
rock wrasse, female	6/28/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, juvenile	6/28/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	6/28/2010	5	5			0.00	0.00	0.00	0.00
ronquil spp.	6/28/2010	5	5	9.60	0.55	1.60	0.55	2.50	1.29
rubberlip surfperch	6/28/2010	5	1	9.00		1.00		1.00	
senorita, adult	6/28/2010	5	4			0.00	0.00	0.00	0.00
senorita, all	6/28/2010	5	5			0.00	0.00	0.00	0.00
senorita, juvenile	6/28/2010	5	4			0.00	0.00	0.00	0.00
snubnose sculpin	6/28/2010	5	3	8.67	1.53	1.67	0.58	4.33	4.16
striped surfperch, adult	6/28/2010	5	4	10.00	0.00	2.00	0.00	5.50	1.91
striped surfperch, all	6/28/2010	5	5	9.80	0.45	2.00	0.00	6.75	1.50
striped surfperch, juvenile	6/28/2010	5	4	10.00	0.00	1.00	0.82	1.25	1.26
treefish, adult	6/28/2010	5	5			0.00	0.00	0.00	0.00
treefish, juvenile	6/28/2010	5	5			0.00	0.00	0.00	0.00
tubesnout	6/28/2010	5	1	8.00		3.00			
vermillion rockfish, juvenile	6/28/2010	5	5	9.00	1.73	2.00	0.00	3.25	0.50

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Gull Island South

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow/gopher rockfish,	7/27/2010	6	4	8.25	1.50	1.75	0.50	3.25	2.63
black surfperch, adult	7/27/2010	6	6	9.50	1.22	2.17	0.41	6.50	3.51
black surfperch, all	7/27/2010	6	6	9.67	0.82	2.17	0.41	8.17	3.37
black surfperch, juvenile	7/27/2010	6	6	8.67	1.21	1.50	0.55	1.67	0.82
blackeye goby	7/27/2010	6	6	10.00	0.00	2.83	0.41	44.17	32.47
blacksmith, adult	7/27/2010	6	6	9.00	1.10	3.33	0.52	111.17	135.58
blacksmith, all	7/27/2010	6	6	9.00	1.10	3.33	0.52	111.17	135.58
blacksmith, juvenile	7/27/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	7/27/2010	6	6	7.00	2.37	2.00	0.00	3.67	1.37
blue rockfish, all	7/27/2010	6	6	9.83	0.41	4.00	0.00	312.00	171.45
blue rockfish, juvenile	7/27/2010	6	6	9.83	0.41	4.00	0.00	308.33	170.75
blue-banded goby	7/27/2010	6	6			0.00	0.00	0.00	0.00
Cabezon	7/27/2010	6	1	5.00		1.00		1.00	
California sheephead, female	7/27/2010	6	6	10.00	0.00	3.00	0.00	20.00	4.24
California sheephead, juvenile	7/27/2010	6	6	8.50	0.71	0.67	1.03	0.67	1.03
California sheephead, male	7/27/2010	6	6	10.00	0.00	2.33	0.52	9.67	2.80
copper rockfish, juvenile	7/27/2010	6	3	8.67	1.53	1.67	0.58	1.67	0.58
coralline sculpin	7/27/2010	6	1	7.00		1.00		1.00	
garibaldi, adult	7/27/2010	6	6	7.00	1.41	0.67	0.52	0.67	0.52
garibaldi, juvenile	7/27/2010	6	6			0.00	0.00	0.00	0.00
gopher rockfish	7/27/2010	6	5	8.40	1.14	1.40	0.55	1.60	0.89
halfmoon	7/27/2010	6	1	5.00		2.00		2.00	
island kelpfish	7/27/2010	6	6			0.00	0.00	0.00	0.00
kelp bass, adult	7/27/2010	6	6	8.75	1.89	0.83	0.75	0.83	0.75
kelp bass, calico bass, all	7/27/2010	6	6	8.75	1.89	0.83	0.75	0.83	0.75
kelp bass, juvenile	7/27/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/27/2010	6	6	9.80	0.45	1.67	0.82	4.50	2.66
kelp rockfish, all	7/27/2010	6	6	9.80	0.45	1.67	0.82	5.83	3.82
kelp rockfish, juvenile	7/27/2010	6	6	10.00	0.00	1.00	1.10	1.33	1.63
kelp surfperch	7/27/2010	6	2	5.00	0.00	1.50	0.71	3.50	3.54
kelp/gopher/copper rockfish,	7/27/2010	6	3	8.00	1.00	1.33	0.58	1.67	1.15
lingcod	7/27/2010	6	6	9.00	1.26	2.00	0.00	2.67	0.82
olive rockfish, adult	7/27/2010	6	6	8.67	1.75	2.17	0.41	5.83	5.19
olive rockfish, all	7/27/2010	6	6	9.67	0.52	3.17	0.75	46.67	45.70
olive/yellowtail rockfish, juvenile	7/27/2010	6	6	9.00	1.10	2.67	0.82	40.83	48.42
opaleye, adult	7/27/2010	6	6	8.00	2.83	0.50	0.84	0.83	1.60
painted greenling	7/27/2010	6	6	10.00	0.00	3.00	0.00	38.00	11.54
pile surfperch, adult	7/27/2010	6	6	7.60	1.14	1.33	0.82	1.67	1.37
pile surfperch, all	7/27/2010	6	6	7.60	1.14	1.33	0.82	1.67	1.37
pile surfperch, juvenile	7/27/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, female	7/27/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, juvenile	7/27/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	7/27/2010	6	6			0.00	0.00	0.00	0.00
rockfish spp., juvenile	7/27/2010	6	2	5.00	0.00	1.00	0.00	1.00	0.00
rubberlip surfperch	7/27/2010	6	6	7.17	0.98	1.50	0.55	1.83	0.98
senorita, adult	7/27/2010	6	6	8.80	1.64	2.67	1.51	80.67	96.51
senorita, all	7/27/2010	6	6	8.80	1.64	2.67	1.51	80.67	96.51
senorita, juvenile	7/27/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, adult	7/27/2010	6	6	9.17	0.75	2.00	0.00	4.83	1.83
striped surfperch, all	7/27/2010	6	6	9.50	0.84	2.33	0.52	11.17	7.65
striped surfperch, juvenile	7/27/2010	6	6	10.00	0.00	1.67	1.37	6.33	7.06
swell shark	7/27/2010	6	2	7.50	2.12	1.50	0.71	2.00	1.41
top smelt	7/27/2010	6	1	5.00		3.00		50.00	
treefish, adult	7/27/2010	6	6	7.67	0.58	0.50	0.55	0.50	0.55
treefish, juvenile	7/27/2010	6	6	7.75	1.71	1.17	0.98	1.67	1.63

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Fry's Harbor

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/16/2010	4	4	8.75	0.96	1.75	0.50	3.00	1.00
black surfperch, adult	6/16/2010	4	3	9.67	0.58	2.00	0.00	7.67	1.53
black surfperch, all	6/16/2010	4	4	9.50	0.58	2.50	0.58	10.33	2.08
black surfperch, juvenile	6/16/2010	4	3	9.50	0.71	1.33	1.15	2.67	3.06
blackeye goby	6/16/2010	4	4	8.75	2.50	2.75	0.50	21.67	12.66
blacksmith, adult	6/16/2010	4	3	10.00	0.00	4.00	0.00	699.00	118.83
blacksmith, all	6/16/2010	4	4	10.00	0.00	4.00	0.00	699.00	118.83
blacksmith, juvenile	6/16/2010	4	3			0.00	0.00	0.00	0.00
blue rockfish, adult	6/16/2010	4	3	7.00		0.33	0.58	0.33	0.58
blue rockfish, all	6/16/2010	4	4	10.00	0.00	3.75	0.50	256.00	71.63
blue rockfish, juvenile	6/16/2010	4	3	10.00	0.00	4.00	0.00	255.67	71.25
blue-banded goby	6/16/2010	4	4	9.00	1.00	2.25	1.50	20.67	8.50
bocaccio, juvenile	6/16/2010	4	3	7.67	1.53	1.33	0.58	1.67	1.15
California sheephead, female	6/16/2010	4	4	9.75	0.50	2.50	0.58	12.00	5.20
California sheephead, juvenile	6/16/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	6/16/2010	4	4	7.00		0.25	0.50	0.33	0.58
garibaldi, adult	6/16/2010	4	4	8.75	1.26	2.00	0.00	3.67	0.58
garibaldi, juvenile	6/16/2010	4	4			0.00	0.00	0.00	0.00
gopher rockfish	6/16/2010	4	4	7.75	1.50	1.50	0.58	4.33	2.89
island kelpfish	6/16/2010	4	4	8.33	1.15	1.00	0.82	1.33	0.58
kelp bass, adult	6/16/2010	4	3	9.33	1.15	2.00	1.00	6.67	7.37
kelp bass, calico bass, all	6/16/2010	4	4	8.25	2.36	1.75	0.96	6.67	7.37
kelp bass, juvenile	6/16/2010	4	3			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/16/2010	4	3	10.00	0.00	3.00	0.00	34.67	11.02
kelp rockfish, all	6/16/2010	4	4	10.00	0.00	3.00	0.00	34.67	11.02
kelp rockfish, juvenile	6/16/2010	4	3			0.00	0.00	0.00	0.00
kelp surfperch	6/16/2010	4	3	7.67	2.31	1.67	1.15	4.67	6.35
kelp/gopher/copper rockfish,	6/16/2010	4	3	9.00	1.00	2.67	0.58	18.33	9.07
Lingcod	6/16/2010	4	2	10.00	0.00	1.50	0.71	1.50	0.71
olive rockfish, adult	6/16/2010	4	3	10.00		0.67	1.15	0.67	1.15
olive rockfish, all	6/16/2010	4	4	10.00	0.00	2.25	0.50	10.00	2.00
olive/yellowtail rockfish, juvenile	6/16/2010	4	3	9.33	1.15	2.33	0.58	9.33	2.31
opaleye, adult	6/16/2010	4	4	8.33	1.53	1.75	1.26	6.67	6.43
Pacific sardine	6/16/2010	4	1	7.00		4.00		5000.00	
painted greenling	6/16/2010	4	4	10.00	0.00	3.00	0.00	26.67	8.74
pile surfperch, adult	6/16/2010	4	3	9.67	0.58	2.33	0.58	8.00	6.08
pile surfperch, all	6/16/2010	4	4	9.75	0.50	2.50	0.58	8.00	6.08
pile surfperch, juvenile	6/16/2010	4	3			0.00	0.00	0.00	0.00
rock wrasse, female	6/16/2010	4	4	9.00	2.00	2.00	0.00	4.33	1.15
rock wrasse, juvenile	6/16/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	6/16/2010	4	4	8.67	1.53	1.50	1.00	1.67	1.53
rockfish spp., juvenile	6/16/2010	4	2	8.00	1.41	1.50	0.71	4.50	4.95
rubberlip surfperch	6/16/2010	4	3	6.33	0.58	1.67	0.58	3.00	2.83
senorita, adult	6/16/2010	4	3	9.67	0.58	3.00	0.00	69.67	31.02
senorita, all	6/16/2010	4	4	9.75	0.50	3.00	0.00	69.67	31.02
senorita, juvenile	6/16/2010	4	3			0.00	0.00	0.00	0.00
sharpnose surfperch	6/16/2010	4	1	5.00		3.00		75.00	
snubnose sculpin	6/16/2010	4	1	6.00		1.00			
striped surfperch, adult	6/16/2010	4	3	10.00	0.00	1.33	1.15	2.67	2.52
striped surfperch, all	6/16/2010	4	4	9.67	0.58	1.50	1.00	3.33	2.89
striped surfperch, juvenile	6/16/2010	4	3	10.00		0.67	1.15	0.67	1.15
stripetail rockfish, juvenile	6/16/2010	4	2	6.50	0.71	1.50	0.71	2.00	1.41
treefish, adult	6/16/2010	4	4	7.75	1.71	2.25	0.50	6.67	7.23
treefish, juvenile	6/16/2010	4	4	6.50	0.71	0.50	0.58	0.67	0.58
zebra goby	6/16/2010	4	1	6.00		2.00		3.00	

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Pelican Bay

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow/gopher rockfish,	9/1/2010	6	1	5.00		2.00		2.00	
black surfperch, adult	9/1/2010	6	6	10.00	0.00	3.00	0.00	35.33	7.63
black surfperch, all	9/1/2010	6	6	10.00	0.00	3.00	0.00	49.50	11.22
black surfperch, juvenile	9/1/2010	6	6	9.33	1.63	2.83	0.41	14.17	4.54
blackeye goby	9/1/2010	6	6	9.33	1.21	3.33	0.52	88.83	45.54
blacksmith, adult	9/1/2010	6	6	9.83	0.41	3.33	0.52	85.83	37.27
blacksmith, all	9/1/2010	6	6	9.83	0.41	3.33	0.52	85.83	37.27
blacksmith, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	9/1/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, all	9/1/2010	6	6	6.50	1.29	1.33	1.03	2.50	1.97
blue rockfish, juvenile	9/1/2010	6	6	6.50	1.29	1.33	1.03	2.50	1.97
blue-banded goby	9/1/2010	6	6	9.33	1.21	3.00	0.00	22.00	7.04
bocaccio, juvenile	9/1/2010	6	1	5.00		3.00		12.00	
California scorpionfish	9/1/2010	6	2	6.50	2.12	1.00	0.00	1.00	0.00
California sheephead, female	9/1/2010	6	6	10.00	0.00	2.67	0.52	13.50	4.04
California sheephead, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, male	9/1/2010	6	6	10.00		0.17	0.41	0.17	0.41
fringehead spp.	9/1/2010	6	1	6.00		2.00		3.00	
garibaldi, adult	9/1/2010	6	6	9.50	0.84	2.67	0.52	12.83	4.88
garibaldi, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
island kelpfish	9/1/2010	6	6			0.00	0.00	0.00	0.00
kelp bass, adult	9/1/2010	6	6	10.00	0.00	3.00	0.00	35.67	5.82
kelp bass, calico bass, all	9/1/2010	6	6	10.00	0.00	3.00	0.00	35.67	5.82
kelp bass, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, adult	9/1/2010	6	6	9.83	0.41	2.50	0.55	10.17	3.49
kelp rockfish, all	9/1/2010	6	6	9.83	0.41	2.50	0.55	10.17	3.49
kelp rockfish, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
kelp surfperch	9/1/2010	6	5	8.00	2.35	2.60	0.55	11.80	9.68
kelp/gopher/copper rockfish,	9/1/2010	6	1	5.00		1.00		1.00	
ocean whitefish	9/1/2010	6	1	7.00		1.00		1.00	
olive rockfish, adult	9/1/2010	6	6			0.00	0.00	0.00	0.00
olive rockfish, all	9/1/2010	6	6	8.80	1.79	1.50	0.84	2.00	1.41
olive/yellowtail rockfish, juvenile	9/1/2010	6	6	8.80	1.79	1.50	0.84	2.00	1.41
opaleye, adult	9/1/2010	6	6	7.75	2.22	0.67	0.52	0.67	0.52
painted greenling	9/1/2010	6	6	9.83	0.41	2.33	0.52	10.00	3.41
pile surfperch, adult	9/1/2010	6	6	8.00	1.90	1.67	0.52	2.83	1.60
pile surfperch, all	9/1/2010	6	6	8.33	1.63	2.33	0.52	8.00	2.90
pile surfperch, juvenile	9/1/2010	6	6	8.00	1.67	2.00	0.63	5.17	3.37
rock wrasse, female	9/1/2010	6	6	9.83	0.41	2.50	0.55	12.00	6.29
rock wrasse, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	9/1/2010	6	6	9.33	1.21	2.00	0.00	7.50	1.22
rubberlip surfperch	9/1/2010	6	4	8.25	1.71	1.25	0.50	2.00	2.00
senorita, adult	9/1/2010	6	6	9.83	0.41	3.00	0.00	34.83	17.05
senorita, all	9/1/2010	6	6	9.83	0.41	3.00	0.00	34.83	17.05
senorita, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
snubnose sculpin	9/1/2010	6	2	5.00	0.00	2.00	0.00	2.00	0.00
striped surfperch, adult	9/1/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, all	9/1/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
top smelt	9/1/2010	6	1	10.00		3.00		37.00	
treefish, adult	9/1/2010	6	6	7.00	1.00	0.67	0.82	0.67	0.82
treefish, juvenile	9/1/2010	6	6			0.00	0.00	0.00	0.00
zebra goby	9/1/2010	6	1	7.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Scorpion Anchorage

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
bat ray	7/13/2010	6	4	7.50	1.91	1.50	0.58	1.75	0.96
bat ray	8/16/2010	6	2	8.00	1.41	1.00	0.00	1.00	0.00
black and yellow rockfish	7/13/2010	6	5	8.60	0.89	1.40	0.55	1.40	0.55
black surfperch, adult	7/13/2010	6	6	10.00	0.00	2.67	0.52	12.50	3.67
black surfperch, adult	8/16/2010	6	5	9.60	0.55	1.80	0.45	5.40	3.58
black surfperch, all	7/13/2010	6	6	10.00	0.00	2.67	0.52	13.33	4.27
black surfperch, all	8/16/2010	6	6	9.50	0.55	2.17	0.41	6.80	3.70
black surfperch, juvenile	7/13/2010	6	6	10.00	0.00	0.67	1.03	0.83	1.33
black surfperch, juvenile	8/16/2010	6	5	9.00	1.00	1.00	1.00	1.40	1.52
blackeye goby	7/13/2010	6	6	10.00	0.00	3.17	0.41	91.67	28.38
blackeye goby	8/16/2010	6	6	9.83	0.41	3.67	0.52	156.80	74.05
blacksmith, adult	7/13/2010	6	6	10.00	0.00	4.00	0.00	211.83	43.03
blacksmith, adult	8/16/2010	6	5	9.40	0.55	2.80	0.45	35.20	24.22
blacksmith, all	7/13/2010	6	6	10.00	0.00	4.00	0.00	211.83	43.03
blacksmith, all	8/16/2010	6	6	9.33	0.52	2.83	0.41	35.20	24.22
blacksmith, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
blacksmith, juvenile	8/16/2010	6	5			0.00	0.00	0.00	0.00
blue rockfish, adult	7/13/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	8/16/2010	6	5			0.00	0.00	0.00	0.00
blue rockfish, all	7/13/2010	6	6	9.17	0.98	3.00	0.00	21.00	6.81
blue rockfish, all	8/16/2010	6	6	9.83	0.41	3.00	0.00	24.00	8.06
blue rockfish, juvenile	7/13/2010	6	6	9.17	0.98	3.00	0.00	21.00	6.81
blue rockfish, juvenile	8/16/2010	6	5	9.80	0.45	3.00	0.00	24.00	8.06
blue-banded goby	7/13/2010	6	6	8.00		0.17	0.41	0.17	0.41
blue-banded goby	8/16/2010	6	6	7.50	2.12	0.33	0.52	0.40	0.55
brown rockfish	8/16/2010	6	1	9.00		1.00		1.00	
California sheephead, female	7/13/2010	6	6	9.50	0.84	2.17	0.41	5.67	3.50
California sheephead, female	8/16/2010	6	6	9.67	0.82	2.00	0.00	4.60	0.89
California sheephead, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, juvenile	8/16/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, male	7/13/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, male	8/16/2010	6	6			0.00	0.00	0.00	0.00
garibaldi, adult	7/13/2010	6	6	10.00	0.00	2.00	0.00	6.33	1.75
garibaldi, adult	8/16/2010	6	6	8.83	1.47	2.00	0.00	4.00	1.58
garibaldi, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
garibaldi, juvenile	8/16/2010	6	6			0.00	0.00	0.00	0.00
halfmoon	7/13/2010	6	2	10.00	0.00	1.50	0.71	1.50	0.71
halfmoon	8/16/2010	6	1	9.00		1.00		1.00	
horn shark	8/16/2010	6	4	8.25	1.71	1.25	0.50	1.25	0.50
island kelpfish	7/13/2010	6	6	8.00	2.00	1.00	1.10	1.00	1.10
island kelpfish	8/16/2010	6	6	8.67	0.58	0.83	0.98	1.40	1.67
kelp bass, adult	7/13/2010	6	6	9.67	0.82	2.67	0.52	12.50	3.15
kelp bass, adult	8/16/2010	6	5	10.00	0.00	2.20	0.45	8.20	2.59
kelp bass, calico bass, all	7/13/2010	6	6	9.67	0.82	2.67	0.52	12.50	3.15
kelp bass, calico bass, all	8/16/2010	6	6	9.67	0.82	2.17	0.41	8.20	2.59
kelp bass, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
kelp bass, juvenile	8/16/2010	6	5			0.00	0.00	0.00	0.00

2010 ROVING DIVER FISH COUNT

kelp rockfish, adult	7/13/2010	6	6	9.00	1.55	2.50	0.55	11.83	3.19
kelp rockfish, adult	8/16/2010	6	5	9.00	0.82	1.60	0.89	3.40	2.07
kelp rockfish, all	7/13/2010	6	6	9.00	1.55	2.50	0.55	12.17	3.66
kelp rockfish, all	8/16/2010	6	6	8.40	1.52	1.83	0.98	3.40	2.07
kelp rockfish, juvenile	7/13/2010	6	6	10.00		0.33	0.82	0.33	0.82
kelp rockfish, juvenile	8/16/2010	6	5			0.00	0.00	0.00	0.00
kelp surfperch	7/13/2010	6	1	9.00		2.00		2.00	
kelp surfperch	8/16/2010	6	1	8.00		1.00		1.00	
kelp/gopher/copper rockfish,	7/13/2010	6	1	9.00		2.00		4.00	
lavender sculpin	8/16/2010	6	1	10.00		1.00		1.00	
olive rockfish, adult	7/13/2010	6	6			0.00	0.00	0.00	0.00
olive rockfish, adult	8/16/2010	6	5			0.00	0.00	0.00	0.00
olive rockfish, all	7/13/2010	6	6	8.60	1.67	1.50	0.84	2.33	1.86
olive rockfish, all	8/16/2010	6	6	8.75	2.50	0.83	0.75	0.60	0.55
olive/yellowtail rockfish, juvenile	7/13/2010	6	6	8.60	1.67	1.50	0.84	2.33	1.86
olive/yellowtail rockfish, juvenile	8/16/2010	6	5	8.33	2.89	0.60	0.55	0.60	0.55
opaleye, adult	7/13/2010	6	6	9.00	1.00	1.83	1.17	7.67	7.20
opaleye, adult	8/16/2010	6	6			0.00	0.00	0.00	0.00
painted greenling	7/13/2010	6	6	9.67	0.52	2.83	0.41	16.00	5.33
painted greenling	8/16/2010	6	6	10.00	0.00	3.00	0.00	19.60	7.02
pile surfperch, adult	7/13/2010	6	6	10.00	0.00	0.50	0.55	0.50	0.55
pile surfperch, adult	8/16/2010	6	5	6.00		0.20	0.45	0.20	0.45
pile surfperch, all	7/13/2010	6	6	10.00	0.00	0.50	0.55	0.50	0.55
pile surfperch, all	8/16/2010	6	6	6.00		0.17	0.41	0.20	0.45
pile surfperch, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/16/2010	6	5			0.00	0.00	0.00	0.00
rock wrasse, female	7/13/2010	6	6	9.17	1.60	1.83	0.41	3.33	2.07
rock wrasse, female	8/16/2010	6	6	9.00	1.00	0.50	0.55	0.60	0.55
rock wrasse, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, juvenile	8/16/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	7/13/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	8/16/2010	6	6	8.00	2.83	0.50	0.84	0.60	0.89
scalyhead sculpin	8/16/2010	6	1	6.00		1.00		1.00	
senorita, adult	7/13/2010	6	6	10.00	0.00	3.00	0.00	50.33	29.49
senorita, adult	8/16/2010	6	5	10.00	0.00	3.00	0.00	41.20	12.81
senorita, all	7/13/2010	6	6	10.00	0.00	3.00	0.00	50.33	29.49
senorita, all	8/16/2010	6	6	10.00	0.00	3.00	0.00	41.20	12.81
senorita, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
senorita, juvenile	8/16/2010	6	5			0.00	0.00	0.00	0.00
speckled sanddab	7/13/2010	6	1	6.00		1.00		1.00	
speckled sanddab	8/16/2010	6	1	8.00		2.00		5.00	
striped surfperch, adult	7/13/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, adult	8/16/2010	6	5			0.00	0.00	0.00	0.00
striped surfperch, all	7/13/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, all	8/16/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/13/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/16/2010	6	5			0.00	0.00	0.00	0.00
thornback ray	8/16/2010	6	1	5.00		1.00		1.00	
treefish, adult	7/13/2010	6	6	7.00	0.00	0.33	0.52	0.33	0.52
treefish, adult	8/16/2010	6	6			0.00	0.00	0.00	0.00
treefish, juvenile	7/13/2010	6	6	7.33	1.53	0.67	0.82	0.83	1.17
treefish, juvenile	8/16/2010	6	6	7.50	2.12	0.33	0.52	0.40	0.55
zebra goby	7/13/2010	6	1	6.00		1.00		1.00	
zebra goby	8/16/2010	6	1	7.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Yellow Banks

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	7/14/2010	3	3	8.33	2.08	1.67	0.58	3.67	2.52
black surfperch, adult	7/14/2010	3	3	8.67	0.58	2.00	0.00	6.00	3.46
black surfperch, all	7/14/2010	3	3	8.67	0.58	2.00	0.00	6.33	3.21
black surfperch, juvenile	7/14/2010	3	3	8.00		0.33	0.58	0.33	0.58
blackeye goby	7/14/2010	3	3	10.00	0.00	4.00	0.00	127.33	11.24
blacksmith, adult	7/14/2010	3	3	9.33	1.15	1.33	0.58	1.67	1.15
blacksmith, all	7/14/2010	3	3	9.33	1.15	1.33	0.58	1.67	1.15
blacksmith, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
blue rockfish, adult	7/14/2010	3	3			0.00	0.00	0.00	0.00
blue rockfish, all	7/14/2010	3	3	9.67	0.58	2.33	0.58	13.33	11.02
blue rockfish, juvenile	7/14/2010	3	3	9.67	0.58	2.33	0.58	13.33	11.02
blue-banded goby	7/14/2010	3	3			0.00	0.00	0.00	0.00
California sheephead, female	7/14/2010	3	3	10.00	0.00	3.00	0.00	15.00	1.00
California sheephead, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
California sheephead, male	7/14/2010	3	3			0.00	0.00	0.00	0.00
copper rockfish, juvenile	7/14/2010	3	3	9.67	0.58	2.33	0.58	10.67	4.04
coralline sculpin	7/14/2010	3	1	9.00		1.00		1.00	
garibaldi, adult	7/14/2010	3	3			0.00	0.00	0.00	0.00
garibaldi, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
giant kelpfish	7/14/2010	3	1	7.00		1.00		1.00	
giant kelpfish, juvenile	7/14/2010	3	1	10.00		1.00		1.00	
gopher rockfish	7/14/2010	3	3	6.67	1.15	1.00	0.00	1.00	0.00
island kelpfish	7/14/2010	3	3			0.00	0.00	0.00	0.00
jack mackerel	7/14/2010	3	2	10.00	0.00	3.00	0.00	17.50	6.36
kelp bass, adult	7/14/2010	3	3	8.00	2.65	2.00	0.00	3.67	1.53
kelp bass, calico bass, all	7/14/2010	3	3	8.00	2.65	2.00	0.00	3.67	1.53
kelp bass, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/14/2010	3	3	9.67	0.58	2.33	0.58	9.33	1.53
kelp rockfish, all	7/14/2010	3	3	9.67	0.58	2.33	0.58	10.33	1.53
kelp rockfish, juvenile	7/14/2010	3	3	9.00	1.73	1.00	0.00	1.00	0.00
kelp surfperch	7/14/2010	3	3	9.67	0.58	2.33	0.58	11.33	13.65
kelp/gopher/copper rockfish,	7/14/2010	3	3	9.67	0.58	2.00	0.00	5.67	2.89
lavender sculpin	7/14/2010	3	1	6.00		1.00		1.00	
lingcod	7/14/2010	3	1	9.00		2.00		2.00	
olive rockfish, adult	7/14/2010	3	3			0.00	0.00	0.00	0.00
olive rockfish, all	7/14/2010	3	3	8.67	1.53	1.00	0.00	1.00	0.00
olive/yellowtail rockfish, juvenile	7/14/2010	3	3	8.67	1.53	1.00	0.00	1.00	0.00
opaleye, adult	7/14/2010	3	3			0.00	0.00	0.00	0.00
painted greenling	7/14/2010	3	3	10.00	0.00	3.00	0.00	25.67	4.93
pile surfperch, adult	7/14/2010	3	3	8.67	1.53	2.00	0.00	4.00	1.00
pile surfperch, all	7/14/2010	3	3	8.67	1.53	2.00	0.00	4.00	1.00
pile surfperch, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
rainbow surfperch	7/14/2010	3	3	10.00	0.00	2.00	0.00	7.00	2.00
rock wrasse, female	7/14/2010	3	3			0.00	0.00	0.00	0.00
rock wrasse, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
rock wrasse, male	7/14/2010	3	3	6.33	0.58	1.00	0.00	1.00	0.00
senorita, adult	7/14/2010	3	3	10.00	0.00	3.67	0.58	118.67	48.42
senorita, all	7/14/2010	3	3	10.00	0.00	3.67	0.58	118.67	48.42
senorita, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
striped surfperch, adult	7/14/2010	3	3			0.00	0.00	0.00	0.00
striped surfperch, all	7/14/2010	3	3			0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/14/2010	3	3			0.00	0.00	0.00	0.00
swell shark	7/14/2010	3	3	9.00	1.00	1.33	0.58	1.67	1.15

2010 ROVING DIVER FISH COUNT

treefish, adult	7/14/2010	3	3	8.00	1.73	1.00	0.00	1.00	0.00
treefish, juvenile	7/14/2010	3	3	9.67	0.58	2.00	0.00	3.67	1.53
vermillion rockfish	7/14/2010	3	3	9.33	1.15	2.00	0.00	4.00	1.00
vermillion rockfish, juvenile	7/14/2010	3	2	9.00	1.41	1.50	0.71	2.00	1.41

2010 ROVING DIVER FISH COUNT
Anacapa Island - Admiral's Reef

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/15/2010	5	3	8.00	1.00	1.33	0.58	2.00	
black surfperch, adult	6/15/2010	5	3	8.00	1.73	2.00	0.00	3.00	1.00
black surfperch, all	6/15/2010	5	5	8.00	1.41	1.80	0.45	3.00	1.00
black surfperch, juvenile	6/15/2010	5	3			0.00	0.00	0.00	0.00
blackeye goby	6/15/2010	5	5	10.00	0.00	3.40	0.55	157.00	67.13
blacksmith, adult	6/15/2010	5	3	10.00	0.00	4.00	0.00	1233.67	382.54
blacksmith, all	6/15/2010	5	5	10.00	0.00	4.00	0.00	1233.67	382.54
blacksmith, juvenile	6/15/2010	5	3			0.00	0.00	0.00	0.00
blue rockfish, adult	6/15/2010	5	3			0.00	0.00	0.00	0.00
blue rockfish, all	6/15/2010	5	5	10.00	0.00	3.80	0.45	265.33	101.20
blue rockfish, juvenile	6/15/2010	5	3	10.00	0.00	4.00	0.00	265.33	101.20
blue-banded goby	6/15/2010	5	5	8.50	2.12	0.60	0.89	1.33	1.53
California moray	6/15/2010	5	2	6.50	2.12	1.00	0.00	1.00	0.00
California sheephead, female	6/15/2010	5	5	10.00	0.00	2.80	0.45	19.33	8.62
California sheephead, juvenile	6/15/2010	5	5	8.00	2.83	0.40	0.55	0.33	0.58
California sheephead, male	6/15/2010	5	5	7.50	3.54	0.40	0.55	0.00	0.00
garibaldi, adult	6/15/2010	5	5	9.60	0.89	2.00	0.00	5.33	1.53
garibaldi, juvenile	6/15/2010	5	5			0.00	0.00	0.00	0.00
gopher rockfish	6/15/2010	5	1	9.00		2.00			
island kelpfish	6/15/2010	5	5	9.00	0.00	0.60	0.89	1.33	1.53
kelp bass, adult	6/15/2010	5	3	8.00	2.00	1.67	0.58	2.00	1.00
kelp bass, calico bass, all	6/15/2010	5	5	8.00	2.00	1.00	1.00	2.00	1.00
kelp bass, juvenile	6/15/2010	5	3			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/15/2010	5	3	9.33	0.58	2.00	0.00	3.00	1.00
kelp rockfish, all	6/15/2010	5	5	9.20	0.84	1.80	0.45	3.00	1.00
kelp rockfish, juvenile	6/15/2010	5	3			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	6/15/2010	5	2	5.50	0.71	1.00	0.00	1.00	0.00
ocean whitefish	6/15/2010	5	3	8.33	1.53	1.00	0.00	1.00	0.00
olive rockfish, adult	6/15/2010	5	3	8.00		0.67	1.15	0.67	1.15
olive rockfish, all	6/15/2010	5	5	8.67	2.31	1.00	1.00	2.33	1.53
olive/yellowtail rockfish, juvenile	6/15/2010	5	3	8.67	2.31	1.67	0.58	1.67	0.58
opaleye, adult	6/15/2010	5	5	8.40	1.82	2.20	0.84	8.33	3.51
painted greenling	6/15/2010	5	5	10.00	0.00	3.00	0.00	32.00	5.57
pile surfperch, adult	6/15/2010	5	3			0.00	0.00	0.00	0.00
pile surfperch, all	6/15/2010	5	5			0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/15/2010	5	3			0.00	0.00	0.00	0.00
rock wrasse, female	6/15/2010	5	5	9.25	0.50	1.40	0.89	2.33	0.58
rock wrasse, juvenile	6/15/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	6/15/2010	5	5	8.00	2.00	1.60	0.55	2.67	2.08
rockfish spp., juvenile	6/15/2010	5	3	8.67	2.31	1.33	0.58	1.33	0.58
rubberlip surfperch	6/15/2010	5	2	9.50	0.71	1.00	0.00	1.00	0.00
senorita, adult	6/15/2010	5	3	10.00	0.00	3.33	0.58	70.00	44.03
senorita, all	6/15/2010	5	5	10.00	0.00	3.20	0.45	70.00	44.03
senorita, juvenile	6/15/2010	5	3			0.00	0.00	0.00	0.00
striped surfperch, adult	6/15/2010	5	3			0.00	0.00	0.00	0.00
striped surfperch, all	6/15/2010	5	5			0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/15/2010	5	3			0.00	0.00	0.00	0.00
treefish, adult	6/15/2010	5	5	9.00	1.00	2.40	0.55	10.33	4.62
treefish, juvenile	6/15/2010	5	5	9.00		0.40	0.89	0.00	0.00

2010 ROVING DIVER FISH COUNT
Anacapa Island - Cathedral Cove

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	6/14/2010	6	4	9.25	0.96	2.00	0.00	3.75	1.26
black surfperch, all	6/14/2010	6	6	8.83	1.17	2.00	0.00	5.25	2.99
black surfperch, juvenile	6/14/2010	6	4	9.00	0.00	1.00	1.15	1.50	1.91
blackeye goby	6/14/2010	6	6	7.67	1.37	2.00	0.63	11.00	9.42
blacksmith, adult	6/14/2010	6	4	10.00	0.00	4.00	0.00	332.00	65.08
blacksmith, all	6/14/2010	6	6	10.00	0.00	3.83	0.41	332.00	65.08
blacksmith, juvenile	6/14/2010	6	4			0.00	0.00	0.00	0.00
blue rockfish, adult	6/14/2010	6	4			0.00	0.00	0.00	0.00
blue rockfish, all	6/14/2010	6	6	9.00	1.00	2.50	1.22	56.00	10.95
blue rockfish, juvenile	6/14/2010	6	4	9.25	0.96	3.00	0.00	56.00	10.95
blue-banded goby	6/14/2010	6	6	8.00		0.33	0.82	0.50	1.00
bocaccio, juvenile	6/14/2010	6	3	7.33	1.15	2.67	0.58	11.33	7.64
California sheephead, female	6/14/2010	6	6	9.33	0.82	2.50	0.55	11.00	3.27
California sheephead, juvenile	6/14/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, male	6/14/2010	6	6	8.67	1.21	1.50	0.55	1.25	0.50
garibaldi, adult	6/14/2010	6	6	9.83	0.41	2.17	0.41	8.00	2.45
garibaldi, juvenile	6/14/2010	6	6	8.50	0.71	0.33	0.52	0.25	0.50
halfmoon	6/14/2010	6	1	6.00		1.00		1.00	
island kelpfish	6/14/2010	6	6	6.00	1.15	1.00	0.89	1.25	1.50
kelp bass, adult	6/14/2010	6	4	9.50	1.00	2.00	0.00	4.75	2.63
kelp bass, calico bass, all	6/14/2010	6	6	9.67	0.82	1.83	0.41	6.25	2.22
kelp bass, juvenile	6/14/2010	6	4	8.33	1.53	1.25	0.96	1.50	1.29
kelp rockfish, adult	6/14/2010	6	4	8.25	2.06	2.25	0.50	7.75	4.86
kelp rockfish, all	6/14/2010	6	6	8.60	1.95	1.83	0.98	7.75	4.86
kelp rockfish, juvenile	6/14/2010	6	4			0.00	0.00	0.00	0.00
kelp surfperch	6/14/2010	6	3	8.00	1.73	1.67	0.58	2.00	1.00
kelp/gopher/copper rockfish,	6/14/2010	6	3	7.67	2.08	1.33	0.58	1.33	0.58
ocean whitefish	6/14/2010	6	1	6.00		2.00		4.00	
olive rockfish, adult	6/14/2010	6	4	7.67	2.08	1.00	0.82	1.00	0.82
olive rockfish, all	6/14/2010	6	6	8.40	1.34	1.50	0.84	3.25	1.50
olive/yellowtail rockfish, juvenile	6/14/2010	6	4	7.00	1.63	1.50	0.58	2.25	1.89
opaleye, adult	6/14/2010	6	6	9.60	0.89	2.00	1.10	8.50	5.80
painted greenling	6/14/2010	6	6	8.17	0.98	1.67	0.52	3.75	2.50
pile surfperch, adult	6/14/2010	6	4	9.00		0.25	0.50	0.25	0.50
pile surfperch, all	6/14/2010	6	6	9.00	0.00	0.33	0.52	0.25	0.50
pile surfperch, juvenile	6/14/2010	6	4			0.00	0.00	0.00	0.00
rock wrasse, female	6/14/2010	6	6	9.00	0.71	1.33	0.82	1.75	0.50
rock wrasse, juvenile	6/14/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	6/14/2010	6	6	6.75	1.50	0.83	0.75	0.75	0.50
rockfish spp., juvenile	6/14/2010	6	2	8.00	0.00	2.50	0.71	9.00	
rubberlip surfperch	6/14/2010	6	2	9.50	0.71	1.00	0.00	1.00	
senorita, adult	6/14/2010	6	4	10.00	0.00	3.00	0.00	30.25	14.71
senorita, all	6/14/2010	6	6	10.00	0.00	2.67	0.52	30.25	14.71
senorita, juvenile	6/14/2010	6	4			0.00	0.00	0.00	0.00
shiner surfperch	6/14/2010	6	3	7.00	1.00	3.00	0.00	30.67	6.03
striped surfperch, adult	6/14/2010	6	4			0.00	0.00	0.00	0.00
striped surfperch, all	6/14/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/14/2010	6	4			0.00	0.00	0.00	0.00
treefish, adult	6/14/2010	6	6			0.00	0.00	0.00	0.00
treefish, juvenile	6/14/2010	6	6	8.25	0.96	0.67	0.52	1.00	0.00

2010 ROVING DIVER FISH COUNT
Anacapa Island - Landing Cove

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/4/2010	6	5	8.00	1.58	1.20	0.45	1.20	0.45
black surfperch, adult	6/4/2010	6	6	9.17	0.75	2.00	0.00	4.33	1.97
black surfperch, all	6/4/2010	6	6	9.17	0.75	2.00	0.00	4.67	2.16
black surfperch, juvenile	6/4/2010	6	6	9.00	0.00	0.33	0.52	0.33	0.52
blackeye goby	6/4/2010	6	6	9.33	1.21	2.83	0.41	22.00	9.01
blacksmith, adult	6/4/2010	6	6	9.17	1.60	3.67	0.52	139.33	62.34
blacksmith, all	6/4/2010	6	6	9.17	1.60	3.67	0.52	139.33	62.34
blacksmith, juvenile	6/4/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	6/4/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, all	6/4/2010	6	6	9.50	0.84	3.00	0.00	38.83	10.68
blue rockfish, juvenile	6/4/2010	6	6	9.50	0.84	3.00	0.00	38.83	10.68
blue-banded goby	6/4/2010	6	6	7.00	1.00	1.17	1.33	3.00	5.06
bocaccio, juvenile	6/4/2010	6	4	8.75	1.89	2.00	0.00	3.00	1.15
California scorpionfish	6/4/2010	6	1	8.00		1.00		1.00	
California sheephead, female	6/4/2010	6	6	9.50	0.84	2.17	0.41	6.83	2.93
California sheephead, juvenile	6/4/2010	6	6	6.00		0.17	0.41	0.17	0.41
California sheephead, male	6/4/2010	6	6	9.20	1.30	1.67	0.82	1.83	0.98
copper rockfish, juvenile	6/4/2010	6	1	6.00		2.00		2.00	
garibaldi, adult	6/4/2010	6	6	9.33	1.03	2.00	0.00	8.83	2.64
garibaldi, juvenile	6/4/2010	6	6			0.00	0.00	0.00	0.00
giant kelpfish	6/4/2010	6	1	9.00		1.00		1.00	
grass rockfish	6/4/2010	6	3	8.33	2.08	1.67	0.58	2.00	1.00
halfmoon	6/4/2010	6	1	8.00		1.00		1.00	
island kelpfish	6/4/2010	6	6	8.00	2.83	0.33	0.52	0.33	0.52
kelp bass, adult	6/4/2010	6	6	9.17	1.60	2.00	0.00	5.33	2.88
kelp bass, calico bass, all	6/4/2010	6	6	9.17	1.60	2.00	0.00	5.33	2.88
kelp bass, juvenile	6/4/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/4/2010	6	6	9.40	0.89	1.50	0.84	4.17	3.19
kelp rockfish, all	6/4/2010	6	6	9.40	0.89	1.50	0.84	4.17	3.19
kelp rockfish, juvenile	6/4/2010	6	6			0.00	0.00	0.00	0.00
kelp surfperch	6/4/2010	6	5	7.60	2.41	1.40	0.55	1.60	0.89
kelp/gopher/copper rockfish,	6/4/2010	6	4	8.75	1.89	2.00	0.00	4.25	1.71
lavender sculpin	6/4/2010	6	5	8.40	1.52	1.00	0.00	1.00	0.00
moray eel	6/4/2010	6	1	9.00		1.00		1.00	
ocean whitefish	6/4/2010	6	1	7.00		1.00		1.00	
olive rockfish, adult	6/4/2010	6	6			0.00	0.00	0.00	0.00
olive rockfish, all	6/4/2010	6	6	9.33	1.15	0.67	0.82	0.67	0.82
olive/yellowtail rockfish, juvenile	6/4/2010	6	6	9.33	1.15	0.67	0.82	0.67	0.82
opaleye, adult	6/4/2010	6	6	8.20	1.79	1.67	0.82	5.17	3.43
painted greenling	6/4/2010	6	6	8.17	1.72	1.67	0.52	3.67	3.08
pile surfperch, adult	6/4/2010	6	6			0.00	0.00	0.00	0.00
pile surfperch, all	6/4/2010	6	6			0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/4/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, female	6/4/2010	6	6	9.50	0.71	0.67	1.03	0.83	1.33
rock wrasse, juvenile	6/4/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	6/4/2010	6	6	9.33	1.15	0.67	0.82	0.67	0.82
rockfish spp., juvenile	6/4/2010	6	1	6.00		3.00		12.00	
rubberlip surfperch	6/4/2010	6	1	10.00		1.00		1.00	
senorita, adult	6/4/2010	6	6	9.83	0.41	3.00	0.00	51.67	27.41
senorita, all	6/4/2010	6	6	9.83	0.41	3.00	0.00	53.50	25.61
senorita, juvenile	6/4/2010	6	6	10.00	0.00	0.67	1.03	1.83	2.99
speckled sanddab	6/4/2010	6	2	7.50	0.71	1.50	0.71	1.50	0.71
striped surfperch, adult	6/4/2010	6	6	7.80	2.17	1.50	0.84	2.33	1.75

2010 ROVING DIVER FISH COUNT

striped surfperch, all	6/4/2010	6	6	7.80	2.17	1.50	0.84	2.33	1.75
striped surfperch, juvenile	6/4/2010	6	6			0.00	0.00	0.00	0.00
treefish, adult	6/4/2010	6	6	7.33	1.15	1.00	1.10	1.50	1.76
treefish, juvenile	6/4/2010	6	6	9.00		0.17	0.41	0.17	0.41
zebra goby	6/4/2010	6	3	8.67	1.15	1.33	0.58	1.67	1.15

2010 ROVING DIVER FISH COUNT
Santa Barbara Island - SE Sea Lion Rookery

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	6/2/2010	6	6	7.50	3.54	0.33	0.52	0.33	0.52
black surfperch, all	6/2/2010	6	6	7.50	3.54	0.33	0.52	0.33	0.52
black surfperch, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
blackeye goby	6/2/2010	6	6	9.83	0.41	2.83	0.41	19.00	10.12
blacksmith, adult	6/2/2010	6	6	9.17	0.75	3.33	0.52	86.50	38.48
blacksmith, all	6/2/2010	6	6	9.17	0.75	3.33	0.52	86.50	38.48
blacksmith, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	6/2/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, all	6/2/2010	6	6	9.33	0.82	3.00	0.00	35.00	9.34
blue rockfish, juvenile	6/2/2010	6	6	9.33	0.82	3.00	0.00	35.00	9.34
blue-banded goby	6/2/2010	6	6			0.00	0.00	0.00	0.00
bocaccio, juvenile	6/2/2010	6	6	8.83	1.94	3.83	0.41	183.50	93.53
California scorpionfish	6/2/2010	6	2	8.00	2.83	1.00	0.00	1.00	0.00
California sheephead, female	6/2/2010	6	6	9.83	0.41	2.50	0.55	9.33	4.68
California sheephead, juvenile	6/2/2010	6	6	8.20	2.49	1.33	0.82	1.33	0.82
California sheephead, male	6/2/2010	6	6	6.00		0.33	0.82	0.33	0.82
copper rockfish, juvenile	6/2/2010	6	2	8.50	2.12	1.50	0.71	2.50	2.12
garibaldi, adult	6/2/2010	6	6	8.33	1.21	1.83	0.41	2.00	0.63
garibaldi, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
island kelpfish	6/2/2010	6	6	10.00		0.17	0.41	0.17	0.41
kelp bass, adult	6/2/2010	6	6	6.00		0.17	0.41	0.17	0.41
kelp bass, calico bass, all	6/2/2010	6	6	6.00		0.17	0.41	0.17	0.41
kelp bass, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/2/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, all	6/2/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	6/2/2010	6	5	9.00	1.22	2.40	0.55	7.80	7.19
ocean whitefish	6/2/2010	6	6	9.00	1.10	2.50	0.55	12.50	7.04
olive rockfish, adult	6/2/2010	6	6			0.00	0.00	0.00	0.00
olive rockfish, all	6/2/2010	6	6	9.67	0.52	2.83	0.41	24.33	19.19
olive/yellowtail rockfish, juvenile	6/2/2010	6	6	9.67	0.52	2.83	0.41	24.33	19.19
opaleye, adult	6/2/2010	6	6			0.00	0.00	0.00	0.00
painted greenling	6/2/2010	6	6	8.83	1.60	2.00	0.00	5.00	1.90
pile surfperch, adult	6/2/2010	6	6			0.00	0.00	0.00	0.00
pile surfperch, all	6/2/2010	6	6			0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, female	6/2/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	6/2/2010	6	6			0.00	0.00	0.00	0.00
rockfish spp., juvenile	6/2/2010	6	2	9.00	1.41	1.50	0.71	1.50	0.71
senorita, adult	6/2/2010	6	6	9.83	0.41	3.33	0.52	93.83	43.38
senorita, all	6/2/2010	6	6	9.83	0.41	3.33	0.52	93.83	43.38
senorita, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, adult	6/2/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, all	6/2/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
treefish, adult	6/2/2010	6	6			0.00	0.00	0.00	0.00
treefish, juvenile	6/2/2010	6	6			0.00	0.00	0.00	0.00
tubesnout	6/2/2010	6	1	9.00		1.00		1.00	
vermillion rockfish, juvenile	6/2/2010	6	3	8.00	1.73	1.33	0.58	1.33	0.58

2010 ROVING DIVER FISH COUNT
Santa Barbara Island - Arch Point

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
baitfish unidentified	5/17/2010	6	1	5.00		4.00		30000.00	
black surfperch, adult	5/17/2010	6	5	9.50	0.71	0.60	0.89	0.80	1.30
black surfperch, all	5/17/2010	6	6	8.67	1.53	0.67	0.82	0.80	1.30
black surfperch, juvenile	5/17/2010	6	5			0.00	0.00	0.00	0.00
blackeye goby	5/17/2010	6	6	9.67	0.82	2.83	0.41	31.80	13.35
blacksmith, adult	5/17/2010	6	5	9.20	1.10	4.00	0.00	301.20	61.30
blacksmith, all	5/17/2010	6	6	9.33	1.03	3.83	0.41	301.20	61.30
blacksmith, juvenile	5/17/2010	6	5			0.00	0.00	0.00	0.00
blue rockfish, adult	5/17/2010	6	5			0.00	0.00	0.00	0.00
blue rockfish, all	5/17/2010	6	6	10.00	0.00	3.00	0.00	66.80	15.94
blue rockfish, juvenile	5/17/2010	6	5	10.00	0.00	3.00	0.00	66.80	15.94
blue-banded goby	5/17/2010	6	6			0.00	0.00	0.00	0.00
bocaccio, juvenile	5/17/2010	6	2	7.00	2.83	2.00	1.41	7.50	9.19
California sheephead, female	5/17/2010	6	6	9.67	0.82	2.50	0.55	10.20	4.32
California sheephead, juvenile	5/17/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, male	5/17/2010	6	6	8.00	1.41	0.33	0.52	0.40	0.55
c-o turbot	5/17/2010	6	1	10.00		1.00		1.00	
copper rockfish, juvenile	5/17/2010	6	2	9.00	1.41	2.50	0.71	9.50	10.61
garibaldi, adult	5/17/2010	6	6	10.00	0.00	3.00	0.00	21.20	4.55
garibaldi, juvenile	5/17/2010	6	6			0.00	0.00	0.00	0.00
grass rockfish	5/17/2010	6	5	7.00	1.41	1.00	0.00	1.00	0.00
island kelpfish	5/17/2010	6	6	9.00	0.00	0.33	0.52	0.20	0.45
kelp bass, adult	5/17/2010	6	5			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	5/17/2010	6	6			0.00	0.00	0.00	0.00
kelp bass, juvenile	5/17/2010	6	5			0.00	0.00	0.00	0.00
kelp rockfish, adult	5/17/2010	6	5			0.00	0.00	0.00	0.00
kelp rockfish, all	5/17/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, juvenile	5/17/2010	6	5			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	5/17/2010	6	3	7.67	2.08	2.67	0.58	17.00	12.53
olive rockfish, adult	5/17/2010	6	5			0.00	0.00	0.00	0.00
olive rockfish, all	5/17/2010	6	6	9.00	1.41	2.67	2.07	136.00	83.12
olive/yellowtail rockfish, juvenile	5/17/2010	6	5	9.00	1.41	3.20	1.79	136.00	83.12
opaleye, adult	5/17/2010	6	6	8.33	0.58	0.67	0.82	0.80	0.84
painted greenling	5/17/2010	6	6	10.00	0.00	3.00	0.00	17.60	3.36
pile surfperch, adult	5/17/2010	6	5			0.00	0.00	0.00	0.00
pile surfperch, all	5/17/2010	6	6			0.00	0.00	0.00	0.00
pile surfperch, juvenile	5/17/2010	6	5			0.00	0.00	0.00	0.00
rock wrasse, female	5/17/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, juvenile	5/17/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	5/17/2010	6	6			0.00	0.00	0.00	0.00
rockfish spp., juvenile	5/17/2010	6	1	6.00		4.00		102.00	
senorita, adult	5/17/2010	6	5	10.00	0.00	4.00	0.00	138.60	44.20
senorita, all	5/17/2010	6	6	9.83	0.41	3.83	0.41	147.00	46.79
senorita, juvenile	5/17/2010	6	5	9.00	0.00	1.20	1.64	8.40	12.03
snubnose sculpin	5/17/2010	6	3	8.00	1.73	1.67	0.58	2.33	1.53
striped surfperch, adult	5/17/2010	6	5			0.00	0.00	0.00	0.00
striped surfperch, all	5/17/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	5/17/2010	6	5			0.00	0.00	0.00	0.00
treefish, adult	5/17/2010	6	6	10.00	0.00	0.50	0.84	0.60	0.89
treefish, juvenile	5/17/2010	6	6			0.00	0.00	0.00	0.00
Vermillion rockfish, juvenile	5/17/2010	6	5	8.00	1.58	1.80	0.45	2.75	1.26

2010 ROVING DIVER FISH COUNT
Santa Barbara Island - Cat Canyon

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	5/19/2010	5	4	8.50	2.38	1.75	0.50	3.00	2.16
black surfperch, all	5/19/2010	5	5	8.60	2.07	1.80	0.45	3.00	2.16
black surfperch, juvenile	5/19/2010	5	4			0.00	0.00	0.00	0.00
blackeye goby	5/19/2010	5	5	9.75	0.50	2.40	1.34	20.75	6.08
blacksmith, adult	5/19/2010	5	4	9.75	0.50	3.75	0.50	196.75	79.84
blacksmith, all	5/19/2010	5	5	9.40	0.89	3.60	0.55	196.75	79.84
blacksmith, juvenile	5/19/2010	5	4			0.00	0.00	0.00	0.00
blue rockfish, adult	5/19/2010	5	4			0.00	0.00	0.00	0.00
blue rockfish, all	5/19/2010	5	5			0.00	0.00	0.00	0.00
blue rockfish, juvenile	5/19/2010	5	4			0.00	0.00	0.00	0.00
blue-banded goby	5/19/2010	5	5			0.00	0.00	0.00	0.00
Cabezon	5/19/2010	5	1	8.00		1.00		1.00	
California sheephead, female	5/19/2010	5	5	10.00	0.00	2.20	0.45	9.00	4.24
California sheephead, juvenile	5/19/2010	5	5	10.00		0.20	0.45	0.25	0.50
California sheephead, male	5/19/2010	5	5	8.00		0.20	0.45	0.00	0.00
garibaldi, adult	5/19/2010	5	5	9.80	0.45	2.40	0.55	8.75	1.71
garibaldi, juvenile	5/19/2010	5	5			0.00	0.00	0.00	0.00
grass rockfish	5/19/2010	5	5	7.80	1.92	1.60	0.55	1.75	0.96
halfmoon	5/19/2010	5	2	9.00	1.41	1.50	0.71	1.50	0.71
island kelpfish	5/19/2010	5	5	7.50	3.54	0.60	0.89	1.75	2.87
kelp bass, adult	5/19/2010	5	4	7.00	0.00	0.75	0.96	0.75	0.96
kelp bass, calico bass, all	5/19/2010	5	5	7.00	0.00	0.60	0.89	0.75	0.96
kelp bass, juvenile	5/19/2010	5	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	5/19/2010	5	4	9.67	0.58	1.50	1.00	2.50	2.52
kelp rockfish, all	5/19/2010	5	5	9.25	0.96	1.40	0.89	2.50	2.52
kelp rockfish, juvenile	5/19/2010	5	4			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	5/19/2010	5	2	7.50	3.54	2.50	0.71	10.50	12.02
ocean whitefish	5/19/2010	5	1	5.00		1.00		1.00	
olive rockfish, adult	5/19/2010	5	4			0.00	0.00	0.00	0.00
olive rockfish, all	5/19/2010	5	5	10.00	0.00	1.00	1.00	0.75	0.96
olive/yellowtail rockfish, juvenile	5/19/2010	5	4	10.00	0.00	0.75	0.96	0.75	0.96
opaleye, adult	5/19/2010	5	5	8.67	1.15	0.80	0.84	1.00	0.82
painted greenling	5/19/2010	5	5	9.40	0.89	2.20	0.45	8.50	3.32
pile surfperch, adult	5/19/2010	5	4	10.00		0.25	0.50	0.25	0.50
pile surfperch, all	5/19/2010	5	5	8.50	2.12	0.40	0.55	0.25	0.50
pile surfperch, juvenile	5/19/2010	5	4			0.00	0.00	0.00	0.00
rock wrasse, female	5/19/2010	5	5	7.50	3.54	0.40	0.55	0.50	0.58
rock wrasse, juvenile	5/19/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	5/19/2010	5	5	10.00		0.20	0.45	0.25	0.50
senorita, adult	5/19/2010	5	4	10.00	0.00	3.75	0.50	176.75	81.06
senorita, all	5/19/2010	5	5	10.00	0.00	3.80	0.45	185.50	86.54
senorita, juvenile	5/19/2010	5	4	10.00		0.75	1.50	8.75	17.50
striped surfperch, adult	5/19/2010	5	4			0.00	0.00	0.00	0.00
striped surfperch, all	5/19/2010	5	5			0.00	0.00	0.00	0.00
striped surfperch, juvenile	5/19/2010	5	4			0.00	0.00	0.00	0.00
treefish, adult	5/19/2010	5	5	9.00		0.20	0.45	0.25	0.50
treefish, juvenile	5/19/2010	5	5			0.00	0.00	0.00	0.00

2010 ROVING DIVER FISH COUNT
San Miguel Island - Miracle Mile

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow/gopher rockfish,	7/28/2010	5	1	10.00		1.00		1.00	
black rockfish	7/28/2010	5	3	8.00	0.00	1.00	0.00	1.00	0.00
black surfperch, adult	7/28/2010	5	5	9.40	0.55	2.00	0.00	5.60	2.51
black surfperch, all	7/28/2010	5	5	9.40	0.55	2.00	0.00	5.80	2.68
black surfperch, juvenile	7/28/2010	5	5	8.00		0.20	0.45	0.20	0.45
blackeye goby	7/28/2010	5	5	6.50	0.71	0.60	0.89	1.00	1.73
blacksmith, adult	7/28/2010	5	5			0.00	0.00	0.00	0.00
blacksmith, all	7/28/2010	5	5			0.00	0.00	0.00	0.00
blacksmith, juvenile	7/28/2010	5	5			0.00	0.00	0.00	0.00
blue rockfish, adult	7/28/2010	5	5	8.80	1.64	2.00	0.00	5.80	2.95
blue rockfish, all	7/28/2010	5	5	10.00	0.00	3.00	0.00	47.80	10.50
blue rockfish, juvenile	7/28/2010	5	5	9.80	0.45	3.00	0.00	42.00	9.85
blue-banded goby	7/28/2010	5	5			0.00	0.00	0.00	0.00
cabezon	7/28/2010	5	2	7.50	2.12	1.50	0.71	1.50	0.71
California sheephead, female	7/28/2010	5	5	8.50	1.29	1.40	0.89	1.40	0.89
California sheephead, juvenile	7/28/2010	5	5	6.00		0.20	0.45	0.20	0.45
California sheephead, male	7/28/2010	5	5			0.00	0.00	0.00	0.00
garibaldi, adult	7/28/2010	5	5			0.00	0.00	0.00	0.00
garibaldi, juvenile	7/28/2010	5	5			0.00	0.00	0.00	0.00
gopher rockfish	7/28/2010	5	1	6.00		1.00		1.00	
grass rockfish	7/28/2010	5	2	9.50	0.71	1.50	0.71	1.50	0.71
island kelpfish	7/28/2010	5	5			0.00	0.00	0.00	0.00
kelp bass, adult	7/28/2010	5	5			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	7/28/2010	5	5			0.00	0.00	0.00	0.00
kelp bass, juvenile	7/28/2010	5	5			0.00	0.00	0.00	0.00
kelp greenling	7/28/2010	5	1	10.00		1.00		1.00	
kelp rockfish, adult	7/28/2010	5	5	9.40	0.55	2.00	0.00	8.00	1.22
kelp rockfish, all	7/28/2010	5	5	9.40	0.55	2.00	0.00	8.00	1.22
kelp rockfish, juvenile	7/28/2010	5	5			0.00	0.00	0.00	0.00
kelp surfperch	7/28/2010	5	1	10.00		1.00		1.00	
kelp/gopher/copper rockfish,	7/28/2010	5	1	10.00		2.00		2.00	
lingcod	7/28/2010	5	1	7.00		1.00		1.00	
olive rockfish, adult	7/28/2010	5	5			0.00	0.00	0.00	0.00
olive rockfish, all	7/28/2010	5	5	8.00	1.87	2.40	0.55	8.20	7.19
olive/yellowtail rockfish, juvenile	7/28/2010	5	5	8.00	1.87	2.40	0.55	8.20	7.19
opaleye, adult	7/28/2010	5	5			0.00	0.00	0.00	0.00
painted greenling	7/28/2010	5	5	9.60	0.89	2.00	0.00	8.40	1.52
pile surfperch, adult	7/28/2010	5	5	8.67	2.31	1.00	1.00	2.20	2.68
pile surfperch, all	7/28/2010	5	5	8.67	2.31	1.00	1.00	2.20	2.68
pile surfperch, juvenile	7/28/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, female	7/28/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, juvenile	7/28/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	7/28/2010	5	5			0.00	0.00	0.00	0.00
senorita, adult	7/28/2010	5	5			0.00	0.00	0.00	0.00
senorita, all	7/28/2010	5	5			0.00	0.00	0.00	0.00
senorita, juvenile	7/28/2010	5	5			0.00	0.00	0.00	0.00
snubnose sculpin	7/28/2010	5	1	10.00		1.00		1.00	
striped surfperch, adult	7/28/2010	5	5	10.00	0.00	3.00	0.00	21.80	4.32
striped surfperch, all	7/28/2010	5	5	10.00	0.00	3.00	0.00	27.00	8.15
striped surfperch, juvenile	7/28/2010	5	5	9.75	0.50	1.80	1.10	5.20	4.44
treefish, adult	7/28/2010	5	5			0.00	0.00	0.00	0.00
treefish, juvenile	7/28/2010	5	5	7.00		0.20	0.45	0.20	0.45
vermillion rockfish	7/28/2010	5	2	7.00	1.41	1.00	0.00	1.00	0.00
vermillion rockfish, juvenile	7/28/2010	5	1	10.00		2.00		3.00	

2010 ROVING DIVER FISH COUNT
Santa Rosa Island - Cluster Point

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/30/2010	4	4	8.25	1.26	2.00	0.00	4.50	3.32
black surfperch, adult	6/30/2010	4	4	9.75	0.50	2.50	0.58	12.00	3.83
black surfperch, all	6/30/2010	4	4	9.75	0.50	2.50	0.58	12.00	3.83
black surfperch, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
blackeye goby	6/30/2010	4	4	9.50	0.58	1.75	0.50	4.50	2.89
blacksmith, adult	6/30/2010	4	4	9.33	0.58	1.25	0.96	2.50	2.65
blacksmith, all	6/30/2010	4	4	9.33	0.58	1.25	0.96	2.50	2.65
blacksmith, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	6/30/2010	4	4	9.25	0.96	2.75	0.50	16.00	5.48
blue rockfish, all	6/30/2010	4	4	10.00	0.00	4.00	0.00	155.00	26.92
blue rockfish, juvenile	6/30/2010	4	4	10.00	0.00	3.75	0.50	139.00	28.06
blue-banded goby	6/30/2010	4	4			0.00	0.00	0.00	0.00
bocaccio, juvenile	6/30/2010	4	1	9.00		2.00		5.00	
cabezon	6/30/2010	4	2	6.00	0.00	1.00	0.00	1.00	0.00
California sheephead, female	6/30/2010	4	4	9.50	0.58	2.25	0.50	9.25	5.44
California sheephead, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	6/30/2010	4	4	7.50	1.29	1.75	0.50	2.00	0.82
copper rockfish	6/30/2010	4	3	9.00	1.00	1.67	0.58	2.00	1.00
copper rockfish, juvenile	6/30/2010	4	1	10.00		1.00		1.00	
coralline sculpin	6/30/2010	4	3	6.00	1.00	1.33	0.58	2.00	1.73
fringehead spp.	6/30/2010	4	1	10.00		1.00		1.00	
garibaldi, adult	6/30/2010	4	4			0.00	0.00	0.00	0.00
garibaldi, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
island kelpfish	6/30/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, adult	6/30/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	6/30/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/30/2010	4	4	9.75	0.50	2.50	0.58	12.25	3.30
kelp rockfish, all	6/30/2010	4	4	9.75	0.50	2.50	0.58	12.25	3.30
kelp rockfish, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	6/30/2010	4	2	7.50	3.54	1.00	0.00	1.00	0.00
kelpfish spp.	6/30/2010	4	2	8.00	2.83	1.50	0.71	2.00	1.41
Lingcod	6/30/2010	4	1	5.00		1.00		1.00	
olive rockfish, adult	6/30/2010	4	4	9.67	0.58	1.75	1.26	5.50	5.45
olive rockfish, all	6/30/2010	4	4	9.75	0.50	3.00	0.00	34.50	11.12
olive/yellowtail rockfish, juvenile	6/30/2010	4	4	9.75	0.50	3.00	0.00	29.00	10.49
opaleye, adult	6/30/2010	4	4			0.00	0.00	0.00	0.00
painted greenling	6/30/2010	4	4	10.00	0.00	3.00	0.00	22.25	7.41
pile surfperch, adult	6/30/2010	4	4	9.75	0.50	1.75	0.50	2.25	0.96
pile surfperch, all	6/30/2010	4	4	9.75	0.50	1.75	0.50	2.25	0.96
pile surfperch, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
rainbow surfperch	6/30/2010	4	2	8.00	1.41	1.50	0.71	1.50	0.71
rock wrasse, female	6/30/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	6/30/2010	4	4			0.00	0.00	0.00	0.00
rockfish spp., juvenile	6/30/2010	4	3	7.00	2.00	2.33	0.58	9.67	9.29
rubberlip surfperch	6/30/2010	4	3	8.33	0.58	2.00	0.00	2.67	0.58
senorita, adult	6/30/2010	4	4			0.00	0.00	0.00	0.00
senorita, all	6/30/2010	4	4			0.00	0.00	0.00	0.00
senorita, juvenile	6/30/2010	4	4			0.00	0.00	0.00	0.00
snubnose sculpin	6/30/2010	4	2	6.00	1.41	1.00	0.00	1.00	0.00
striped surfperch, adult	6/30/2010	4	4	10.00	0.00	2.75	0.50	20.50	8.23
striped surfperch, all	6/30/2010	4	4	10.00	0.00	2.75	0.50	24.50	7.19

2010 ROVING DIVER FISH COUNT

striped surfperch, juvenile	6/30/2010	4	4	9.00	1.00	1.50	1.00	4.00	3.27
treefish, adult	6/30/2010	4	4	6.67	0.58	0.75	0.50	0.75	0.50
treefish, juvenile	6/30/2010	4	4	7.50	0.71	0.50	0.58	0.50	0.58
tubesnout	6/30/2010	4	1	7.00		3.00		22.00	
vermillion rockfish	6/30/2010	4	1	10.00		1.00		1.00	
wolf eel	6/30/2010	4	2	6.50	0.71	1.00	0.00	1.00	0.00

2010 ROVING DIVER FISH COUNT
Santa Rosa Island - Trancion Canyon

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/29/2010	4	4	9.00	0.82	2.00	0.00	5.75	2.50
black rockfish	6/29/2010	4	2	8.50	0.71	2.00	0.00	2.50	0.71
black surfperch, adult	6/29/2010	4	4	10.00	0.00	3.00	0.00	17.75	3.40
black surfperch, all	6/29/2010	4	4	10.00	0.00	3.00	0.00	19.25	6.13
black surfperch, juvenile	6/29/2010	4	4	9.00		0.50	1.00	1.50	3.00
blackeye goby	6/29/2010	4	4	8.25	1.26	2.50	0.58	10.50	4.43
blacksmith, adult	6/29/2010	4	4	9.00	1.41	1.50	1.73	21.75	33.15
blacksmith, all	6/29/2010	4	4	9.00	1.41	1.50	1.73	21.75	33.15
blacksmith, juvenile	6/29/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	6/29/2010	4	4	10.00	0.00	3.00	0.00	43.50	33.37
blue rockfish, all	6/29/2010	4	4	10.00	0.00	4.00	0.00	337.00	54.45
blue rockfish, juvenile	6/29/2010	4	4	9.75	0.50	4.00	0.00	293.50	72.20
blue-banded goby	6/29/2010	4	4			0.00	0.00	0.00	0.00
bocaccio, juvenile	6/29/2010	4	3	7.67	1.15	2.33	0.58	17.67	23.69
Cabezon	6/29/2010	4	2	7.50	2.12	1.00	0.00	1.00	0.00
California sheephead, female	6/29/2010	4	4	10.00	0.00	2.50	0.58	12.75	5.91
California sheephead, juvenile	6/29/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	6/29/2010	4	4	8.00	1.41	1.75	0.50	2.50	1.29
copper rockfish, juvenile	6/29/2010	4	2	8.50	2.12	1.50	0.71	1.50	0.71
garibaldi, adult	6/29/2010	4	4			0.00	0.00	0.00	0.00
garibaldi, juvenile	6/29/2010	4	4			0.00	0.00	0.00	0.00
halfbanded rockfish, juvenile	6/29/2010	4	1	6.00		1.00		1.00	
island kelpfish	6/29/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, adult	6/29/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	6/29/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, juvenile	6/29/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/29/2010	4	4	10.00	0.00	2.75	0.50	17.25	9.39
kelp rockfish, all	6/29/2010	4	4	10.00	0.00	3.00	0.00	22.00	6.06
kelp rockfish, juvenile	6/29/2010	4	4	10.00	0.00	1.00	1.41	4.25	7.85
kelp surfperch	6/29/2010	4	2	10.00	0.00	2.50	0.71	9.50	9.19
kelp/gopher/copper rockfish,	6/29/2010	4	4	9.00	1.15	2.25	0.50	12.50	16.38
olive rockfish, adult	6/29/2010	4	4	10.00	0.00	2.75	0.50	15.75	8.58
olive rockfish, all	6/29/2010	4	4	10.00	0.00	3.00	0.00	70.50	16.60
olive/yellowtail rockfish, juvenile	6/29/2010	4	4	9.75	0.50	3.00	0.00	54.75	20.45
opaleye, adult	6/29/2010	4	4	7.00	2.65	1.00	0.82	1.75	2.22
painted greenling	6/29/2010	4	4	10.00	0.00	3.00	0.00	33.75	14.86
pile surfperch, adult	6/29/2010	4	4	9.75	0.50	2.00	0.00	7.00	1.15
pile surfperch, all	6/29/2010	4	4	9.75	0.50	2.00	0.00	7.00	1.15
pile surfperch, juvenile	6/29/2010	4	4			0.00	0.00	0.00	0.00
rainbow surfperch	6/29/2010	4	3	7.67	1.53	2.00	1.00	7.33	10.12
rock wrasse, female	6/29/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, juvenile	6/29/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	6/29/2010	4	4			0.00	0.00	0.00	0.00
rubberlip surfperch	6/29/2010	4	2	9.50	0.71	2.00	0.00	3.00	1.41
senorita, adult	6/29/2010	4	4	10.00	0.00	1.75	0.96	15.00	27.34
senorita, all	6/29/2010	4	4	10.00	0.00	1.75	0.96	15.00	27.34
senorita, juvenile	6/29/2010	4	4			0.00	0.00	0.00	0.00
snubnose sculpin	6/29/2010	4	1	6.00		1.00		1.00	
striped surfperch, adult	6/29/2010	4	4	9.75	0.50	3.00	0.00	27.50	5.32
striped surfperch, all	6/29/2010	4	4	9.75	0.50	3.00	0.00	34.00	6.68
striped surfperch, juvenile	6/29/2010	4	4	8.25	1.50	2.25	0.50	6.50	3.70
treefish, adult	6/29/2010	4	4	8.00	1.00	1.25	0.96	1.25	0.96
treefish, juvenile	6/29/2010	4	4	8.00	0.00	1.00	1.15	1.00	1.15

2010 ROVING DIVER FISH COUNT
Santa Rosa Island - Chickasaw

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow/gopher rockfish,	8/18/2010	6	4	9.50	0.58	1.75	0.50	4.75	2.99
black surfperch, adult	8/18/2010	6	6	9.67	0.52	2.83	0.41	15.00	3.52
black surfperch, all	8/18/2010	6	6	9.67	0.52	2.83	0.41	18.33	4.89
black surfperch, juvenile	8/18/2010	6	6	9.17	1.17	1.67	0.52	3.33	2.07
blackeye goby	8/18/2010	6	6	9.33	0.82	2.17	0.41	6.50	3.62
blacksmith, adult	8/18/2010	6	6	9.33	1.21	2.33	0.52	9.00	5.76
blacksmith, all	8/18/2010	6	6	9.33	1.21	2.33	0.52	9.00	5.76
blacksmith, juvenile	8/18/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	8/18/2010	6	6	9.33	1.21	2.50	0.55	14.17	11.92
blue rockfish, all	8/18/2010	6	6	10.00	0.00	3.67	0.52	160.67	69.35
blue rockfish, juvenile	8/18/2010	6	6	10.00	0.00	3.67	0.52	146.50	67.22
blue-banded goby	8/18/2010	6	6			0.00	0.00	0.00	0.00
bocaccio, juvenile	8/18/2010	6	2	8.00	2.83	2.00	1.41	24.00	32.53
cabezon	8/18/2010	6	3	6.00	1.00	1.00	0.00	1.00	0.00
California sheephead, female	8/18/2010	6	6	9.33	1.21	2.00	0.00	5.50	2.07
California sheephead, juvenile	8/18/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, male	8/18/2010	6	6	9.67	0.82	1.67	0.52	2.83	1.72
copper rockfish, juvenile	8/18/2010	6	1	7.00		1.00		1.00	
garibaldi, adult	8/18/2010	6	6			0.00	0.00	0.00	0.00
garibaldi, juvenile	8/18/2010	6	6			0.00	0.00	0.00	0.00
island kelpfish	8/18/2010	6	6			0.00	0.00	0.00	0.00
kelp bass, adult	8/18/2010	6	6	5.00		0.17	0.41	0.17	0.41
kelp bass, calico bass, all	8/18/2010	6	6	5.00		0.17	0.41	0.17	0.41
kelp bass, juvenile	8/18/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, adult	8/18/2010	6	6	9.67	0.82	2.83	0.41	15.83	6.27
kelp rockfish, all	8/18/2010	6	6	9.67	0.82	2.83	0.41	17.00	7.64
kelp rockfish, juvenile	8/18/2010	6	6	6.50	0.71	0.67	1.03	1.17	2.04
kelp surfperch	8/18/2010	6	4	8.25	2.36	2.00	0.82	7.50	7.85
kelp/gopher/copper rockfish,	8/18/2010	6	3	9.33	0.58	1.67	0.58	2.67	2.08
kelpfish spp.	8/18/2010	6	2	7.50	3.54	1.50	0.71	2.50	2.12
lingcod	8/18/2010	6	5	8.20	1.30	1.20	0.45	1.20	0.45
olive rockfish, adult	8/18/2010	6	6	9.20	1.30	1.67	0.82	4.33	2.94
olive rockfish, all	8/18/2010	6	6	9.83	0.41	3.67	0.52	104.00	31.22
olive/yellowtail rockfish, juvenile	8/18/2010	6	6	9.83	0.41	3.50	0.55	99.67	31.56
opaleye, adult	8/18/2010	6	6	9.00		0.17	0.41	0.17	0.41
painted greenling	8/18/2010	6	6	10.00	0.00	3.00	0.00	43.50	14.90
pile surfperch, adult	8/18/2010	6	6	9.20	0.84	1.50	0.84	3.17	2.56
pile surfperch, all	8/18/2010	6	6	9.20	0.84	1.67	0.82	3.83	2.79
pile surfperch, juvenile	8/18/2010	6	6	8.00	2.65	0.67	0.82	0.67	0.82
rainbow surfperch	8/18/2010	6	4	8.50	1.91	1.50	0.58	3.75	4.27
rock wrasse, female	8/18/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, juvenile	8/18/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	8/18/2010	6	6			0.00	0.00	0.00	0.00
senorita, adult	8/18/2010	6	6	9.60	0.55	2.33	1.21	17.83	11.92
senorita, all	8/18/2010	6	6	9.60	0.55	2.33	1.21	17.83	11.92
senorita, juvenile	8/18/2010	6	6			0.00	0.00	0.00	0.00
snubnose sculpin	8/18/2010	6	2	8.00	2.83	2.00	0.00	3.00	1.41
speckled sanddab	8/18/2010	6	1	9.00		2.00		2.00	
striped surfperch, adult	8/18/2010	6	6	10.00	0.00	2.50	1.22	17.33	10.11
striped surfperch, all	8/18/2010	6	6	9.83	0.41	2.83	0.41	26.50	15.60
striped surfperch, juvenile	8/18/2010	6	6	9.00	1.55	2.33	0.52	9.50	7.50
treefish, adult	8/18/2010	6	6	8.00		0.17	0.41	0.17	0.41
treefish, juvenile	8/18/2010	6	6	8.40	0.89	1.50	0.84	1.50	0.84
tubesnout	8/18/2010	6	1	7.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
Santa Rosa Island - South Point

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow/gopher rockfish,	8/17/2010	6	1	7.00		2.00		3.00	
black surfperch, adult	8/17/2010	6	6	9.50	1.22	2.50	0.55	10.50	4.93
black surfperch, all	8/17/2010	6	6	9.50	1.22	2.67	0.52	13.00	6.00
black surfperch, juvenile	8/17/2010	6	6	8.00	1.58	1.50	0.84	2.50	1.87
blackeye goby	8/17/2010	6	6	9.17	0.41	2.17	0.41	5.67	3.67
blacksmith, adult	8/17/2010	6	6	8.50	1.76	3.00	0.00	23.33	9.95
blacksmith, all	8/17/2010	6	6	8.50	1.76	3.00	0.00	23.33	9.95
blacksmith, juvenile	8/17/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	8/17/2010	6	6	9.50	1.22	3.00	0.00	18.33	5.89
blue rockfish, all	8/17/2010	6	6	10.00	0.00	3.67	0.52	108.67	35.84
blue rockfish, juvenile	8/17/2010	6	6	10.00	0.00	3.33	0.52	90.33	30.83
blue-banded goby	8/17/2010	6	6			0.00	0.00	0.00	0.00
bocaccio, juvenile	8/17/2010	6	2	8.00	1.41	2.00	0.00	4.00	1.41
cabezon	8/17/2010	6	1	9.00		1.00		1.00	
California sheephead, female	8/17/2010	6	6	9.67	0.82	2.00	0.00	6.17	2.23
California sheephead, juvenile	8/17/2010	6	6			0.00	0.00	0.00	0.00
California sheephead, male	8/17/2010	6	6	9.83	0.41	2.00	0.00	4.50	2.07
garibaldi, adult	8/17/2010	6	6			0.00	0.00	0.00	0.00
garibaldi, juvenile	8/17/2010	6	6			0.00	0.00	0.00	0.00
island kelpfish	8/17/2010	6	6			0.00	0.00	0.00	0.00
kelp bass, adult	8/17/2010	6	6	8.50	2.12	0.50	0.84	1.00	2.00
kelp bass, calico bass, all	8/17/2010	6	6	8.50	2.12	0.50	0.84	1.00	2.00
kelp bass, juvenile	8/17/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, adult	8/17/2010	6	6	9.67	0.52	2.67	0.52	14.17	8.16
kelp rockfish, all	8/17/2010	6	6	9.67	0.52	2.67	0.52	15.17	8.06
kelp rockfish, juvenile	8/17/2010	6	6	10.00		0.33	0.82	1.00	2.45
kelp surfperch	8/17/2010	6	3	9.33	1.15	1.67	0.58	2.33	1.53
kelp/gopher/copper rockfish,	8/17/2010	6	3	7.00	1.73	2.00	0.00	3.33	1.53
kelpfish spp.	8/17/2010	6	3	7.67	1.53	1.33	0.58	1.33	0.58
olive rockfish, adult	8/17/2010	6	6	10.00	0.00	2.67	0.52	14.17	7.31
olive rockfish, all	8/17/2010	6	6	10.00	0.00	3.00	0.00	50.17	17.38
olive/yellowtail rockfish, juvenile	8/17/2010	6	6	9.50	0.55	3.00	0.00	36.00	12.84
opaleye, adult	8/17/2010	6	6	6.00	1.41	0.33	0.52	0.33	0.52
painted greenling	8/17/2010	6	6	10.00	0.00	3.00	0.00	18.67	4.76
pile surfperch, adult	8/17/2010	6	6	9.00	1.55	1.83	0.41	4.50	2.88
pile surfperch, all	8/17/2010	6	6	9.00	1.55	1.83	0.41	4.67	2.88
pile surfperch, juvenile	8/17/2010	6	6	7.00		0.17	0.41	0.17	0.41
rock wrasse, female	8/17/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, juvenile	8/17/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	8/17/2010	6	6			0.00	0.00	0.00	0.00
rubberlip surfperch	8/17/2010	6	4	7.00	1.83	2.25	0.50	6.75	7.09
senorita, adult	8/17/2010	6	6	10.00	0.00	2.83	0.41	34.17	19.52
senorita, all	8/17/2010	6	6	15.17	12.66	2.83	0.41	34.17	19.52
senorita, juvenile	8/17/2010	6	6			0.00	0.00	0.00	0.00
snubnose sculpin	8/17/2010	6	2	8.50	0.71	1.00	0.00	1.00	0.00
striped surfperch, adult	8/17/2010	6	6	10.00	0.00	2.83	0.41	13.17	5.42
striped surfperch, all	8/17/2010	6	6	10.00	0.00	2.83	0.41	15.83	8.04
striped surfperch, juvenile	8/17/2010	6	6	9.25	0.96	1.17	0.98	2.67	3.78
swell shark	8/17/2010	6	3	8.67	1.53	1.00	0.00	1.00	0.00
treefish, adult	8/17/2010	6	6			0.00	0.00	0.00	0.00
treefish, juvenile	8/17/2010	6	6	8.00	2.00	1.00	1.10	1.33	1.51

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Devil's Peak Member

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
bat ray	6/17/2010	4	1	5.00		1.00		1.00	
black and yellow rockfish	6/17/2010	4	1	5.00		1.00		1.00	
black surfperch, adult	6/17/2010	4	4	9.50	0.58	2.25	0.50	8.50	3.70
black surfperch, all	6/17/2010	4	4	9.50	0.58	2.25	0.50	8.75	3.59
black surfperch, juvenile	6/17/2010	4	4	9.00		0.25	0.50	0.25	0.50
blackeye goby	6/17/2010	4	4	10.00	0.00	3.00	0.00	63.75	18.66
blacksmith, adult	6/17/2010	4	4	10.00	0.00	4.00	0.00	221.75	106.14
blacksmith, all	6/17/2010	4	4	10.00	0.00	4.00	0.00	221.75	106.14
blacksmith, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	6/17/2010	4	4	10.00	0.00	0.50	0.58	0.50	0.58
blue rockfish, all	6/17/2010	4	4	9.75	0.50	3.00	0.00	52.25	10.59
blue rockfish, juvenile	6/17/2010	4	4	9.75	0.50	3.00	0.00	51.75	10.53
blue-banded goby	6/17/2010	4	4	9.25	0.96	2.25	0.50	10.25	2.87
cabezon	6/17/2010	4	1	10.00		1.00		1.00	
California sheephead, female	6/17/2010	4	4	10.00	0.00	2.50	0.58	10.50	1.73
California sheephead, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	6/17/2010	4	4			0.00	0.00	0.00	0.00
fringehead spp.	6/17/2010	4	1	5.00		1.00		1.00	
garibaldi, adult	6/17/2010	4	4	10.00	0.00	3.00	0.00	16.00	1.15
garibaldi, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
gopher rockfish	6/17/2010	4	3	9.00	1.00	2.00	0.00	2.67	0.58
halfmoon	6/17/2010	4	4	8.75	0.96	1.75	0.50	2.50	1.00
island kelpfish	6/17/2010	4	4	7.75	2.06	1.50	0.58	2.50	1.91
kelp bass, adult	6/17/2010	4	4	9.75	0.50	2.50	0.58	12.00	3.56
kelp bass, calico bass, all	6/17/2010	4	4	9.75	0.50	2.50	0.58	12.00	3.56
kelp bass, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/17/2010	4	4	9.25	1.50	2.00	0.00	4.50	1.73
kelp rockfish, all	6/17/2010	4	4	9.25	1.50	2.00	0.00	4.50	1.73
kelp rockfish, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
olive rockfish, adult	6/17/2010	4	4			0.00	0.00	0.00	0.00
olive rockfish, all	6/17/2010	4	4	8.75	1.89	2.00	0.00	4.00	1.63
olive/yellowtail rockfish, juvenile	6/17/2010	4	4	8.75	1.89	2.00	0.00	4.00	1.63
opaleye, adult	6/17/2010	4	4	8.25	0.96	2.00	0.00	4.75	2.22
painted greenling	6/17/2010	4	4	9.75	0.50	3.00	0.00	25.25	5.12
pile surfperch, adult	6/17/2010	4	4	10.00	0.00	2.00	0.00	7.75	2.06
pile surfperch, all	6/17/2010	4	4	10.00	0.00	2.00	0.00	7.75	2.06
pile surfperch, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, female	6/17/2010	4	4	8.50	1.91	1.75	0.50	4.50	2.89
rock wrasse, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	6/17/2010	4	4	8.75	1.50	2.00	0.00	3.00	2.00
rubberlip surfperch	6/17/2010	4	2	6.50	0.71	1.00	0.00	1.00	0.00
sculpin spp.	6/17/2010	4	1	10.00		1.00		1.00	
senorita, adult	6/17/2010	4	4	10.00	0.00	3.25	0.50	69.25	26.47
senorita, all	6/17/2010	4	4	10.00	0.00	3.25	0.50	69.25	26.47
senorita, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
sharpnose surfperch	6/17/2010	4	4	7.75	1.71	2.00	0.00	4.75	1.71
snubnose sculpin	6/17/2010	4	2	8.00	1.41	1.50	0.71	1.50	0.71
striped surfperch, adult	6/17/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, all	6/17/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00
treefish, adult	6/17/2010	4	4	7.75	1.89	1.75	0.50	4.00	3.16
treefish, juvenile	6/17/2010	4	4			0.00	0.00	0.00	0.00

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Potato Pasture

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	9/13/2010	5	5	9.80	0.45	2.40	0.55	8.80	3.11
black surfperch, all	9/13/2010	5	5	9.80	0.45	2.40	0.55	9.20	3.11
black surfperch, juvenile	9/13/2010	5	5	9.00		0.40	0.89	0.40	0.89
blackeye goby	9/13/2010	5	5	9.60	0.89	3.20	0.45	58.20	45.55
blacksmith, adult	9/13/2010	5	5	10.00	0.00	4.00	0.00	334.60	103.25
blacksmith, all	9/13/2010	5	5	10.00	0.00	4.00	0.00	334.60	103.25
blacksmith, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
blue rockfish, adult	9/13/2010	5	5	9.00		0.20	0.45	0.20	0.45
blue rockfish, all	9/13/2010	5	5	9.40	0.55	3.00	0.00	21.00	8.94
blue rockfish, juvenile	9/13/2010	5	5	9.40	0.55	3.00	0.00	20.80	8.79
blue-banded goby	9/13/2010	5	5	9.60	0.89	2.20	0.84	16.80	17.81
California sheephead, female	9/13/2010	5	5	10.00	0.00	2.40	0.55	11.20	2.17
California sheephead, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
California sheephead, male	9/13/2010	5	5	8.80	1.79	1.40	0.55	1.40	0.55
copper rockfish	9/13/2010	5	2	8.00	1.41	1.50	0.71	1.50	0.71
garibaldi, adult	9/13/2010	5	5	9.80	0.45	2.00	0.00	7.80	3.49
garibaldi, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
gopher rockfish	9/13/2010	5	4	8.50	2.38	1.50	0.58	1.50	0.58
halfmoon	9/13/2010	5	4	6.75	1.26	1.50	0.58	2.50	1.91
horn shark	9/13/2010	5	1	6.00		1.00		1.00	
island kelpfish	9/13/2010	5	5			0.00	0.00	0.00	0.00
kelp bass, adult	9/13/2010	5	5	10.00	0.00	3.00	0.00	25.00	6.96
kelp bass, calico bass, all	9/13/2010	5	5	10.00	0.00	3.00	0.00	25.00	6.96
kelp bass, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
kelp rockfish, adult	9/13/2010	5	5	10.00		0.20	0.45	0.20	0.45
kelp rockfish, all	9/13/2010	5	5	10.00		0.20	0.45	0.20	0.45
kelp rockfish, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	9/13/2010	5	1	9.00		2.00		2.00	
ocean whitefish	9/13/2010	5	3	6.67	1.53	2.00	0.00	2.00	0.00
olive rockfish, adult	9/13/2010	5	5	8.00		0.20	0.45	0.20	0.45
olive rockfish, all	9/13/2010	5	5	8.00		0.20	0.45	0.20	0.45
olive/yellowtail rockfish, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
opaleye, adult	9/13/2010	5	5	8.75	1.26	1.80	1.10	15.80	23.31
painted greenling	9/13/2010	5	5	10.00	0.00	3.00	0.00	36.40	9.34
pile surfperch, adult	9/13/2010	5	5	9.80	0.45	2.60	0.55	11.00	2.65
pile surfperch, all	9/13/2010	5	5	9.80	0.45	2.60	0.55	11.00	2.65
pile surfperch, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, female	9/13/2010	5	5	9.50	0.71	0.60	0.89	0.60	0.89
rock wrasse, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	9/13/2010	5	5	9.00	1.15	1.40	0.89	1.60	1.14
rockfish spp., juvenile	9/13/2010	5	1	9.00		1.00		1.00	
rubberlip surfperch	9/13/2010	5	4	7.25	1.71	2.00	0.00	2.75	0.50
senorita, adult	9/13/2010	5	5	10.00	0.00	3.00	0.00	38.80	17.24
senorita, all	9/13/2010	5	5	10.00	0.00	3.00	0.00	39.00	17.06
senorita, juvenile	9/13/2010	5	5	10.00		0.20	0.45	0.20	0.45
striped surfperch, adult	9/13/2010	5	5			0.00	0.00	0.00	0.00
striped surfperch, all	9/13/2010	5	5			0.00	0.00	0.00	0.00
striped surfperch, juvenile	9/13/2010	5	5			0.00	0.00	0.00	0.00
treefish, adult	9/13/2010	5	5	9.50	1.00	1.60	0.89	3.20	2.05
treefish, juvenile	9/13/2010	5	5	9.00	1.41	1.40	0.89	1.80	1.48
zebra goby	9/13/2010	5	1	9.00		2.00		5.00	

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Cavern Point

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	7/12/2010	4	1	7.00		1.00		1.00	
black surfperch, adult	7/12/2010	4	3	10.00	0.00	3.00	0.00	29.33	15.95
black surfperch, all	7/12/2010	4	4	10.00	0.00	3.00	0.00	30.00	16.37
black surfperch, juvenile	7/12/2010	4	3	9.50	0.71	0.67	0.58	0.67	0.58
blackeye goby	7/12/2010	4	4	10.00	0.00	3.50	0.58	100.00	31.22
blacksmith, adult	7/12/2010	4	3	10.00	0.00	4.00	0.00	640.33	185.69
blacksmith, all	7/12/2010	4	4	10.00	0.00	4.00	0.00	640.33	185.69
blacksmith, juvenile	7/12/2010	4	3			0.00	0.00	0.00	0.00
blue rockfish, adult	7/12/2010	4	3			0.00	0.00	0.00	0.00
blue rockfish, all	7/12/2010	4	4	10.00	0.00	3.00	0.00	60.00	15.00
blue rockfish, juvenile	7/12/2010	4	3	10.00	0.00	3.00	0.00	60.00	15.00
blue-banded goby	7/12/2010	4	4	8.25	2.36	2.75	0.50	24.67	8.50
bocaccio, juvenile	7/12/2010	4	2	9.00	1.41	1.50	0.71	5.00	5.66
brown rockfish	7/12/2010	4	1	9.00		1.00		1.00	
California barracuda	7/12/2010	4	1	5.00		2.00		4.00	
California sheephead, female	7/12/2010	4	4	10.00	0.00	3.00	0.00	23.67	4.04
California sheephead, juvenile	7/12/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	7/12/2010	4	4	6.50	1.29	1.50	0.58	2.33	1.15
copper rockfish	7/12/2010	4	1	9.00		1.00		1.00	
garibaldi, adult	7/12/2010	4	4	9.75	0.50	2.75	0.50	12.67	5.77
garibaldi, juvenile	7/12/2010	4	4			0.00	0.00	0.00	0.00
gopher rockfish	7/12/2010	4	3	8.00	1.73	2.00	0.00	4.00	2.83
gopher/black and yellow rockfish,	7/12/2010	4	1	9.00		1.00		1.00	
halfmoon	7/12/2010	4	1	8.00		2.00			
horn shark	7/12/2010	4	1	8.00		1.00		1.00	
island kelpfish	7/12/2010	4	4	7.50	2.38	1.50	0.58	3.67	2.31
kelp bass, adult	7/12/2010	4	3	10.00	0.00	3.00	0.00	18.67	6.11
kelp bass, calico bass, all	7/12/2010	4	4	10.00	0.00	3.00	0.00	18.67	6.11
kelp bass, juvenile	7/12/2010	4	3			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/12/2010	4	3	6.50	0.71	0.67	0.58	0.67	0.58
kelp rockfish, all	7/12/2010	4	4	6.50	0.71	0.50	0.58	0.67	0.58
kelp rockfish, juvenile	7/12/2010	4	4			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	7/12/2010	4	1	8.00		2.00		2.00	
ocean whitefish	7/12/2010	4	4	8.00	1.83	1.75	0.50	4.00	2.65
olive rockfish, adult	7/12/2010	4	3	8.00		0.67	1.15	1.00	1.73
olive rockfish, all	7/12/2010	4	4	7.75	2.06	1.75	0.50	4.33	2.52
olive/yellowtail rockfish, juvenile	7/12/2010	4	3	8.33	2.08	2.00	0.00	3.33	1.15
opaleye, adult	7/12/2010	4	4	8.75	1.50	2.25	0.50	7.00	1.00
Pacific sardine	7/12/2010	4	2	10.00	0.00	4.00	0.00	2500.00	
painted greenling	7/12/2010	4	4	10.00	0.00	2.75	0.50	30.33	17.79
pile surfperch, adult	7/12/2010	4	3	8.33	0.58	2.33	0.58	10.00	4.58
pile surfperch, all	7/12/2010	4	4	8.75	0.96	2.50	0.58	10.00	4.58
pile surfperch, juvenile	7/12/2010	4	3			0.00	0.00	0.00	0.00
rock wrasse, female	7/12/2010	4	4	8.33	1.53	1.50	1.00	2.33	0.58
rock wrasse, juvenile	7/12/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	7/12/2010	4	4	8.33	0.58	1.50	1.00	4.00	2.65
rubberlip surfperch	7/12/2010	4	3	8.33	2.08	1.67	0.58	1.67	0.58
senorita, adult	7/12/2010	4	3	10.00	0.00	4.00	0.00	258.00	86.63
senorita, all	7/12/2010	4	4	10.00	0.00	4.00	0.00	258.00	86.63
senorita, juvenile	7/12/2010	4	3			0.00	0.00	0.00	0.00
sharpnose surfperch	7/12/2010	4	3	8.67	1.53	2.00	0.00	7.00	0.00
striped surfperch, adult	7/12/2010	4	3			0.00	0.00	0.00	0.00

2010 ROVING DIVER FISH COUNT

striped surfperch, all	7/12/2010	4	4	10.00		0.50	1.00	0.00	0.00
striped surfperch, juvenile	7/12/2010	4	3			0.00	0.00	0.00	0.00
treefish, adult	7/12/2010	4	4	8.67	1.53	1.50	1.00	3.33	0.58
treefish, juvenile	7/12/2010	4	4	7.67	0.58	1.25	0.96	3.33	2.08
white surfperch	7/12/2010	4	2	7.50	3.54	2.00	0.00	5.00	
zebra goby	7/12/2010	4	1	10.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Little Scorpion

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/18/2010	4	4	8.50	1.73	2.00	0.00	3.50	1.29
black surfperch, adult	6/18/2010	4	4	8.50	1.29	2.00	0.00	7.50	1.29
black surfperch, all	6/18/2010	4	4	8.50	1.29	2.00	0.00	7.50	1.29
black surfperch, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
blackeye goby	6/18/2010	4	4	10.00	0.00	3.75	0.50	168.75	66.54
blacksmith, adult	6/18/2010	4	4	10.00	0.00	4.00	0.00	502.75	155.96
blacksmith, all	6/18/2010	4	4	10.00	0.00	4.00	0.00	502.75	155.96
blacksmith, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	6/18/2010	4	4	5.00		0.25	0.50	0.25	0.50
blue rockfish, all	6/18/2010	4	4	10.00	0.00	3.00	0.00	76.25	11.79
blue rockfish, juvenile	6/18/2010	4	4	10.00	0.00	3.00	0.00	76.00	11.40
blue-banded goby	6/18/2010	4	4	10.00	0.00	3.00	0.00	53.00	25.66
brown rockfish	6/18/2010	4	2	9.50	0.71	1.00	0.00	1.00	0.00
cabezon	6/18/2010	4	1	8.00		1.00		1.00	
California sheephead, female	6/18/2010	4	4	10.00	0.00	2.00	0.00	8.25	1.50
California sheephead, juvenile	6/18/2010	4	4	10.00		0.25	0.50	0.25	0.50
California sheephead, male	6/18/2010	4	4			0.00	0.00	0.00	0.00
garibaldi, adult	6/18/2010	4	4	10.00	0.00	3.00	0.00	16.75	1.71
garibaldi, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
grass rockfish	6/18/2010	4	1	9.00		1.00		1.00	
halfmoon	6/18/2010	4	3	8.00	2.65	1.33	0.58	1.33	0.58
island kelpfish	6/18/2010	4	4	8.00	2.83	0.75	0.96	1.25	1.89
kelp bass, adult	6/18/2010	4	4	9.75	0.50	2.25	0.50	8.75	2.99
kelp bass, calico bass, all	6/18/2010	4	4	9.75	0.50	2.25	0.50	8.75	2.99
kelp bass, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/18/2010	4	4	9.25	0.96	2.00	0.00	4.75	1.26
kelp rockfish, all	6/18/2010	4	4	9.25	0.96	2.00	0.00	4.75	1.26
kelp rockfish, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	6/18/2010	4	2	7.50	3.54	2.00	0.00	3.50	2.12
olive rockfish, adult	6/18/2010	4	4	7.50	0.71	0.75	0.96	0.75	0.96
olive rockfish, all	6/18/2010	4	4	8.67	1.15	1.00	0.82	1.25	1.26
olive/yellowtail rockfish, juvenile	6/18/2010	4	4	9.00	1.41	0.50	0.58	0.50	0.58
opaleye, adult	6/18/2010	4	4	6.75	0.50	1.75	0.50	3.75	4.19
painted greenling	6/18/2010	4	4	10.00	0.00	3.00	0.00	47.25	5.06
pile surfperch, adult	6/18/2010	4	4	9.25	1.50	2.25	0.50	7.25	4.19
pile surfperch, all	6/18/2010	4	4	9.25	1.50	2.25	0.50	7.25	4.19
pile surfperch, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, female	6/18/2010	4	4	8.25	2.06	1.75	0.50	3.25	2.22
rock wrasse, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	6/18/2010	4	4	7.75	1.71	2.00	0.00	3.00	1.41
rubberlip surfperch	6/18/2010	4	1	6.00		1.00		1.00	
senorita, adult	6/18/2010	4	4	9.75	0.50	3.00	0.00	54.50	23.30
senorita, all	6/18/2010	4	4	9.75	0.50	3.00	0.00	54.50	23.30
senorita, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, adult	6/18/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, all	6/18/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/18/2010	4	4			0.00	0.00	0.00	0.00
treefish, adult	6/18/2010	4	4	9.25	0.96	2.00	0.00	6.25	2.50
treefish, juvenile	6/18/2010	4	4	6.25	1.89	1.25	0.50	1.25	0.50
zebra goby	6/18/2010	4	2	7.50	0.71	1.00	0.00	1.00	0.00

2010 ROVING DIVER FISH COUNT
Santa Cruz Island - Pedro Reef

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	7/13/2010	5	4	8.75	2.50	2.00	0.00	3.50	1.29
black surfperch, all	7/13/2010	5	5	9.00	2.24	2.00	0.00	3.50	1.29
black surfperch, juvenile	7/13/2010	5	4			0.00	0.00	0.00	0.00
blackeye goby	7/13/2010	5	5	10.00	0.00	4.00	0.00	208.50	69.92
blacksmith, adult	7/13/2010	5	4	10.00	0.00	4.00	0.00	805.75	63.28
blacksmith, all	7/13/2010	5	5	10.00	0.00	4.00	0.00	805.75	63.28
blacksmith, juvenile	7/13/2010	5	4			0.00	0.00	0.00	0.00
blue rockfish, adult	7/13/2010	5	4			0.00	0.00	0.00	0.00
blue rockfish, all	7/13/2010	5	5	10.00	0.00	4.00	0.00	168.50	45.91
blue rockfish, juvenile	7/13/2010	5	4	10.00	0.00	4.00	0.00	168.50	45.91
blue-banded goby	7/13/2010	5	5	9.00	0.82	1.80	1.10	4.50	4.12
cabezon	7/13/2010	5	1	5.00		2.00		2.00	
California sheephead, female	7/13/2010	5	5	10.00	0.00	2.80	0.45	12.50	4.65
California sheephead, juvenile	7/13/2010	5	5			0.00	0.00	0.00	0.00
California sheephead, male	7/13/2010	5	5			0.00	0.00	0.00	0.00
garibaldi, adult	7/13/2010	5	5	9.80	0.45	2.00	0.00	6.00	0.82
garibaldi, juvenile	7/13/2010	5	5			0.00	0.00	0.00	0.00
halfmoon	7/13/2010	5	5	9.60	0.89	2.00	0.00	3.50	0.58
island kelpfish	7/13/2010	5	5	6.00		0.20	0.45	0.25	0.50
kelp bass, adult	7/13/2010	5	4	8.75	1.89	2.25	0.50	10.00	2.16
kelp bass, calico bass, all	7/13/2010	5	5	8.60	1.67	2.20	0.45	10.00	2.16
kelp bass, juvenile	7/13/2010	5	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/13/2010	5	4			0.00	0.00	0.00	0.00
kelp rockfish, all	7/13/2010	5	5			0.00	0.00	0.00	0.00
kelp rockfish, juvenile	7/13/2010	5	4			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	7/13/2010	5	1	9.00		1.00		1.00	
ocean whitefish	7/13/2010	5	1	7.00		2.00		4.00	
olive rockfish, adult	7/13/2010	5	4			0.00	0.00	0.00	0.00
olive rockfish, all	7/13/2010	5	5	7.00	2.83	0.60	0.89	0.75	0.96
olive/yellowtail rockfish, juvenile	7/13/2010	5	4	7.00	2.83	0.75	0.96	0.75	0.96
opaleye, adult	7/13/2010	5	5	9.40	0.89	1.80	0.45	3.00	2.16
painted greenling	7/13/2010	5	5	9.80	0.45	3.20	0.45	40.75	14.52
pile surfperch, adult	7/13/2010	5	4	9.50	0.58	2.00	0.00	4.00	1.41
pile surfperch, all	7/13/2010	5	5	9.60	0.55	2.00	0.00	4.00	1.41
pile surfperch, juvenile	7/13/2010	5	4			0.00	0.00	0.00	0.00
rock wrasse, female	7/13/2010	5	5	8.25	1.71	1.60	0.89	3.25	1.50
rock wrasse, juvenile	7/13/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	7/13/2010	5	5			0.00	0.00	0.00	0.00
senorita, adult	7/13/2010	5	4	10.00	0.00	3.50	0.58	123.25	72.27
senorita, all	7/13/2010	5	5	10.00	0.00	3.60	0.55	124.25	73.68
senorita, juvenile	7/13/2010	5	4	7.00		0.50	1.00	1.00	2.00
snubnose sculpin	7/13/2010	5	1	6.00		2.00		2.00	
striped surfperch, adult	7/13/2010	5	4			0.00	0.00	0.00	0.00
striped surfperch, all	7/13/2010	5	5			0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/13/2010	5	4			0.00	0.00	0.00	0.00
treefish, adult	7/13/2010	5	5			0.00	0.00	0.00	0.00
treefish, juvenile	7/13/2010	5	5	9.00	1.22	1.20	0.45	1.25	0.50
vermillion rockfish, juvenile	7/13/2010	5	3	6.33	2.31	1.00	0.00	1.00	0.00

2010 ROVING DIVER FISH COUNT
Anacapa Island - Keyhole

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow/gopher rockfish,	8/31/2010	6	1	5.00		1.00		1.00	
black surfperch, adult	8/31/2010	6	6	10.00	0.00	2.83	0.41	13.83	3.19
black surfperch, all	8/31/2010	6	6	10.00	0.00	3.00	0.00	21.33	2.34
black surfperch, juvenile	8/31/2010	6	6	9.67	0.52	2.00	0.00	7.50	2.43
blackeye goby	8/31/2010	6	6	10.00	0.00	3.33	0.52	123.17	87.00
blacksmith, adult	8/31/2010	6	6	10.00	0.00	3.50	0.55	96.33	63.19
blacksmith, all	8/31/2010	6	6	10.00	0.00	3.50	0.55	96.33	63.19
blacksmith, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, adult	8/31/2010	6	6			0.00	0.00	0.00	0.00
blue rockfish, all	8/31/2010	6	6	10.00	0.00	3.00	0.00	63.83	15.56
blue rockfish, juvenile	8/31/2010	6	6	10.00	0.00	3.00	0.00	63.83	15.56
blue-banded goby	8/31/2010	6	6	8.00	2.45	1.50	1.22	4.17	6.01
California sheephead, female	8/31/2010	6	6	9.83	0.41	2.17	0.41	9.67	3.56
California sheephead, juvenile	8/31/2010	6	6	9.25	0.96	1.00	0.89	1.67	2.25
California sheephead, male	8/31/2010	6	6	7.00	0.00	0.83	0.75	0.83	0.75
garibaldi, adult	8/31/2010	6	6	10.00	0.00	2.00	0.00	6.00	1.67
garibaldi, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
halfmoon	8/31/2010	6	1	8.00		1.00		1.00	
island kelpfish	8/31/2010	6	6	9.33	0.82	2.00	0.63	5.17	4.96
kelp bass, adult	8/31/2010	6	6	9.40	0.89	1.83	0.98	7.33	6.56
kelp bass, calico bass, all	8/31/2010	6	6	9.40	0.89	1.83	0.98	7.33	6.56
kelp bass, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, adult	8/31/2010	6	6	9.20	1.79	1.50	0.84	2.33	1.86
kelp rockfish, all	8/31/2010	6	6	9.20	1.79	1.50	0.84	2.33	1.86
kelp rockfish, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
kelp surfperch	8/31/2010	6	3	9.00	1.73	1.67	1.15	9.67	15.01
kelp/gopher/copper rockfish,	8/31/2010	6	1	10.00		1.00		1.00	
kelpfish spp.	8/31/2010	6	1	7.00		1.00		1.00	
ocean whitefish	8/31/2010	6	1	5.00		1.00		1.00	
olive rockfish, adult	8/31/2010	6	6			0.00	0.00	0.00	0.00
olive rockfish, all	8/31/2010	6	6			0.00	0.00	0.00	0.00
olive/yellowtail rockfish, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
opaleye, adult	8/31/2010	6	6	8.17	1.83	2.17	0.75	7.50	8.12
painted greenling	8/31/2010	6	6	10.00	0.00	3.00	0.00	23.17	4.12
pile surfperch, adult	8/31/2010	6	6	8.60	1.95	1.33	0.82	1.67	1.37
pile surfperch, all	8/31/2010	6	6	10.00	0.00	2.00	0.00	3.33	1.03
pile surfperch, juvenile	8/31/2010	6	6	9.33	1.63	1.67	0.52	1.67	0.52
rock wrasse, female	8/31/2010	6	6	9.50	0.84	2.33	0.52	8.67	2.34
rock wrasse, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	8/31/2010	6	6	10.00	0.00	2.17	0.41	7.00	4.15
rubberlip surfperch	8/31/2010	6	4	7.50	1.91	1.50	0.58	1.50	0.58
senorita, adult	8/31/2010	6	6	10.00	0.00	3.00	0.00	41.50	5.75
senorita, all	8/31/2010	6	6	10.00	0.00	3.00	0.00	41.50	5.75
senorita, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
snubnose sculpin	8/31/2010	6	1	7.00		2.00		3.00	
speckled sanddab	8/31/2010	6	1	7.00		1.00		1.00	
striped surfperch, adult	8/31/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, all	8/31/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/31/2010	6	6			0.00	0.00	0.00	0.00
treefish, adult	8/31/2010	6	6	9.60	0.55	1.33	0.82	2.00	1.79
treefish, juvenile	8/31/2010	6	6	9.60	0.89	1.50	0.84	2.83	2.14

2010 ROVING DIVER FISH COUNT
Anacapa Island - East Fish Camp

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	7/16/2010	6	2	6.50	0.71	1.00	0.00	1.00	0.00
black surfperch, adult	7/16/2010	6	5	7.60	2.07	1.80	0.45	2.40	0.89
black surfperch, all	7/16/2010	6	6	8.00	2.10	1.83	0.41	2.40	0.89
black surfperch, juvenile	7/16/2010	6	5			0.00	0.00	0.00	0.00
blackeye goby	7/16/2010	6	6	10.00	0.00	4.00	0.00	327.80	80.87
blacksmith, adult	7/16/2010	6	5	10.00	0.00	4.00	0.00	469.60	110.02
blacksmith, all	7/16/2010	6	6	10.00	0.00	4.00	0.00	469.60	110.02
blacksmith, juvenile	7/16/2010	6	5			0.00	0.00	0.00	0.00
blue rockfish, adult	7/16/2010	6	5			0.00	0.00	0.00	0.00
blue rockfish, all	7/16/2010	6	6	10.00	0.00	4.00	0.00	274.20	56.02
blue rockfish, juvenile	7/16/2010	6	5	10.00	0.00	4.00	0.00	274.20	56.02
blue-banded goby	7/16/2010	6	6			0.00	0.00	0.00	0.00
bocaccio, juvenile	7/16/2010	6	3	6.00	1.00	1.00	0.00	1.00	0.00
brown rockfish	7/16/2010	6	2	7.50	2.12	1.00	0.00	1.00	0.00
cabezon	7/16/2010	6	2	8.50	0.71	1.00	0.00	1.00	
California scorpionfish	7/16/2010	6	1	8.00		1.00		1.00	
California sheephead, female	7/16/2010	6	6	9.83	0.41	2.67	0.52	13.00	5.24
California sheephead, juvenile	7/16/2010	6	6	9.00	1.41	0.67	1.03	1.00	1.41
California sheephead, male	7/16/2010	6	6			0.00	0.00	0.00	0.00
copper rockfish, juvenile	7/16/2010	6	3	6.67	1.15	2.00	0.00	5.33	2.52
garibaldi, adult	7/16/2010	6	6	10.00	0.00	3.00	0.00	14.60	2.70
garibaldi, juvenile	7/16/2010	6	6			0.00	0.00	0.00	0.00
giant black sea bass	7/16/2010	6	1	10.00		1.00		1.00	
gopher/black and yellow rockfish,	7/16/2010	6	2	9.00	1.41	2.50	0.71	11.50	2.12
halfmoon	7/16/2010	6	3	7.00	2.65	1.33	0.58	1.33	0.58
island kelpfish	7/16/2010	6	6	7.17	1.94	1.50	0.55	2.00	1.22
kelp bass, adult	7/16/2010	6	5	9.20	0.45	2.00	0.71	6.00	3.61
kelp bass, calico bass, all	7/16/2010	6	6	9.20	0.45	1.67	1.03	6.00	3.61
kelp bass, juvenile	7/16/2010	6	5			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/16/2010	6	5			0.00	0.00	0.00	0.00
kelp rockfish, all	7/16/2010	6	6			0.00	0.00	0.00	0.00
kelp rockfish, juvenile	7/16/2010	6	5			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	7/16/2010	6	5	9.40	0.89	2.60	0.55	12.50	6.81
ocean whitefish	7/16/2010	6	1	6.00		1.00		1.00	
olive rockfish, adult	7/16/2010	6	5			0.00	0.00	0.00	0.00
olive rockfish, all	7/16/2010	6	6	6.60	1.34	1.67	0.82	2.60	1.95
olive/yellowtail rockfish, juvenile	7/16/2010	6	5	7.00	1.15	1.60	0.89	2.60	1.95
opaleye, adult	7/16/2010	6	6	8.33	1.37	1.83	0.41	3.80	3.03
painted greenling	7/16/2010	6	6	10.00	0.00	3.00	0.00	64.80	7.36
pile surfperch, adult	7/16/2010	6	5			0.00	0.00	0.00	0.00
pile surfperch, all	7/16/2010	6	6			0.00	0.00	0.00	0.00
pile surfperch, juvenile	7/16/2010	6	5			0.00	0.00	0.00	0.00
rock wrasse, female	7/16/2010	6	6	7.67	1.37	1.50	0.55	1.60	0.55
rock wrasse, juvenile	7/16/2010	6	6			0.00	0.00	0.00	0.00
rock wrasse, male	7/16/2010	6	6	8.40	1.52	1.67	0.82	2.20	1.79
senorita, adult	7/16/2010	6	5	10.00	0.00	3.00	0.00	50.00	17.16
senorita, all	7/16/2010	6	6	10.00	0.00	3.00	0.00	50.00	17.16
senorita, juvenile	7/16/2010	6	5			0.00	0.00	0.00	0.00
striped surfperch, adult	7/16/2010	6	5			0.00	0.00	0.00	0.00
striped surfperch, all	7/16/2010	6	6			0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/16/2010	6	5			0.00	0.00	0.00	0.00
stripetail rockfish, juvenile	7/16/2010	6	4	6.25	1.26	1.25	0.50	1.33	0.58
treefish, adult	7/16/2010	6	6	6.00		0.17	0.41	0.20	0.45
treefish, juvenile	7/16/2010	6	6	8.50	1.87	1.83	0.41	3.40	2.07
zebra goby	7/16/2010	6	1	7.00		2.00		2.00	

2010 ROVING DIVER FISH COUNT
Anacapa Island - Black Sea Bass Reef

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	7/15/2010	4	4	8.33	1.53	1.00	0.82	1.00	0.82
black surfperch, all	7/15/2010	4	4	8.33	1.53	1.00	0.82	1.00	0.82
black surfperch, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
blackeye goby	7/15/2010	4	4	10.00	0.00	4.00	0.00	202.25	68.27
blacksmith, adult	7/15/2010	4	4	9.75	0.50	4.00	0.00	528.25	115.88
blacksmith, all	7/15/2010	4	4	9.75	0.50	4.00	0.00	528.25	115.88
blacksmith, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	7/15/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, all	7/15/2010	4	4	10.00	0.00	3.00	0.00	57.25	25.02
blue rockfish, juvenile	7/15/2010	4	4	10.00	0.00	3.00	0.00	57.25	25.02
blue-banded goby	7/15/2010	4	4	10.00	0.00	2.75	0.50	18.25	11.27
California sheephead, female	7/15/2010	4	4	9.75	0.50	3.00	0.00	13.75	1.50
California sheephead, juvenile	7/15/2010	4	4	8.50	0.71	0.50	0.58	0.50	0.58
California sheephead, male	7/15/2010	4	4	8.50	1.73	1.75	0.50	3.50	2.52
copper rockfish, juvenile	7/15/2010	4	3	10.00	0.00	2.33	0.58	17.00	20.07
garibaldi, adult	7/15/2010	4	4	9.50	0.58	2.00	0.00	5.00	2.94
garibaldi, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
giant black sea bass	7/15/2010	4	3	7.67	2.52	1.67	0.58	2.33	1.53
gopher/ black and yellow	7/15/2010	4	2	6.50	2.12	1.00	0.00	1.00	0.00
halfmoon	7/15/2010	4	4	9.25	0.96	2.75	0.50	15.75	6.95
island kelpfish	7/15/2010	4	4	8.25	2.36	1.75	0.50	4.25	3.59
jack mackerel	7/15/2010	4	2	9.50	0.71	3.00	0.00	100.00	0.00
kelp bass, adult	7/15/2010	4	4	10.00	0.00	3.25	0.50	73.00	19.54
kelp bass, calico bass, all	7/15/2010	4	4	10.00	0.00	3.25	0.50	73.00	19.54
kelp bass, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	7/15/2010	4	4	8.50	0.71	0.75	0.96	1.75	2.87
kelp rockfish, all	7/15/2010	4	4	9.00	0.00	1.00	1.15	2.00	2.83
kelp rockfish, juvenile	7/15/2010	4	4	9.00		0.25	0.50	0.25	0.50
kelp/gopher/copper rockfish,	7/15/2010	4	3	10.00	0.00	2.33	0.58	7.33	5.77
ocean sunfish	7/15/2010	4	1	9.00		1.00		1.00	
ocean whitefish	7/15/2010	4	4	10.00	0.00	3.00	0.00	46.00	23.02
olive rockfish, adult	7/15/2010	4	4			0.00	0.00	0.00	0.00
olive rockfish, all	7/15/2010	4	4			0.00	0.00	0.00	0.00
olive/yellowtail rockfish, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
opaleye, adult	7/15/2010	4	4	8.50	0.58	1.75	0.50	6.25	3.59
painted greenling	7/15/2010	4	4	10.00	0.00	2.25	0.50	10.75	7.14
pile surfperch, adult	7/15/2010	4	4	7.75	0.96	1.00	0.00	1.00	0.00
pile surfperch, all	7/15/2010	4	4	7.75	0.96	1.00	0.00	1.00	0.00
pile surfperch, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, female	7/15/2010	4	4	8.25	0.50	1.75	0.50	2.50	1.29
rock wrasse, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	7/15/2010	4	4	9.25	0.96	1.50	0.58	2.00	1.41
senorita, adult	7/15/2010	4	4	10.00	0.00	3.25	0.50	93.50	31.17
senorita, all	7/15/2010	4	4	10.00	0.00	3.25	0.50	93.50	31.17
senorita, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, adult	7/15/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, all	7/15/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/15/2010	4	4			0.00	0.00	0.00	0.00
stripetail rockfish, juvenile	7/15/2010	4	2	10.00	0.00	2.00	0.00	3.00	0.00
treefish, adult	7/15/2010	4	4	8.00		0.25	0.50	0.25	0.50
treefish, juvenile	7/15/2010	4	4	8.50	2.38	1.75	0.50	3.75	2.06
zebra goby	7/15/2010	4	1	6.00		2.00		2.00	

2010 ROVING DIVER FISH COUNT
Anacapa Island - Lighthouse

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	5/20/2010	7	3	7.00	1.73	1.00	0.00	1.00	0.00
black surfperch, adult	5/20/2010	7	7	7.71	1.70	1.43	0.53	1.43	0.53
black surfperch, all	5/20/2010	7	7	7.71	1.70	1.43	0.53	1.43	0.53
black surfperch, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
blackeye goby	5/20/2010	7	7	10.00	0.00	3.43	0.53	92.29	51.15
blacksmith, adult	5/20/2010	7	7	9.14	0.90	3.00	0.00	48.43	29.51
blacksmith, all	5/20/2010	7	7	9.14	0.90	3.00	0.00	48.43	29.51
blacksmith, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
blue rockfish, adult	5/20/2010	7	7			0.00	0.00	0.00	0.00
blue rockfish, all	5/20/2010	7	7	9.43	0.79	2.71	0.49	13.00	3.06
blue rockfish, juvenile	5/20/2010	7	7	9.43	0.79	2.71	0.49	13.00	3.06
blue-banded goby	5/20/2010	7	7			0.00	0.00	0.00	0.00
California sheephead, female	5/20/2010	7	7	9.86	0.38	2.71	0.49	14.00	3.42
California sheephead, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
California sheephead, male	5/20/2010	7	7	7.00		0.14	0.38	0.14	0.38
c-o turbot	5/20/2010	7	2	5.50	0.71	1.00	0.00	1.00	0.00
coralline sculpin	5/20/2010	7	1	7.00		1.00		1.00	
garibaldi, adult	5/20/2010	7	7	9.86	0.38	2.29	0.49	9.57	1.72
garibaldi, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
halfmoon	5/20/2010	7	4	7.00	1.83	2.25	0.96	15.00	19.10
horn shark	5/20/2010	7	1	9.00		1.00		1.00	
island kelpfish	5/20/2010	7	7	9.00		0.14	0.38	0.14	0.38
kelp bass, adult	5/20/2010	7	7	6.40	1.52	0.71	0.49	0.71	0.49
kelp bass, calico bass, all	5/20/2010	7	7	6.40	1.52	0.71	0.49	0.71	0.49
kelp bass, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
kelp rockfish, adult	5/20/2010	7	7			0.00	0.00	0.00	0.00
kelp rockfish, all	5/20/2010	7	7			0.00	0.00	0.00	0.00
kelp rockfish, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	5/20/2010	7	1	5.00		2.00		2.00	
ocean whitefish	5/20/2010	7	7	8.14	0.69	2.00	0.58	3.86	3.34
olive rockfish, adult	5/20/2010	7	7			0.00	0.00	0.00	0.00
olive rockfish, all	5/20/2010	7	7			0.00	0.00	0.00	0.00
olive/yellowtail rockfish, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
opaleye, adult	5/20/2010	7	7	7.20	2.28	0.86	0.69	0.86	0.69
painted greenling	5/20/2010	7	7	9.86	0.38	3.00	0.00	20.86	7.20
pile surfperch, adult	5/20/2010	7	7	8.00	0.00	0.29	0.49	0.29	0.49
pile surfperch, all	5/20/2010	7	7	8.00	0.00	0.29	0.49	0.29	0.49
pile surfperch, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
rock wrasse, female	5/20/2010	7	7			0.00	0.00	0.00	0.00
rock wrasse, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
rock wrasse, male	5/20/2010	7	7			0.00	0.00	0.00	0.00
rockfish spp., juvenile	5/20/2010	7	5	9.80	0.45	2.00	0.71	5.40	4.56
senorita, adult	5/20/2010	7	7	6.75	1.50	1.29	1.25	5.00	5.07
senorita, all	5/20/2010	7	7	6.75	1.50	1.29	1.25	5.00	5.07
senorita, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
snubnose sculpin	5/20/2010	7	1	9.00		1.00		1.00	
striped surfperch, adult	5/20/2010	7	7			0.00	0.00	0.00	0.00
striped surfperch, all	5/20/2010	7	7			0.00	0.00	0.00	0.00
striped surfperch, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
treefish, adult	5/20/2010	7	7	9.00		0.14	0.38	0.14	0.38
treefish, juvenile	5/20/2010	7	7			0.00	0.00	0.00	0.00
zebra goby	5/20/2010	7	1	8.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
Santa Barbara Island - Webster's Arch

Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
bat ray	5/18/2010	4	2	9.50	0.71	1.00	0.00	1.00	0.00
black and yellow rockfish	5/18/2010	4	4	10.00	0.00	2.00	0.00	4.50	0.58
black surfperch, adult	5/18/2010	4	4			0.00	0.00	0.00	0.00
black surfperch, all	5/18/2010	4	4			0.00	0.00	0.00	0.00
black surfperch, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
blackeye goby	5/18/2010	4	4	10.00	0.00	3.00	0.00	26.50	12.01
blacksmith, adult	5/18/2010	4	4	10.00	0.00	4.00	0.00	368.00	27.06
blacksmith, all	5/18/2010	4	4	10.00	0.00	4.00	0.00	368.00	27.06
blacksmith, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	5/18/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, all	5/18/2010	4	4	10.00	0.00	1.50	0.58	3.25	2.63
blue rockfish, juvenile	5/18/2010	4	4	10.00	0.00	1.50	0.58	3.25	2.63
blue-banded goby	5/18/2010	4	4	7.00		0.25	0.50	0.25	0.50
bocaccio, juvenile	5/18/2010	4	4	7.50	2.89	1.00	0.00	1.00	0.00
California moray	5/18/2010	4	1	10.00		1.00		1.00	
California scorpionfish	5/18/2010	4	3	7.00	2.65	1.67	0.58	2.00	1.00
California sheephead, female	5/18/2010	4	4	10.00	0.00	2.75	0.50	10.25	2.22
California sheephead, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
California sheephead, male	5/18/2010	4	4	7.75	1.50	1.50	0.58	1.50	0.58
coralline sculpin	5/18/2010	4	2	5.50	0.71	1.00	0.00	1.00	0.00
garibaldi, adult	5/18/2010	4	4	10.00	0.00	2.00	0.00	6.25	1.50
garibaldi, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
island kelpfish	5/18/2010	4	4	10.00		0.50	1.00	0.75	1.50
kelp bass, adult	5/18/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	5/18/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	5/18/2010	4	4	7.00		0.25	0.50	0.25	0.50
kelp rockfish, all	5/18/2010	4	4	7.00		0.25	0.50	0.25	0.50
kelp rockfish, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
larval fish spp.	5/18/2010	4	1	6.00		3.00		25.00	
olive rockfish, adult	5/18/2010	4	4			0.00	0.00	0.00	0.00
olive rockfish, all	5/18/2010	4	4	9.50	0.58	3.00	0.00	38.75	20.56
olive/yellowtail rockfish, juvenile	5/18/2010	4	4	9.50	0.58	3.00	0.00	38.75	20.56
opaleye, adult	5/18/2010	4	4	6.00		0.25	0.50	0.25	0.50
painted greenling	5/18/2010	4	4	10.00	0.00	3.00	0.00	30.25	7.85
pile surfperch, adult	5/18/2010	4	4			0.00	0.00	0.00	0.00
pile surfperch, all	5/18/2010	4	4			0.00	0.00	0.00	0.00
pile surfperch, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, female	5/18/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	5/18/2010	4	4			0.00	0.00	0.00	0.00
senorita, adult	5/18/2010	4	4			0.00	0.00	0.00	0.00
senorita, all	5/18/2010	4	4			0.00	0.00	0.00	0.00
senorita, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
snubnose sculpin	5/18/2010	4	1	5.00		1.00		1.00	
striped surfperch, adult	5/18/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, all	5/18/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, juvenile	5/18/2010	4	4			0.00	0.00	0.00	0.00
treefish, adult	5/18/2010	4	4	9.00		0.25	0.50	0.25	0.50
treefish, juvenile	5/18/2010	4	4	5.00		0.25	0.50	0.25	0.50
zebra goby	5/18/2010	4	1	9.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
Santa Barbara Island - Graveyard Canyon

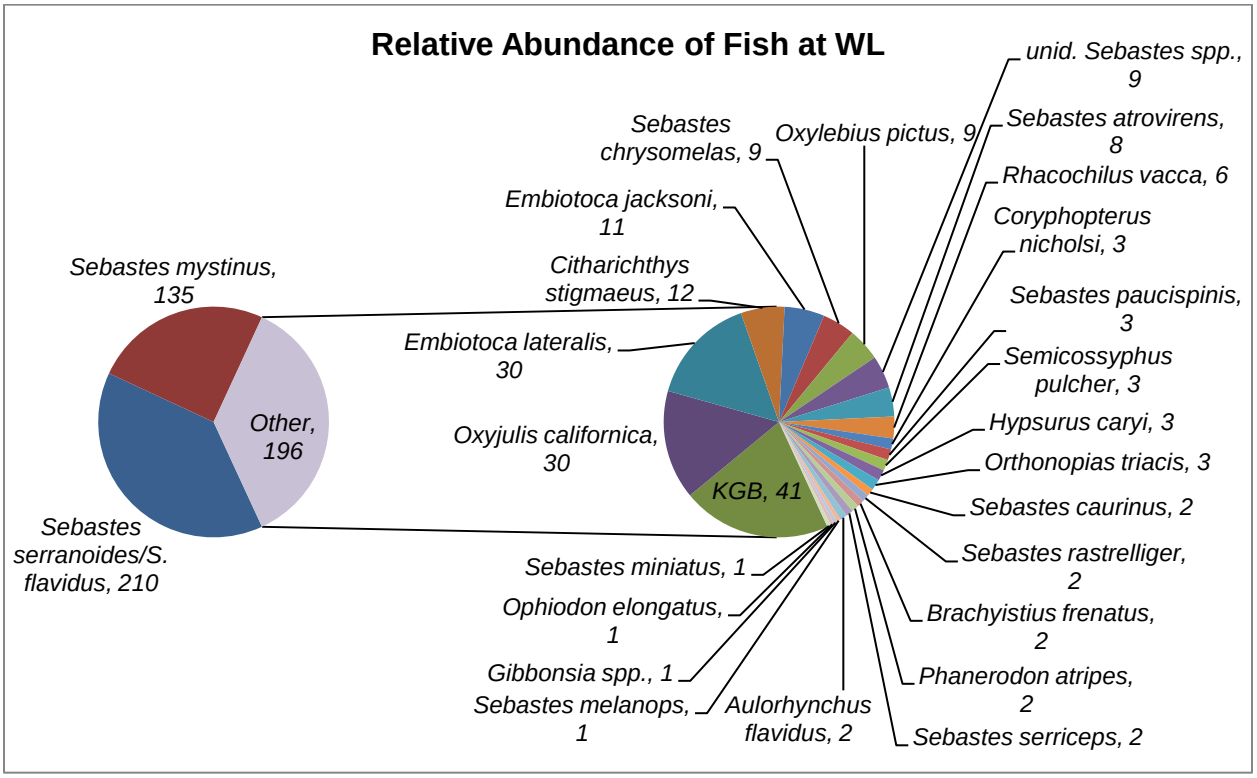
Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black surfperch, adult	6/1/2010	5	5	7.67	2.52	1.20	1.10	1.40	1.34
black surfperch, all	6/1/2010	5	5	7.50	2.08	1.40	0.89	2.00	1.58
black surfperch, juvenile	6/1/2010	5	5	8.00	1.73	0.60	0.55	0.60	0.55
blackeye goby	6/1/2010	5	5	10.00	0.00	3.00	0.00	37.40	15.57
blacksmith, adult	6/1/2010	5	5	9.00	1.41	3.00	0.00	49.80	28.42
blacksmith, all	6/1/2010	5	5	9.00	1.41	3.00	0.00	49.80	28.42
blacksmith, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
blue rockfish, adult	6/1/2010	5	5			0.00	0.00	0.00	0.00
blue rockfish, all	6/1/2010	5	5	9.60	0.55	2.00	0.00	5.60	3.21
blue rockfish, juvenile	6/1/2010	5	5	9.60	0.55	2.00	0.00	5.60	3.21
blue-banded goby	6/1/2010	5	5			0.00	0.00	0.00	0.00
bocaccio, juvenile	6/1/2010	5	5	9.60	0.55	3.80	0.45	159.80	44.35
California sheephead, female	6/1/2010	5	5	8.80	1.64	2.00	0.00	5.00	2.00
California sheephead, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
California sheephead, male	6/1/2010	5	5	6.00	1.00	0.60	0.55	0.60	0.55
copper rockfish, juvenile	6/1/2010	5	3	10.00	0.00	3.00	0.00	49.67	12.50
garibaldi, adult	6/1/2010	5	5	8.00	1.73	0.60	0.55	0.60	0.55
garibaldi, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
grass rockfish	6/1/2010	5	2	9.50	0.71	1.00	0.00	1.00	0.00
halfmoon	6/1/2010	5	1	5.00		2.00		10.00	
island kelpfish	6/1/2010	5	5			0.00	0.00	0.00	0.00
jack mackerel	6/1/2010	5	1	8.00		1.00		1.00	
kelp bass, adult	6/1/2010	5	5			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	6/1/2010	5	5			0.00	0.00	0.00	0.00
kelp bass, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/1/2010	5	5			0.00	0.00	0.00	0.00
kelp rockfish, all	6/1/2010	5	5			0.00	0.00	0.00	0.00
kelp rockfish, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
kelp/gopher/copper rockfish,	6/1/2010	5	5	10.00	0.00	3.40	0.55	81.60	30.75
olive rockfish, adult	6/1/2010	5	5			0.00	0.00	0.00	0.00
olive rockfish, all	6/1/2010	5	5	9.60	0.89	3.20	0.45	74.00	36.73
olive/yellowtail rockfish, juvenile	6/1/2010	5	5	9.60	0.89	3.20	0.45	74.00	36.73
opaleye, adult	6/1/2010	5	5	7.00		0.20	0.45	0.20	0.45
painted greenling	6/1/2010	5	5	8.80	1.10	2.00	0.00	3.60	1.52
pile surfperch, adult	6/1/2010	5	5	5.50	0.71	0.40	0.55	0.40	0.55
pile surfperch, all	6/1/2010	5	5	5.50	0.71	0.40	0.55	0.40	0.55
pile surfperch, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, female	6/1/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
rock wrasse, male	6/1/2010	5	5			0.00	0.00	0.00	0.00
rockfish spp., juvenile	6/1/2010	5	1	7.00		2.00		4.00	
senorita, adult	6/1/2010	5	5	10.00	0.00	4.00	0.00	471.20	265.77
senorita, all	6/1/2010	5	5	10.00	0.00	4.00	0.00	471.20	265.77
senorita, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
speckled sanddab	6/1/2010	5	5	9.80	0.45	2.80	0.45	23.80	10.92
striped surfperch, adult	6/1/2010	5	5			0.00	0.00	0.00	0.00
striped surfperch, all	6/1/2010	5	5			0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
treefish, adult	6/1/2010	5	5			0.00	0.00	0.00	0.00
treefish, juvenile	6/1/2010	5	5			0.00	0.00	0.00	0.00
tubesnout	6/1/2010	5	2	9.50	0.71	2.50	0.71	12.00	11.31
vermillion rockfish, juvenile	6/1/2010	5	4	9.75	0.50	2.00	0.00	3.50	1.29
zebra goby	6/1/2010	5	1	6.00		1.00		1.00	

2010 ROVING DIVER FISH COUNT
Santa Barbara Island - Southeast Reef

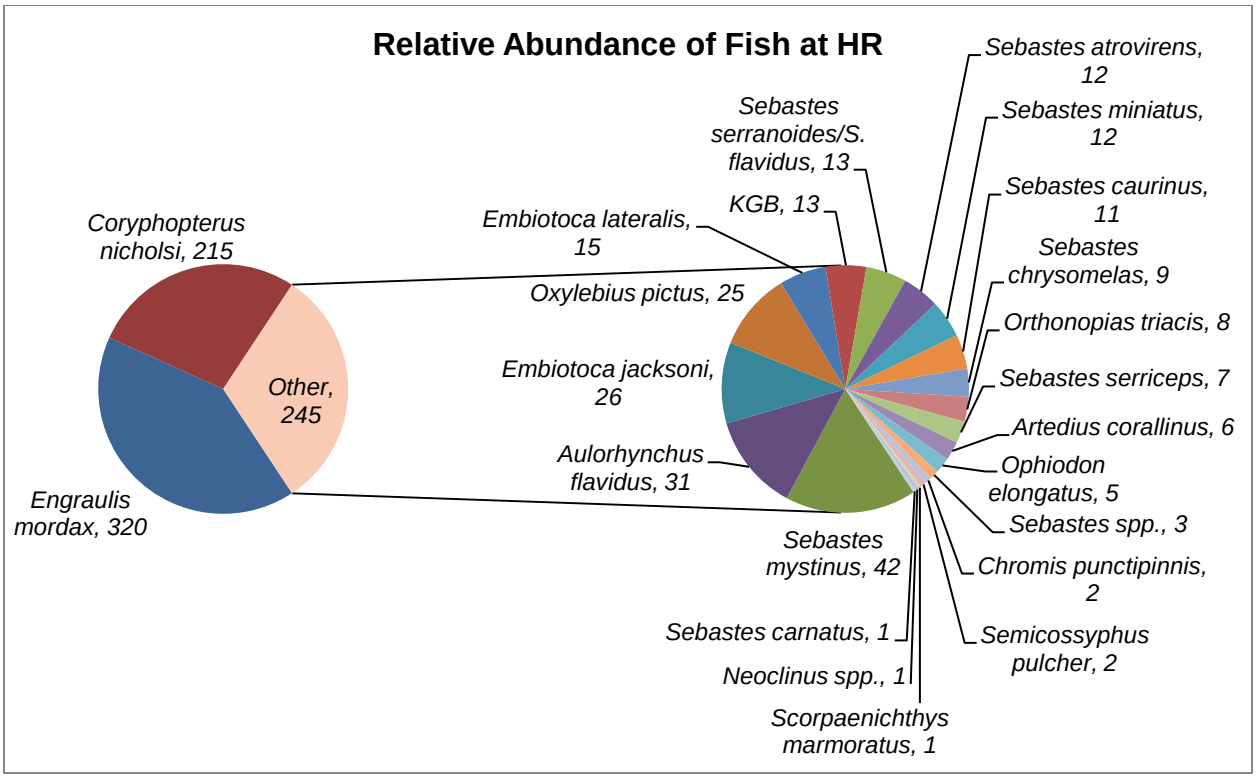
Common Name:	Date:	Maximum # of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:	Avg Count:	StDev Count:
black and yellow rockfish	6/2/2010	4	4	7.75	0.50	1.50	0.58	1.50	0.58
black surfperch, adult	6/2/2010	4	4	9.50	0.71	1.00	1.15	1.75	2.36
black surfperch, all	6/2/2010	4	4	9.50	0.71	1.00	1.15	2.00	2.45
black surfperch, juvenile	6/2/2010	4	4	9.00		0.25	0.50	0.25	0.50
blackeye goby	6/2/2010	4	4	8.00	2.83	0.75	0.96	2.00	3.37
blacksmith, adult	6/2/2010	4	4	10.00	0.00	4.00	0.00	1453.75	449.19
blacksmith, all	6/2/2010	4	4	10.00	0.00	4.00	0.00	1453.75	449.19
blacksmith, juvenile	6/2/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, adult	6/2/2010	4	4			0.00	0.00	0.00	0.00
blue rockfish, all	6/2/2010	4	4	9.50	0.71	1.00	1.15	1.00	1.15
blue rockfish, juvenile	6/2/2010	4	4	9.50	0.71	1.00	1.15	1.00	1.15
blue-banded goby	6/2/2010	4	4			0.00	0.00	0.00	0.00
bocaccio, juvenile	6/2/2010	4	3	10.00	0.00	2.67	0.58	18.33	17.04
California sheephead, female	6/2/2010	4	4	9.75	0.50	3.00	0.00	23.75	11.70
California sheephead, juvenile	6/2/2010	4	4	9.67	0.58	1.25	0.96	1.25	0.96
California sheephead, male	6/2/2010	4	4	7.00	0.82	2.00	0.00	4.00	1.41
copper rockfish	6/2/2010	4	1	10.00		2.00		2.00	
garibaldi, adult	6/2/2010	4	4	9.75	0.50	3.00	0.00	24.25	5.91
garibaldi, juvenile	6/2/2010	4	4	6.00		0.50	1.00	0.50	1.00
halfmoon	6/2/2010	4	2	7.50	0.71	1.50	0.71	1.50	0.71
island kelpfish	6/2/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, adult	6/2/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, calico bass, all	6/2/2010	4	4			0.00	0.00	0.00	0.00
kelp bass, juvenile	6/2/2010	4	4			0.00	0.00	0.00	0.00
kelp rockfish, adult	6/2/2010	4	4	7.50	0.58	1.75	0.50	2.25	0.96
kelp rockfish, all	6/2/2010	4	4	7.50	0.58	1.75	0.50	2.25	0.96
kelp rockfish, juvenile	6/2/2010	4	4			0.00	0.00	0.00	0.00
kelp surfperch	6/2/2010	4	2	7.50	3.54	1.50	0.71	1.50	0.71
kelp/gopher/copper rockfish,	6/2/2010	4	2	10.00	0.00	2.00	0.00	7.50	0.71
leopard shark	6/2/2010	4	1	5.00		1.00		1.00	
lingcod	6/2/2010	4	2	8.50	0.71	1.00	0.00	1.00	0.00
olive rockfish, adult	6/2/2010	4	4	9.50	0.71	0.75	0.96	1.75	2.87
olive rockfish, all	6/2/2010	4	4	10.00	0.00	1.25	1.50	4.50	5.74
olive/yellowtail rockfish, juvenile	6/2/2010	4	4	10.00		0.75	1.50	2.75	5.50
opaleye, adult	6/2/2010	4	4	8.50	0.71	1.25	1.50	26.00	46.20
painted greenling	6/2/2010	4	4	9.75	0.50	2.50	0.58	10.25	7.50
pile surfperch, adult	6/2/2010	4	4			0.00	0.00	0.00	0.00
pile surfperch, all	6/2/2010	4	4			0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/2/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, female	6/2/2010	4	4	8.00		0.25	0.50	0.25	0.50
rock wrasse, juvenile	6/2/2010	4	4			0.00	0.00	0.00	0.00
rock wrasse, male	6/2/2010	4	4			0.00	0.00	0.00	0.00
senorita, adult	6/2/2010	4	4	10.00	0.00	3.50	0.58	111.00	56.07
senorita, all	6/2/2010	4	4	10.00	0.00	3.50	0.58	111.50	56.39
senorita, juvenile	6/2/2010	4	4	10.00		0.50	1.00	0.50	1.00
snubnose sculpin	6/2/2010	4	1	9.00		2.00		2.00	
striped surfperch, adult	6/2/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, all	6/2/2010	4	4			0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/2/2010	4	4			0.00	0.00	0.00	0.00
treefish, adult	6/2/2010	4	4	10.00		0.50	1.00	0.75	1.50
treefish, juvenile	6/2/2010	4	4	9.50	0.71	0.50	0.58	0.50	0.58

Appendix H. RDFC Relative Abundance Figures

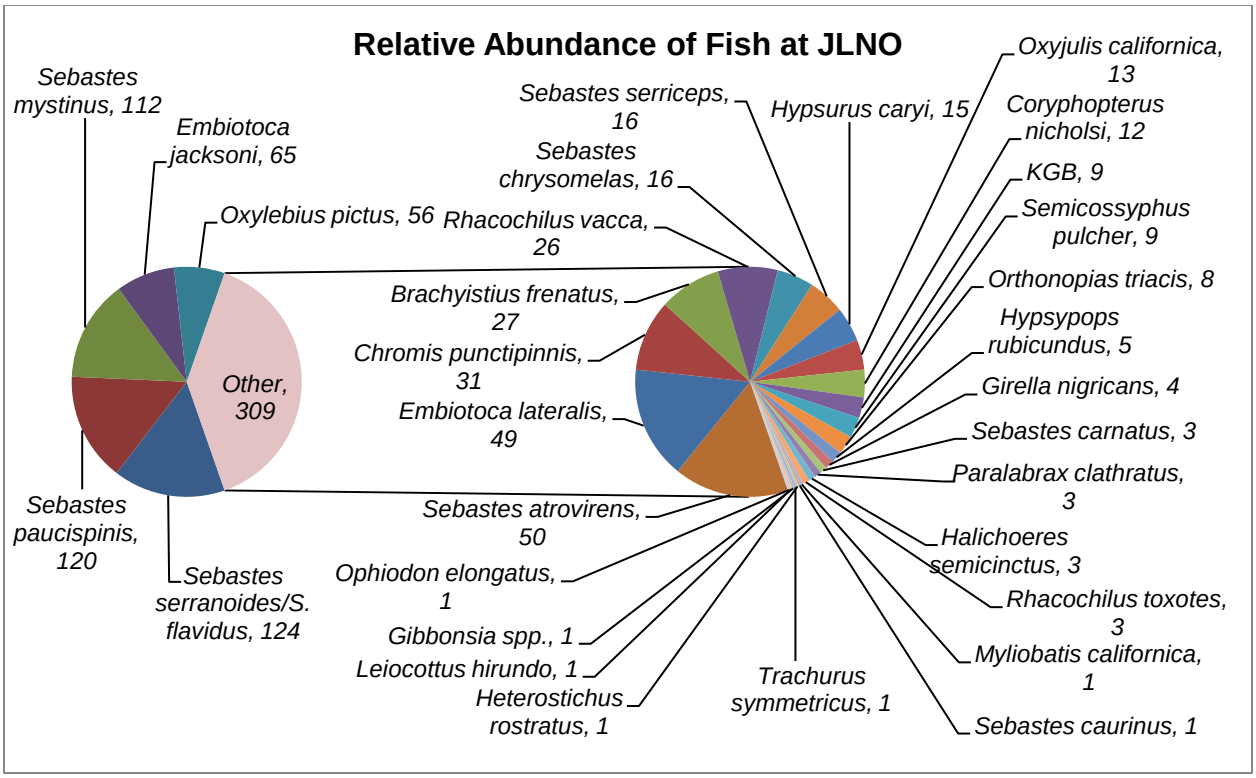
Note: these figures are based on the highest counts observed during RDFC.



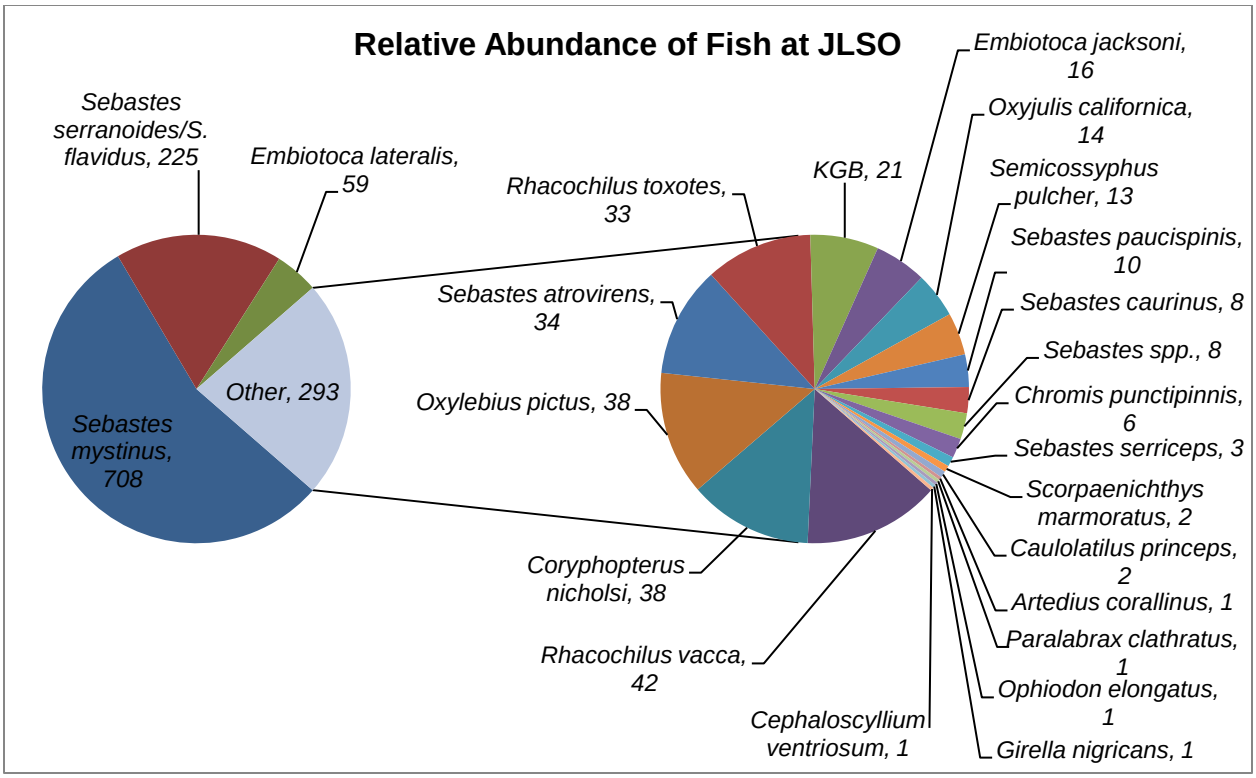
Species	Max Count	Species	Max Count
Aulorhynchus flavidus	2	*Rhacochilus vacca* (adult)	6
Brachyistius frenatus	2	*Sebastes atrovirens* (adult)	7
Citharichthys stigmaeus	12	*Sebastes atrovirens* (juv)	1
Coryphopterus nicholsi	3	*Sebastes caurinus* (adult)	2
Embiotoca jacksoni (adult)	8	*Sebastes chrysomelas* (adult)	9
Embiotoca jacksoni (juv)	3	*Sebastes melanops* (adult)	1
Embiotoca lateralis (adult)	25	*Sebastes miniatus* (adult)	1
Embiotoca lateralis (juv)	5	*Sebastes mystinus* (adult)	5
Gibbonsia spp.	1	*Sebastes mystinus* (juv)	130
Hypsurus caryi	3	*Sebastes paucispinis* (juv)	3
KGB	41	*Sebastes rastrelliger* (adult)	2
Ophiodon elongatus	1	*Sebastes serranoides/S. flavidus* (juv)	210
Orthonopias triacis	3	*Sebastes serriceps* (adult)	2
Oxyjulis californica (adult)	30	*Sebastes* spp. (juv, unidentified)	9
Oxylebius pictus	9	*Semicossyphus pulcher* (female)	2
Phanerodon atripes	2	*Semicossyphus pulcher* (male)	1



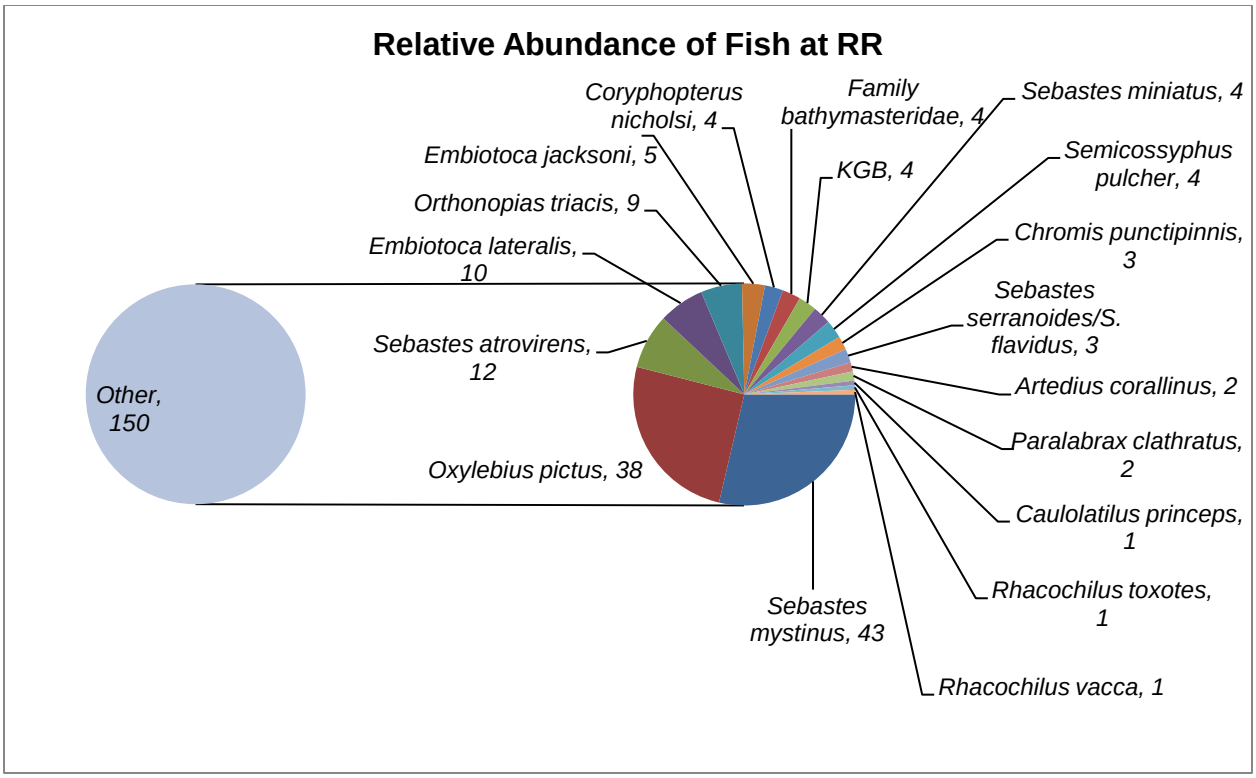
Species	Max Count	Species	Max Count
Artedius corallinus	6	*Sebastes atrovirens (adult)*	12
Aulorhynchus flavidus	31	*Sebastes carnatus (adult)*	1
Chromis punctipinnis (adult)	2	*Sebastes caurinus (adult)*	10
Coryphopterus nicholsi	215	*Sebastes caurinus (juv)*	1
Embiotoca jacksoni (adult)	26	*Sebastes chrysomelas (adult)*	9
Embiotoca lateralis (adult)	13	*Sebastes miniatus (juv)*	12
Embiotoca lateralis (juv)	2	*Sebastes mystinus (adult)*	28
Engraulis mordax	320	*Sebastes mystinus (juv)*	14
KGB	13	*Sebastes serranoides (adult)*	3
Neoclinus spp.	1	*Sebastes serranoides/S. flavidus (juv)*	10
Ophiodon elongatus	5	*Sebastes serriceps (adult)*	7
Orthonopias triacis	8	*Sebastes spp. (juv, unidentified)*	3
Oxylebius pictus	25	*Semicossyphus pulcher (female)*	1
Scorpaenichthys marmoratus	1	*Semicossyphus pulcher (male)*	1



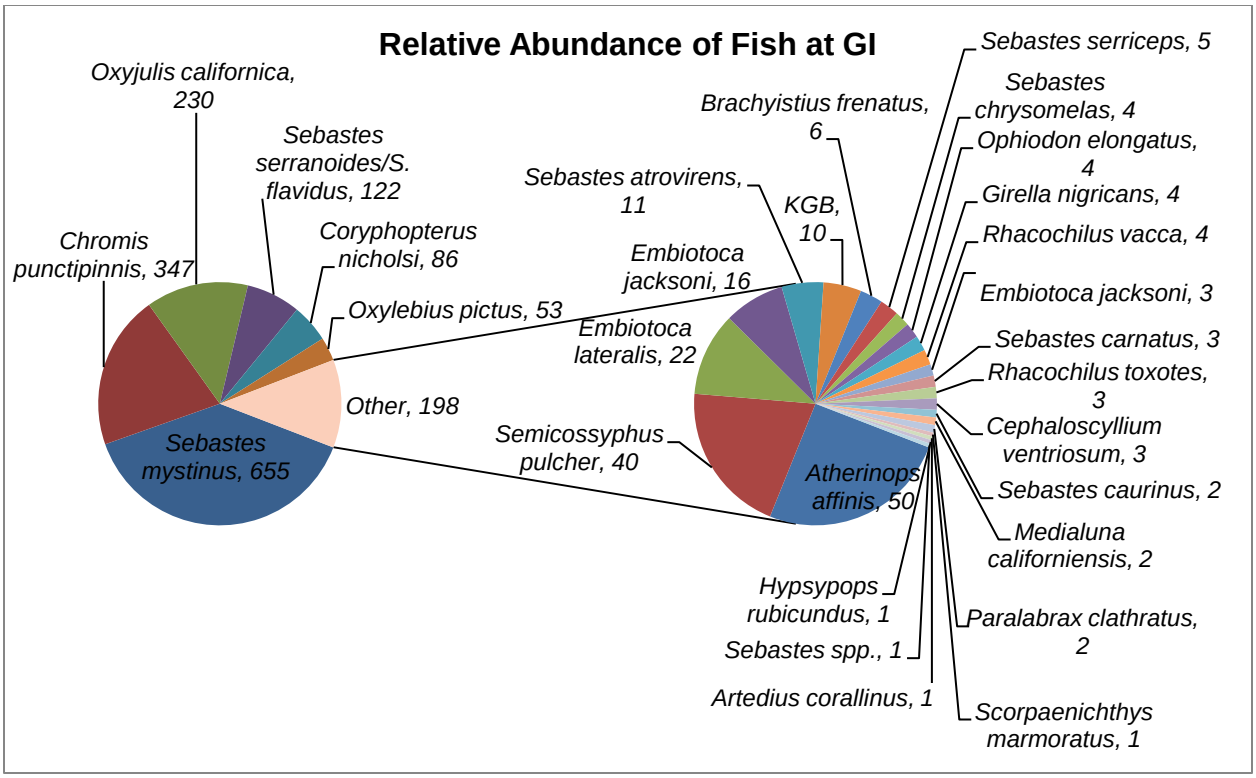
Species	Max Count	Species	Max Count
Brachyistius frenatus	27	*Oxyjulis californica (adult)*	13
Chromis punctipinnis (adult)	31	*Oxylebius pictus*	56
Coryphopterus nicholsii	12	*Paralabrax clathratus (adult)*	3
Embiotoca jacksoni (adult)	41	*Rhacochilus toxotes*	3
Embiotoca jacksoni (juv)	24	*Rhacochilus vacca (adult)*	24
Embiotoca lateralis (adult)	32	*Rhacochilus vacca (juv)*	2
Embiotoca lateralis (juv)	17	*Sebastes atrovirens (adult)*	47
Gibbonsia spp.	1	*Sebastes atrovirens (juv)*	3
Girella nigricans (adult)	4	*Sebastes carnatus (adult)*	3
Halichoeres semicinctus (female)	1	*Sebastes caurinus (juv)*	1
Halichoeres semicinctus (male)	2	*Sebastes chrysomelas (adult)*	16
Heterostichus rostratus	1	*Sebastes mystinus (juv)*	112
Hypsurus caryi	15	*Sebastes paucispinis (juv)*	120
Hypsypops rubicundus (adult)	5	*Sebastes serranoides (adult)*	4
KGB	9	*Sebastes serranoides/S. flavidus (juv)*	120
Leiocottus hirundo	1	*Sebastes serriceps (adult)*	6
Myliobatis californica	1	*Sebastes serriceps (juv)*	10
Ophiodon elongatus	1	*Semicossyphus pulcher (female)*	9
Orthonopias triacis	8	*Trachurus symmetricus*	1



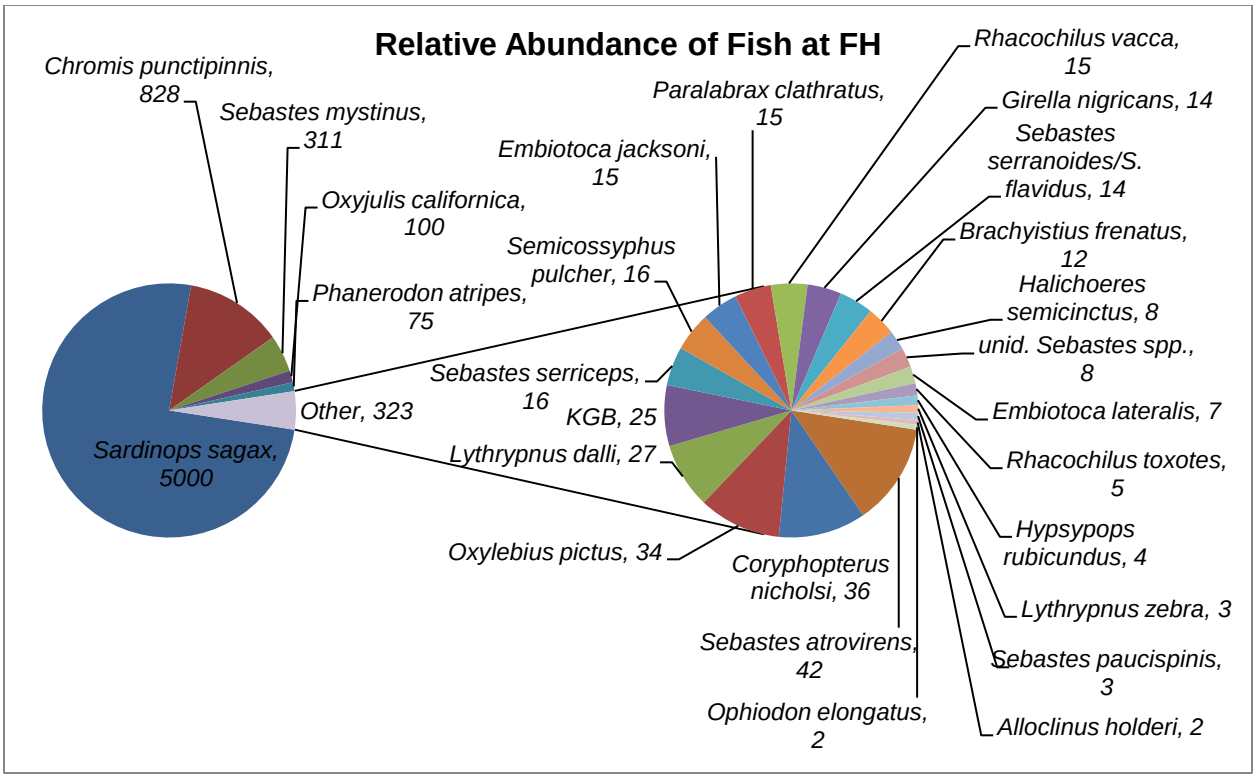
Species	Max Count	Species	Max Count
Artedius corallinus	1	*Rhacochilus vacca (adult)*	40
Caulolatilus princeps	2	*Rhacochilus vacca (juv)*	2
ventriosum	1	*Scorpaenichthys marmoratus*	2
Chromis punctipinnis (adult)	6	*Sebastes atrovirens (adult)*	29
Coryphopterus nicholsi	38	*Sebastes atrovirens (juv)*	5
Embiotoca jacksoni (adult)	14	*Sebastes caurinus (juv)*	8
Embiotoca jacksoni (juv)	2	*Sebastes mystinus (adult)*	79
Embiotoca lateralis (adult)	55	*Sebastes mystinus (juv)*	629
Embiotoca lateralis (juv)	4	*Sebastes paucispinis (juv)*	10
Girella nigricans (adult)	1	*Sebastes serranoides (adult)*	5
KGB	21	*Sebastes serranoides/S. flavidus (juv)*	220
Ophiodon elongatus	1	*Sebastes serriceps (adult)*	1
Oxyjulis californica (adult)	3	*Sebastes serriceps (juv)*	2
Oxyjulis californica (juv)	11	*Sebastes spp. (juv, unidentified)*	8
Oxylebius pictus	38	*Semicossyphus pulcher (female)*	9
(adult)	1	*Semicossyphus pulcher (male)*	4
Rhacochilus toxotes	33		



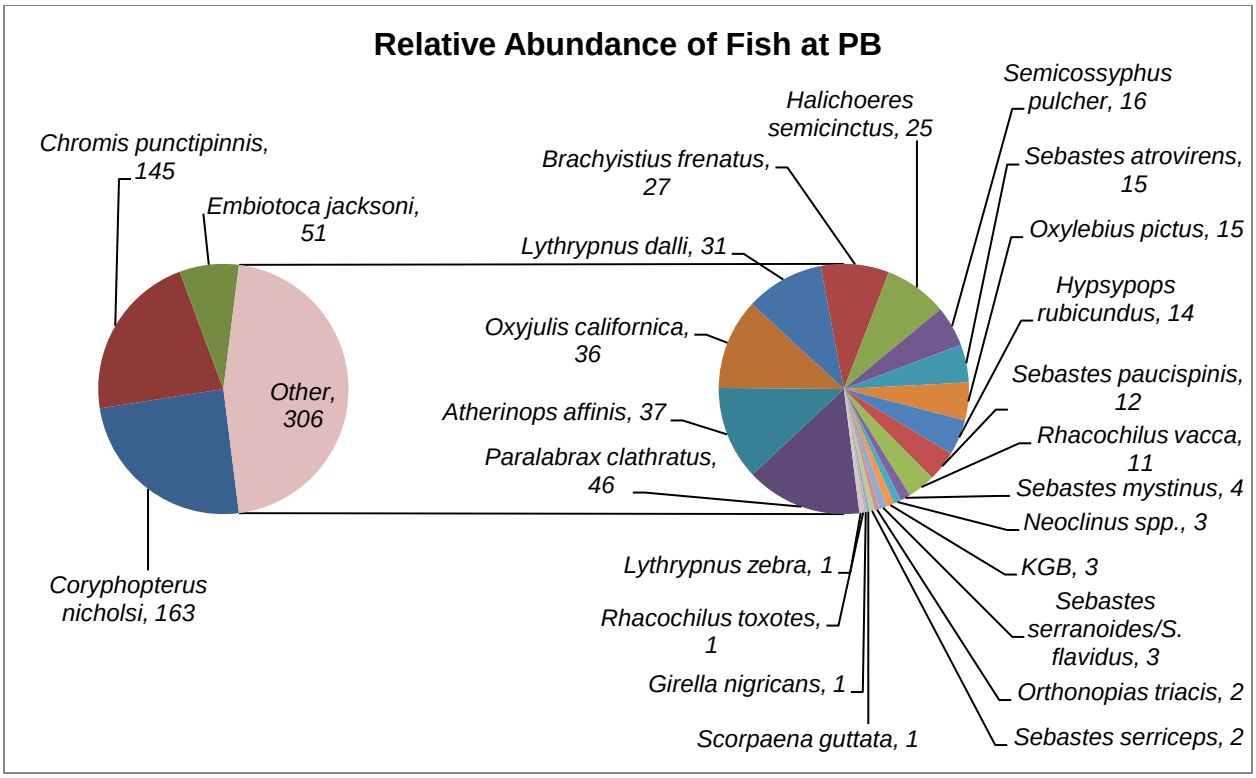
Species	Max Count	Species	Max Count
Artedius corallinus	2	*Paralabrax clathratus (adult)*	2
Caulolatilus princeps	1	*Rhacochilus toxotes*	1
Chromis punctipinnis (adult)	3	*Rhacochilus vacca (adult)*	1
Coryphopterus nicholsi	4	*Sebastes atrovirens (adult)*	12
Embiotoca jacksoni (adult)	3	*Sebastes miniatus (juv)*	4
Embiotoca jacksoni (juv)	2	*Sebastes mystinus (adult)*	6
Embiotoca lateralis (adult)	7	*Sebastes mystinus (juv)*	37
Embiotoca lateralis (juv)	3	*Sebastes serranoides (adult)*	2
Family bathymasteridae	4	*Sebastes serranoides/S. flavidus (juv)*	1
KGB	4	*Semicossyphus pulcher (female)*	2
Orthonopias triacis	9	*Semicossyphus pulcher (male)*	2



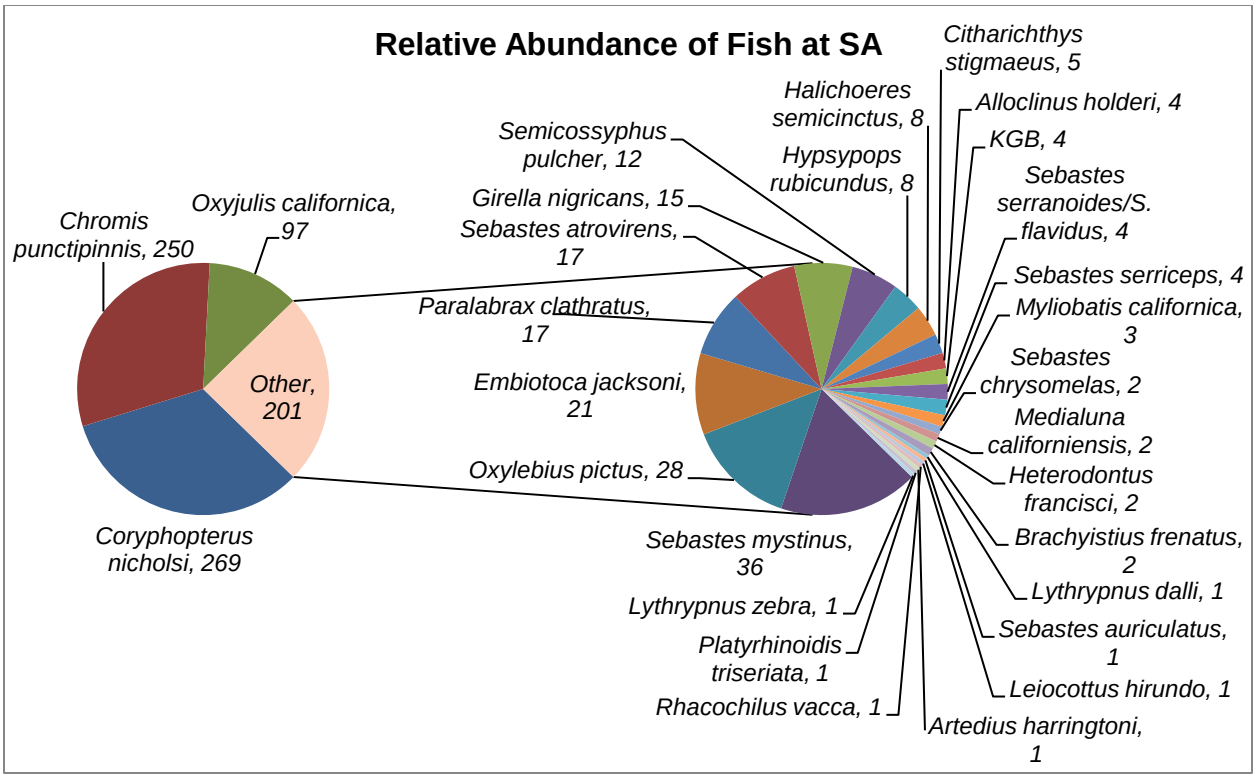
Species	Max Count	Species	Max Count
Artedius corallinus	1	*Rhacochilus toxotes*	3
Atherinops affinis	50	*Rhacochilus vacca (adult)*	4
Brachyistius frenatus	6	*Scorpaenichthys marmoratus*	1
Cephaloscyllium ventriosum	3	*Sebastes atrovirens (adult)*	7
Chromis punctipinnis (adult)	347	*Sebastes atrovirens (juv)*	4
Coryphopterus nicholsi	86	*Sebastes carnatus (adult)*	3
Embiotoca jacksoni (adult)	13	*Sebastes caurinus (juv)*	2
Embiotoca jacksoni (juv)	3	*Sebastes chrysomelas (adult)*	4
Embiotoca lateralis (adult)	7	*Sebastes mystinus (adult)*	5
Embiotoca lateralis (juv)	15	*Sebastes mystinus (juv)*	650
Girella nigricans (adult)	4	*Sebastes serranoides (adult)*	15
Hypsypops rubicundus (adult)	1	*Sebastes serranoides/S. flavidus (juv)*	107
KGB	10	*Sebastes serriceps (adult)*	1
Medialuna californiensis	2	*Sebastes serriceps (juv)*	4
Ophiodon elongatus	4	*Sebastes spp. (juv, unidentified)*	1
Oxyjulis californica (adult)	230	*Semicossyphus pulcher (female)*	25
Oxylebius pictus	53	*Semicossyphus pulcher (juv)*	2
Paralabrax clathratus (adult)	2	*Semicossyphus pulcher (male)*	13



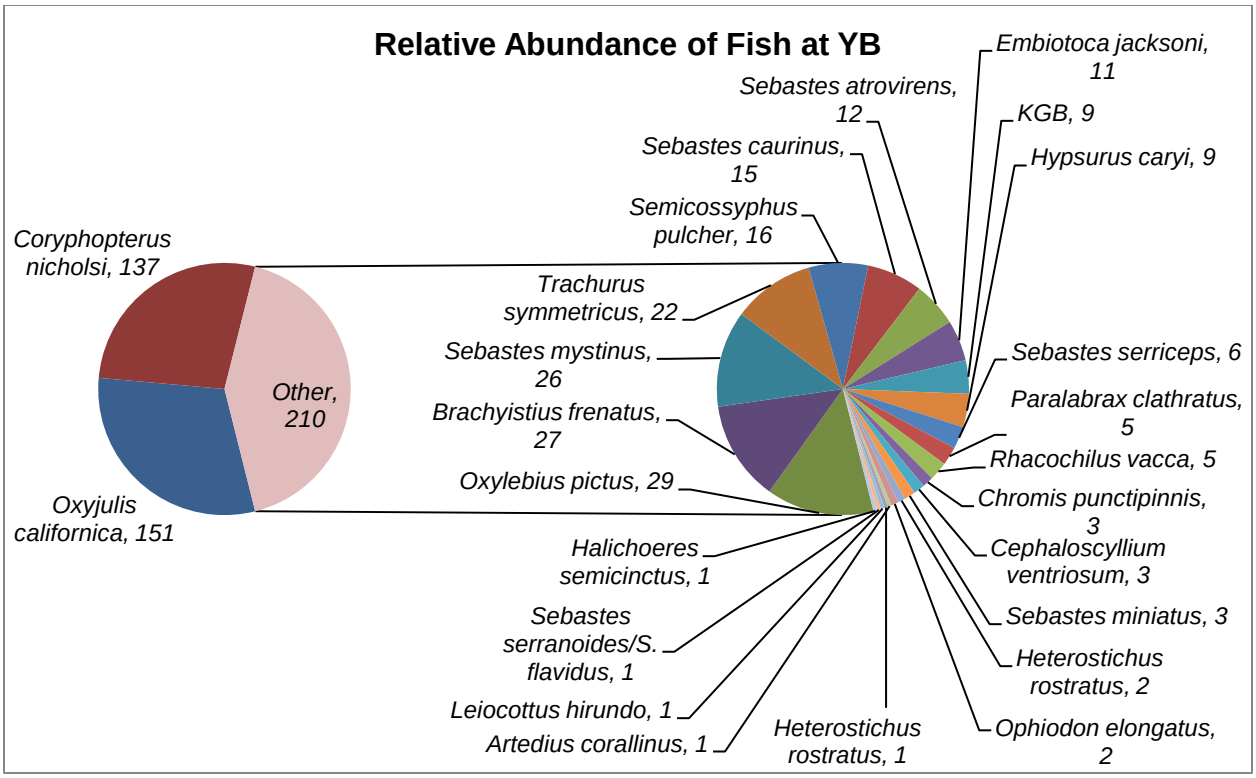
Species	Max Count	Species	Max Count
Alloclinus holderi	2	*Paralabrax clathratus (adult)*	15
Brachyistius frenatus	12	*Phanerodon atripes*	75
Chromis punctipinnis (adult)	828	*Rhacochilus toxotes*	5
Coryphopterus nicholsi	36	*Rhacochilus vacca (adult)*	15
Embiotoca jacksoni (adult)	9	*Sardinops sagax*	5000
Embiotoca jacksoni (juv)	6	*Sebastes atrovirens (adult)*	42
Embiotoca lateralis (adult)	5	*KGB*	25
Embiotoca lateralis (juv)	2	*Sebastes mystinus (adult)*	1
Girella nigricans (adult)	14	*Sebastes mystinus (juv)*	310
Halichoeres semicinctus (female)	5	*Sebastes paucispinis (juv)*	3
Halichoeres semicinctus (male)	3	*Sebastes serranoides (adult)*	2
Hypsypops rubicundus (adult)	4	*Sebastes serranoides/S. flavidus (juv)*	12
Lythrypnus dalli	27	*Sebastes serriceps (adult)*	15
Lythrypnus zebra	3	*Sebastes serriceps (juv)*	1
Ophiodon elongatus	2	*Sebastes spp. (juv, unidentified)*	8
Oxyjulis californica (adult)	100	*Semicossyphus pulcher (female)*	15
Oxylebius pictus	34	*Semicossyphus pulcher (male)*	1



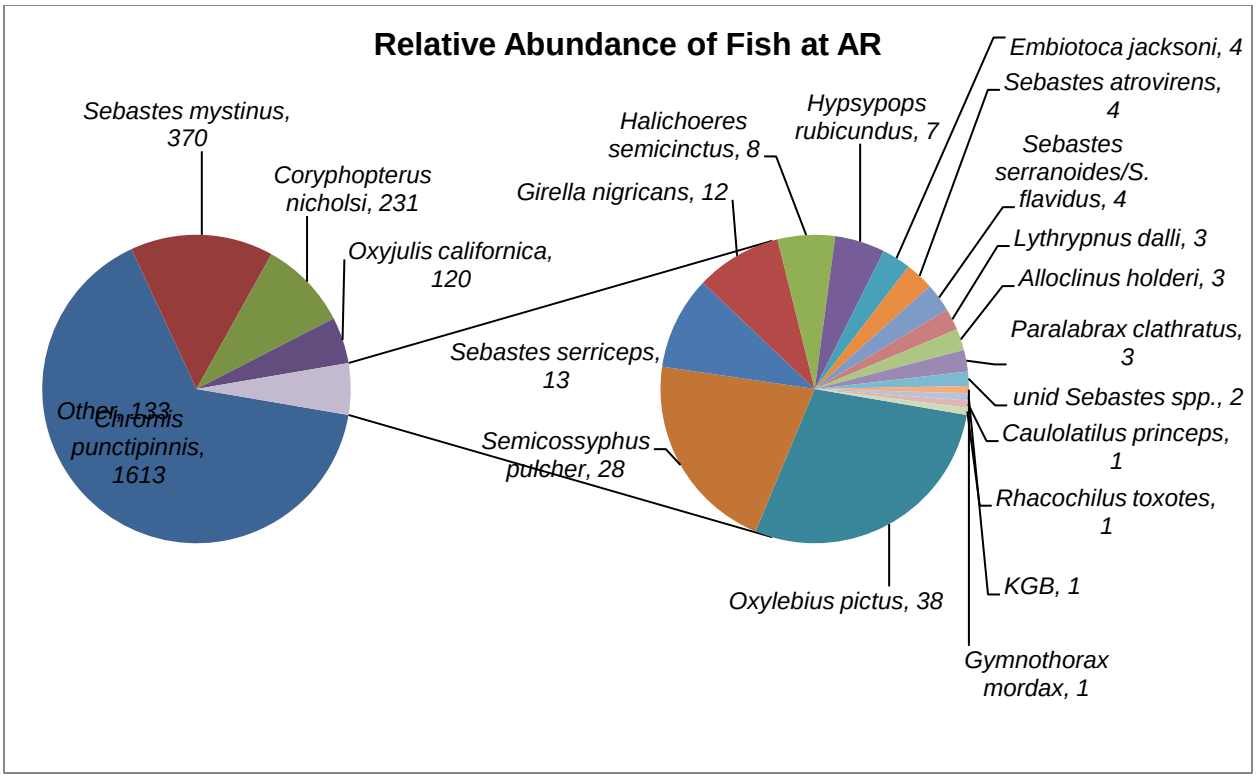
Species	Max Count	Species	Max Count
Atherinops affinis	37	*Oxyjulis californica (adult)*	36
Brachyistius frenatus	27	*Oxylebius pictus*	15
Chromis punctipinnis (adult)	145	*Paralabrax clathratus (adult)*	46
Coryphopterus nicholsi	163	*Rhacochilus toxotes*	1
Embiotoca jacksoni (adult)	37	*Rhacochilus vacca (adult)*	5
Embiotoca jacksoni (juv)	14	*Rhacochilus vacca (juv)*	6
Girella nigricans (adult)	1	*Scorpaena guttata*	1
Halichoeres semicinctus (female)	17	*Sebastes atrovirens (adult)*	15
Halichoeres semicinctus (male)	8	*Sebastes mystinus (juv)*	4
Hypsypops rubicundus (adult)	14	*Sebastes paucispinis (juv)*	12
KGB	3	*Sebastes serranoides/S. flavidus (juv)*	3
Lythrypnus dalli	31	*Sebastes serriceps (adult)*	2
Lythrypnus zebra	1	*Semicossyphus pulcher (female)*	15
Neoclinus spp.	3	*Semicossyphus pulcher (male)*	1
Orthonopias triacis	2		



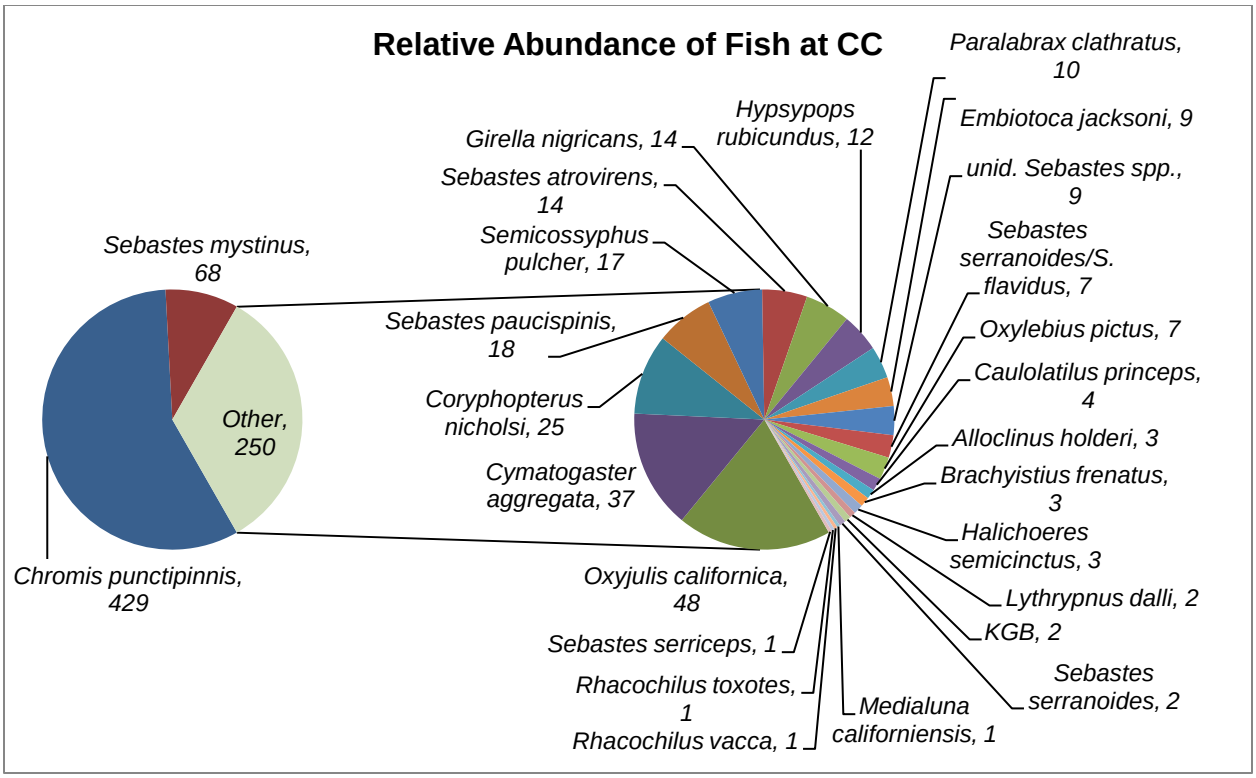
Species	Max Count	Species	Max Count
Alloclinus holderi	4	*Medialuna californiensis*	2
Artedius harringtoni	1	*Myliobatis californica*	3
Brachyistius frenatus	2	*Oxyjulis californica (adult)*	97
Chromis punctipinnis (adult)	250	*Oxylebius pictus*	28
Citharichthys stigmaeus	5	*Paralabrax clathratus (adult)*	17
Coryphopterus nicholsi	269	*Platyrhinoidis triseriata*	1
Embiotoca jacksoni (adult)	18	*Rhacochilus vacca (adult)*	1
Embiotoca jacksoni (juv)	3	*Sebastes atrovirens (adult)*	15
Girella nigricans (adult)	15	*Sebastes atrovirens (juv)*	2
Halichoeres semicinctus (female)	7	*Sebastes auriculatus (adult)*	1
Halichoeres semicinctus (male)	1	*Sebastes chrysomelas (adult)*	2
Heterodontus francisci	2	*Sebastes mystinus (juv)*	36
Hypsypops rubicundus (adult)	8	*Sebastes serranoides/S. flavidus (juv)*	4
KGB	4	*Sebastes serriceps (adult)*	1
Leiocottus hirundo	1	*Sebastes serriceps (juv)*	3
Lythrypnus dalli	1	*Semicossyphus pulcher (female)*	12
Lythrypnus zebra	1		



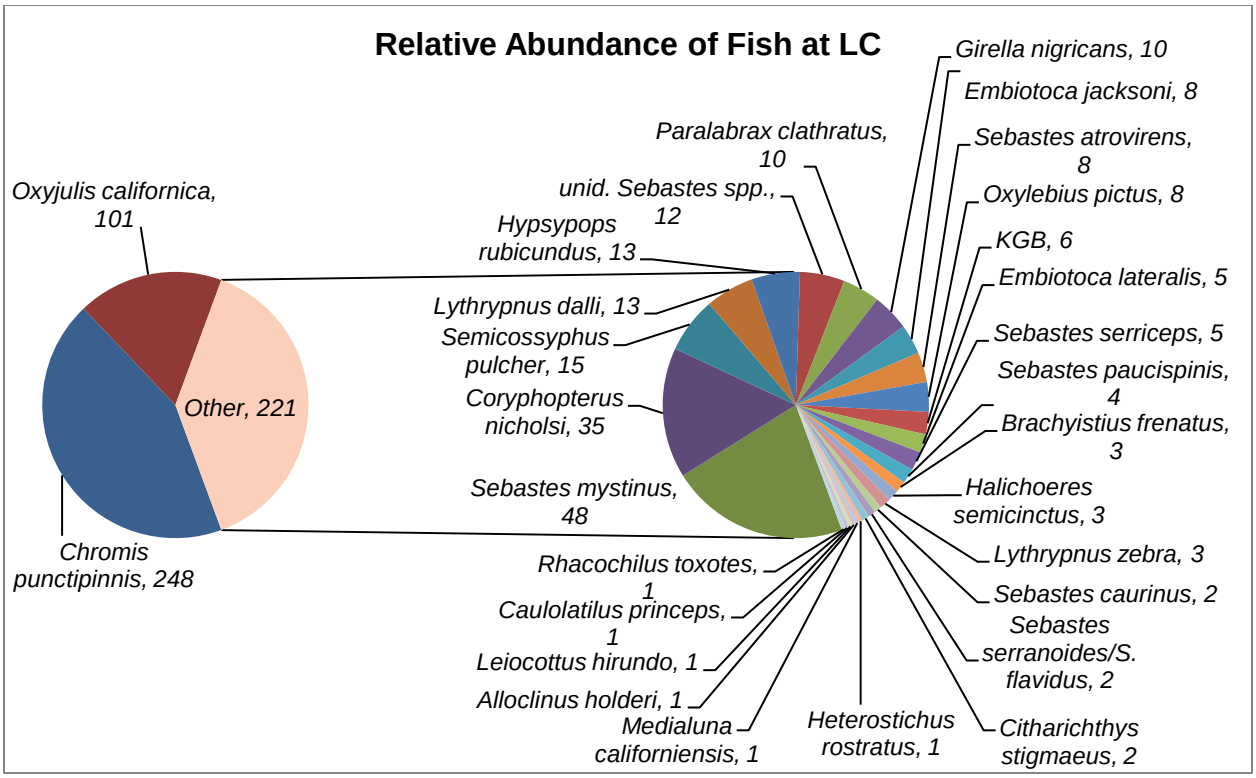
Species	Max Count	Species	Max Count
Artedius corallinus	1	*Oxyjulis californica (adult)*	151
Brachyistius frenatus	27	*Oxylebius pictus*	29
Cephaloscyllium ventriosum	3	*Paralabrax clathratus (adult)*	5
Chromis punctipinnis (adult)	3	*Rhacochilus vacca (adult)*	5
Coryphopterus nicholsi	137	*Sebastes atrovirens (adult)*	11
Embiotoca jacksoni (adult)	10	*Sebastes atrovirens (juv)*	1
Embiotoca jacksoni (juv)	1	*Sebastes caurinus (juv)*	15
Halichoeres semicinctus (male)	1	*Sebastes miniatus (juv)*	3
Heterostichus rostratus	1	*Sebastes mystinus (juv)*	26
Heterostichus rostratus (juv)	1	*Sebastes serranoides/S. flavidus (juv)*	1
Hypsurus caryi	9	*Sebastes serriceps (adult)*	1
KGB	9	*Sebastes serriceps (juv)*	5
Leiocottus hirundo	1	*Semicossyphus pulcher (female)*	16
Ophiodon elongatus	2	*Trachurus symmetricus*	22



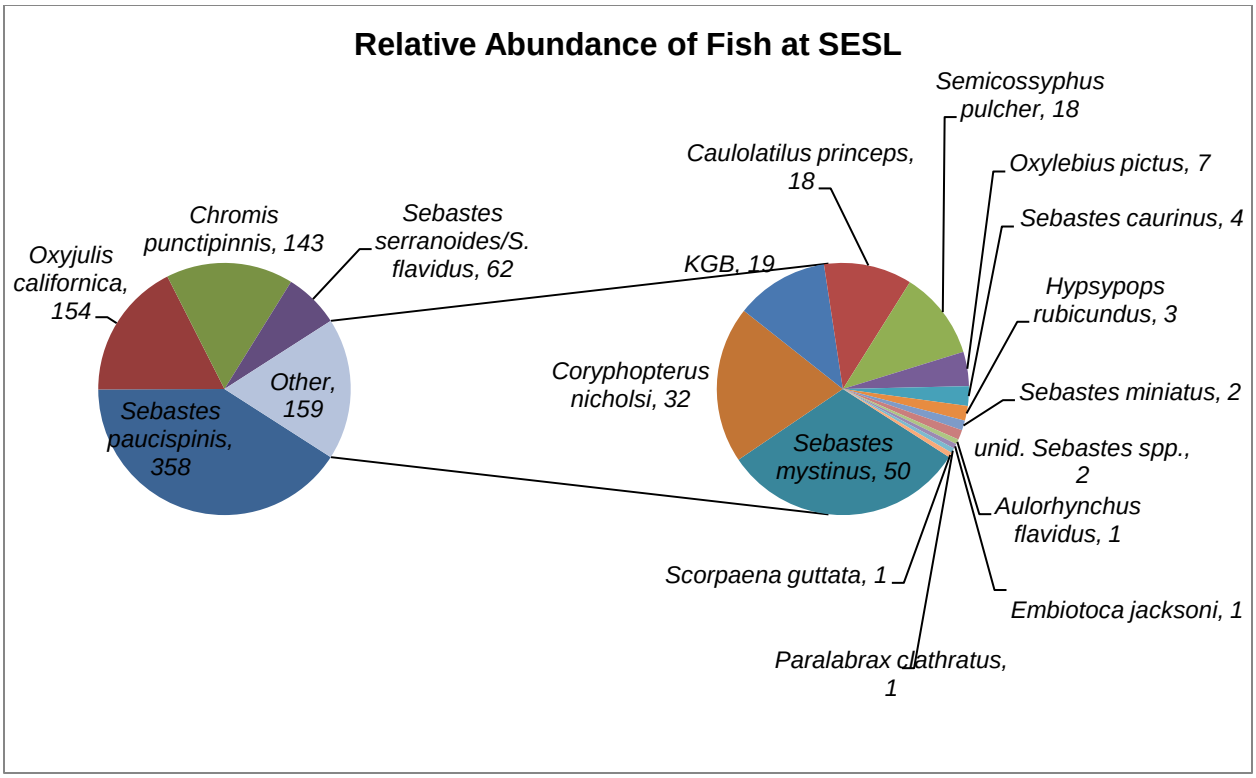
Species	Max Count	Species	Max Count
Alloclinus holderi	3	*Oxyjulis californica (adult)*	120
Caulolatilus princeps	1	*Oxylebius pictus*	38
Chromis punctipinnis (adult)	1613	*Paralabrax clathratus (adult)*	3
Coryphopterus nicholsi	231	*Rhacochilus toxotes*	1
Embiotoca jacksoni (adult)	4	*Sebastes atrovirens (adult)*	4
Girella nigricans (adult)	12	*Sebastes mystinus (juv)*	370
Gymnothorax mordax	1	*Sebastes serranoides (adult)*	2
Halichoeres semicinctus (female)	3	*Sebastes serranoides/S. flavidus (juv)*	2
Halichoeres semicinctus (male)	5	*Sebastes serriceps (adult)*	13
Hypsypops rubicundus (adult)	7	*Sebastes spp. (juv, unidentified)*	2
KGB	1	*Semicossyphus pulcher (female)*	27
Lythrypnus dalli	3	*Semicossyphus pulcher (juv)*	1



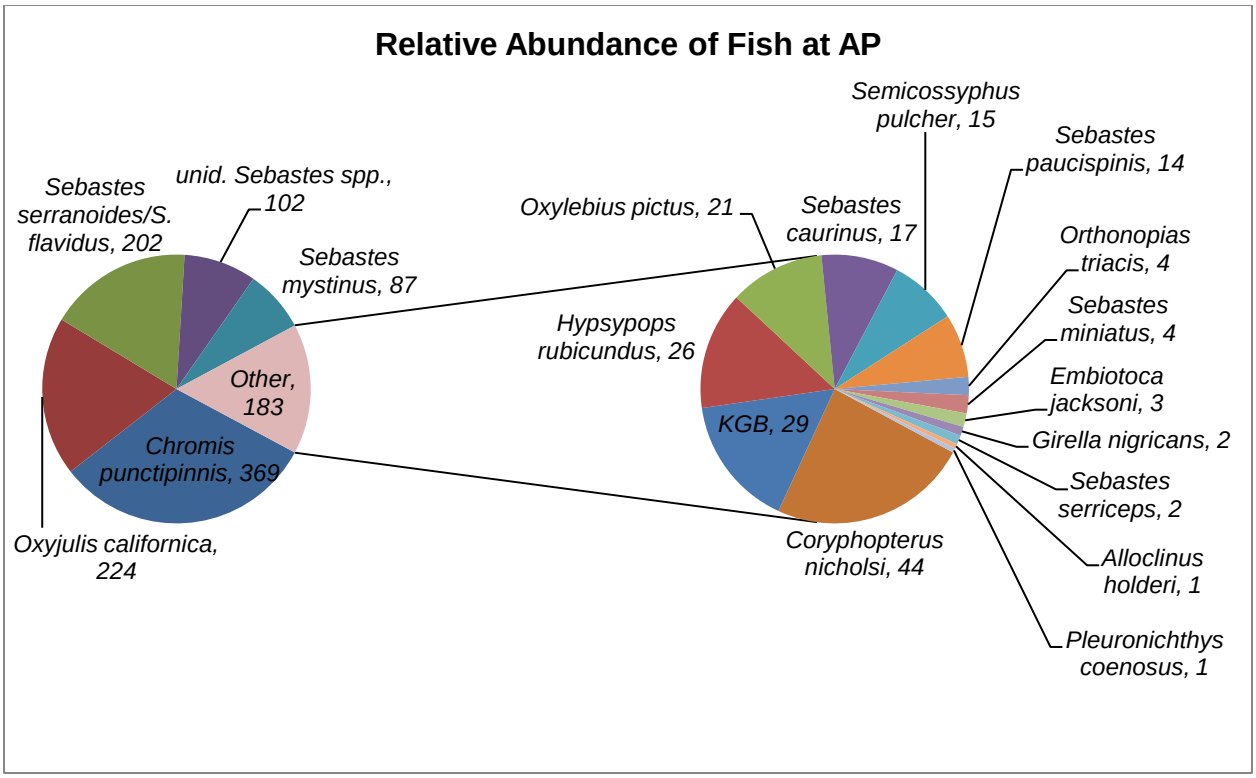
Species	Max Count	Species	Max Count
Alloclinus holderi	3	*Oxyjulis californica (adult)*	48
Brachyistius frenatus	3	*Oxylebius pictus*	7
Caulolatilus princeps	4	*Paralabrax clathratus (adult)*	7
Chromis punctipinnis (adult)	429	*Paralabrax clathratus (juv)*	3
Coryphopterus nicholsi	25	*Rhacochilus toxotes*	1
Cymatogaster aggregata	37	*Rhacochilus vacca (adult)*	1
Embiotoca jacksoni (adult)	5	*Sebastes atrovirens (adult)*	14
Embiotoca jacksoni (juv)	4	*Sebastes mystinus (juv)*	68
Girella nigricans (adult)	14	*Sebastes paucispinis (juv)*	18
Halichoeres semicinctus (female)	2	*Sebastes serranoides (adult)*	2
Halichoeres semicinctus (male)	1	*Sebastes serranoides/S. flavidus (juv)*	5
Hypsypops rubicundus (adult)	11	*Sebastes serriceps (juv)*	1
Hypsypops rubicundus (juv)	1	*Sebastes spp. (juv, unidentified)*	9
KGB	2	*Semicossyphus pulcher (female)*	15
Lythrypnus dalli	2	*Semicossyphus pulcher (male)*	2
Medialuna californiensis	1		



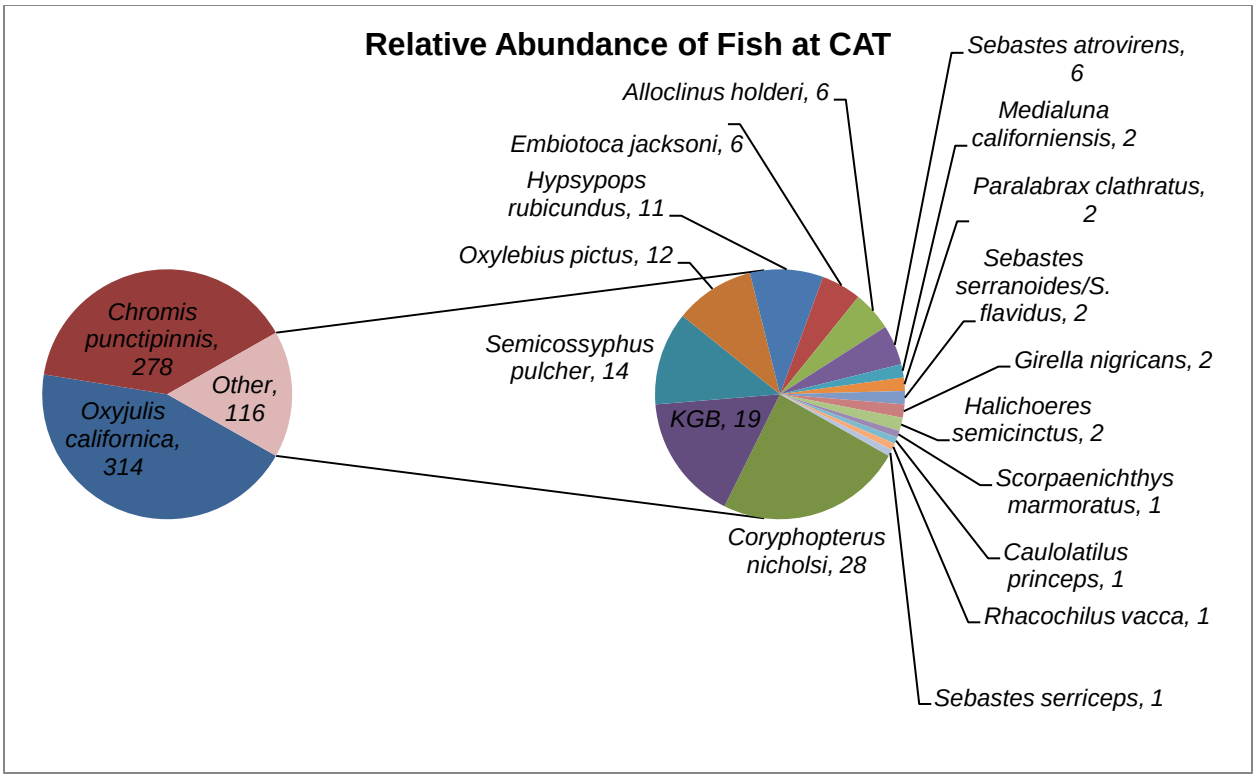
Species	Max Count	Species	Max Count
Alloclinus holderi	1	*Medialuna californiensis*	1
Brachyistius frenatus	3	*Oxyjulis californica (adult)*	97
Caulolatilus princeps	1	*Oxyjulis californica (juv)*	4
Chromis punctipinnis (adult)	248	*Oxylebius pictus*	8
Citharichthys stigmaeus	2	*Paralabrax clathratus (adult)*	10
Coryphopterus nicholsi	35	*Rhacochilus toxotes*	1
Embiotoca jacksoni (adult)	7	*Sebastes atrovirens (adult)*	8
Embiotoca jacksoni (juv)	1	*Sebastes caurinus (juv)*	2
Embiotoca lateralis (adult)	5	*Sebastes mystinus (juv)*	48
Girella nigricans (adult)	10	*Sebastes paucispinis (juv)*	4
Halichoeres semicinctus (female)	2	*Sebastes serranoides/S. flavidus (juv)*	2
Halichoeres semicinctus (male)	1	*Sebastes serriceps (adult)*	4
Heterostichus rostratus	1	*Sebastes serriceps (juv)*	1
Hypsypops rubicundus (adult)	13	*Sebastes spp. (juv, unidentified)*	12
KGB	6	*Semicossyphus pulcher (female)*	11
Leiocottus hirundo	1	*Semicossyphus pulcher (juv)*	1
Lythrypnus dalli	13	*Semicossyphus pulcher (male)*	3
Lythrypnus zebra	3		



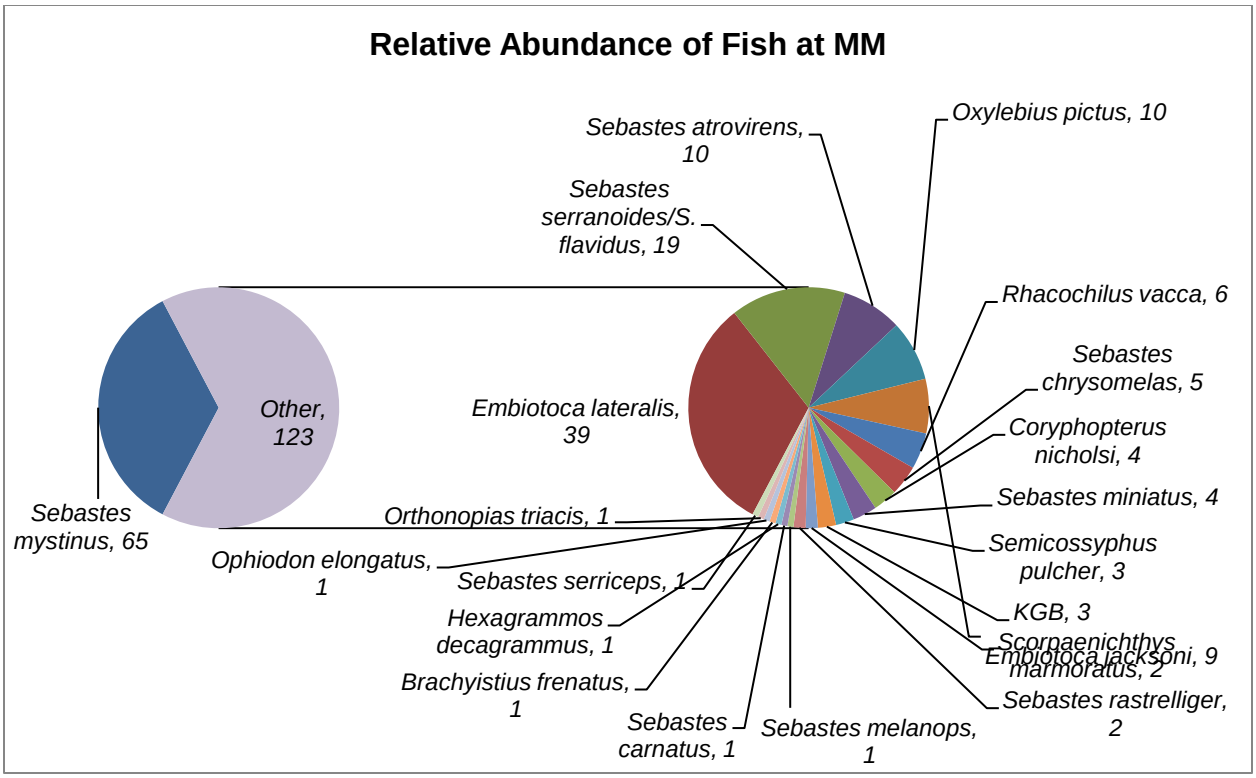
Species	Max Count	Species	Max Count
Aulorhynchus flavidus	1	*Scorpaena guttata*	1
Caulolatilus princeps	18	*Sebastes caurinus (juv)*	4
Chromis punctipinnis (adult)	143	*Sebastes miniatus (juv)*	2
Coryphopterus nicholsi	32	*Sebastes mystinus (juv)*	50
Embiotoca jacksoni (adult)	1	*Sebastes paucispinis (juv)*	358
Hypsypops rubicundus (adult)	3	*Sebastes serranoides/S. flavidus (juv)*	62
KGB	19	*Sebastes spp. (juv, unidentified)*	2
Oxyjulis californica (adult)	154	*Semicossyphus pulcher (female)*	14
Oxylebius pictus	7	*Semicossyphus pulcher (juv)*	2
Paralabrax clathratus (adult)	1	*Semicossyphus pulcher (male)*	2



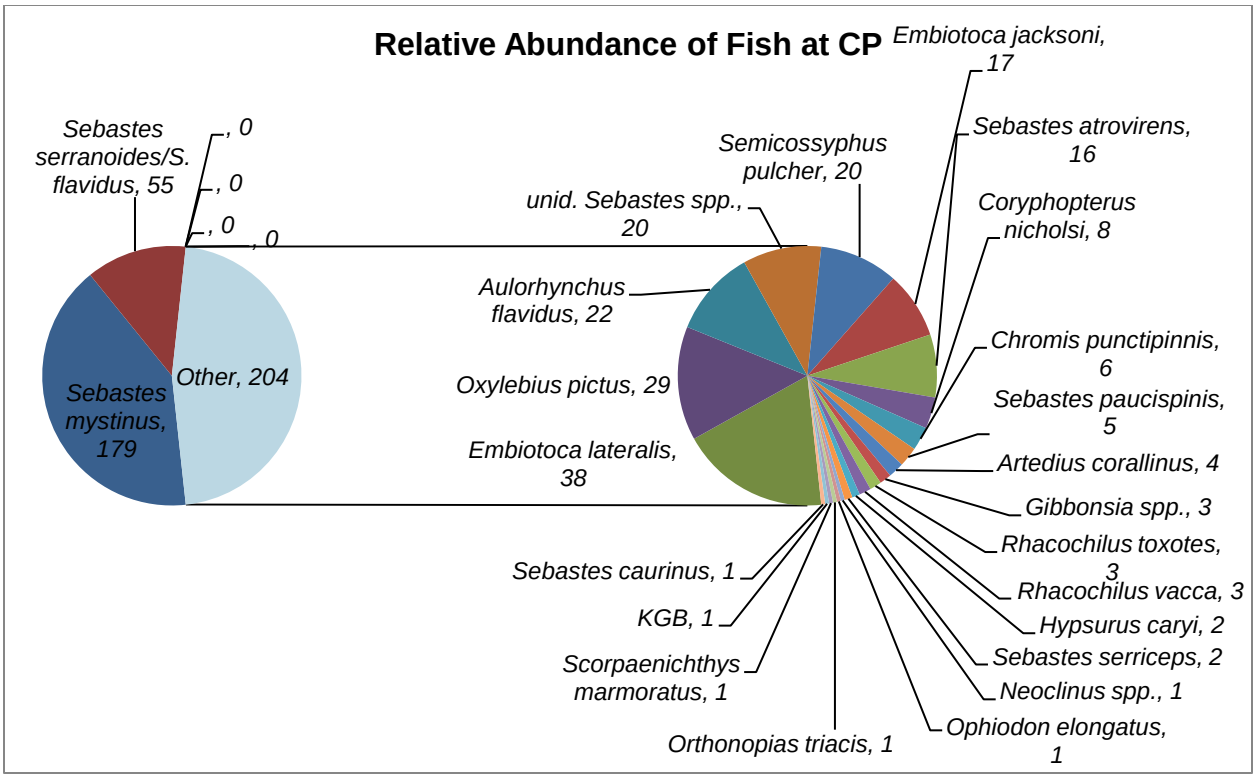
Species	MaxCount	Species	MaxCount
Alloclinus holderi	1	*Pleuronichthys coenosus*	1
Chromis punctipinnis (adult)	369	*Sebastes caurinus (juv)*	17
Coryphopterus nicholsi	44	*Sebastes miniatus (juv)*	4
Embiotoca jacksoni (adult)	3	*Sebastes mystinus (juv)*	87
Girella nigricans (adult)	2	*Sebastes paucispinis (juv)*	14
Hypsypops rubicundus (adult)	26	*Sebastes serranoides/S. flavidus (juv)*	202
KGB	29	*Sebastes serriceps (adult)*	2
Orthonopias triacis	4	*Sebastes spp. (juv, unidentified)*	102
Oxyjulis californica (adult)	198	*Semicossyphus pulcher (female)*	14
Oxyjulis californica (juv)	26	*Semicossyphus pulcher (male)*	1
Oxylebius pictus	21		



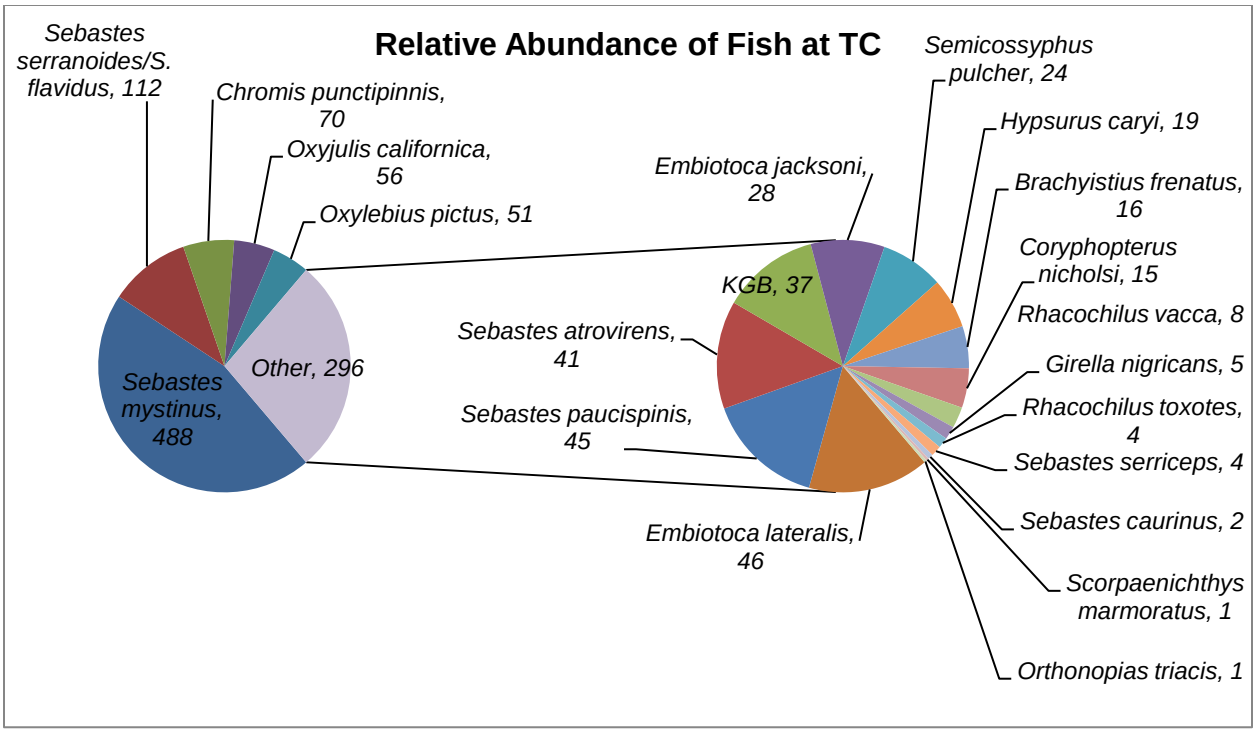
Species	MaxCount	Species	MaxCount
Alloclinus holderi	6	*Oxyjulis californica (adult)*	279
Caulolatilus princeps	1	*Oxyjulis californica (juv)*	35
Chromis punctipinnis (adult)	278	*Oxylebius pictus*	12
Coryphopterus nicholsi	28	*Paralabrax clathratus (adult)*	2
Embiotoca jacksoni (adult)	6	*Rhacochilus vacca (adult)*	1
Girella nigricans (adult)	2	*Scorpaenichthys marmoratus*	1
Halichoeres semicinctus (female)	1	*Sebastes atrovirens (adult)*	6
Halichoeres semicinctus (male)	1	*Sebastes serranoides/S. flavidus (juv)*	2
Hypsypops rubicundus (adult)	11	*Sebastes serriceps (adult)*	1
KGB	19	*Semicossyphus pulcher (female)*	13
Medialuna californiensis	2	*Semicossyphus pulcher (juv)*	1



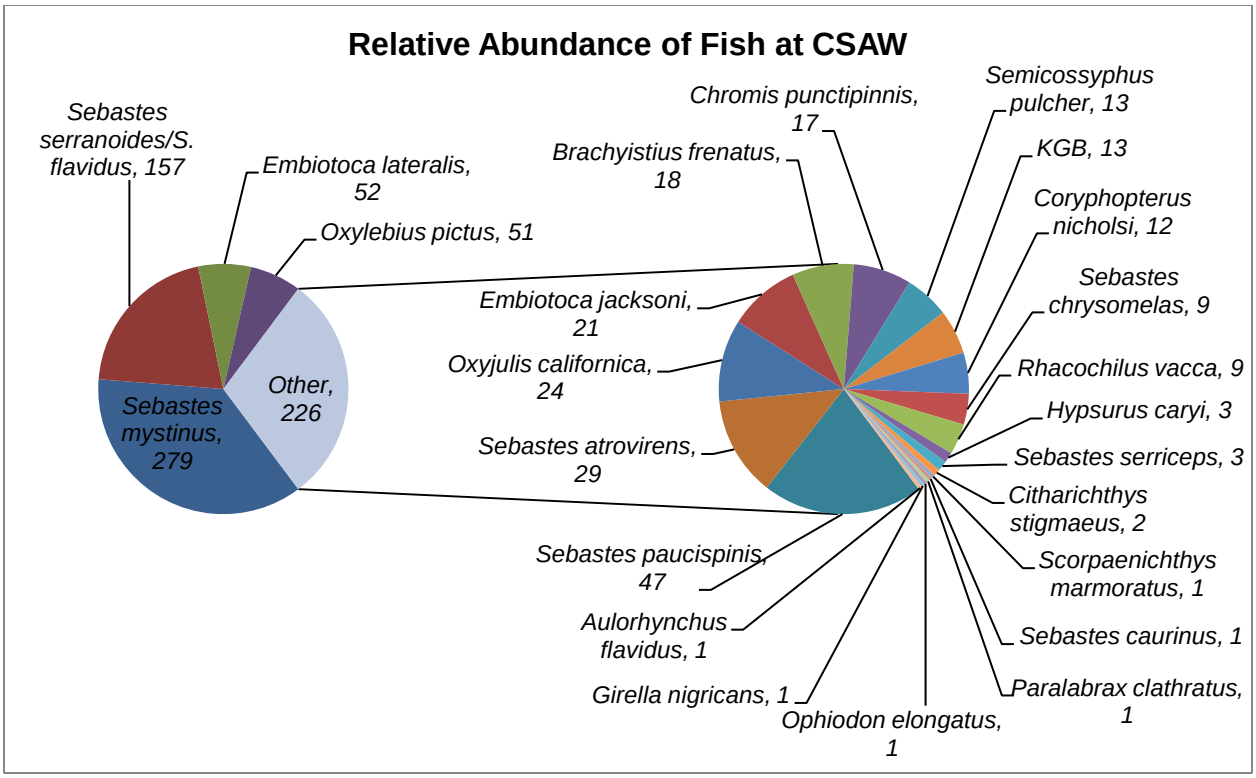
Species	Max Count	Species	Max Count
Brachyistius frenatus	1	*Sebastes atrovirens (adult)*	10
Coryphopterus nicholsi	4	*Sebastes carnatus (adult)*	1
Embiotoca jacksoni (adult)	8	*Sebastes chrysomelas (adult)*	5
Embiotoca jacksoni (juv)	1	*Sebastes melanops (adult)*	1
Embiotoca lateralis (adult)	27	*Sebastes miniatus (adult)*	1
Embiotoca lateralis (juv)	12	*Sebastes miniatus (juv)*	3
Hexagrammos decagrammus	1	*Sebastes mystinus (adult)*	10
KGB	3	*Sebastes mystinus (juv)*	55
Ophiodon elongatus	1	*Sebastes rastrelliger (adult)*	2
Orthonopias triacis	1	*Sebastes serranoides/S. flavidus (juv)*	19
Oxylebius pictus	10	*Sebastes serriceps (juv)*	1
Rhacochilus vacca (adult)	6	*Semicossyphus pulcher (female)*	2
Scorpaenichthys marmoratus	2	*Semicossyphus pulcher (juv)*	1



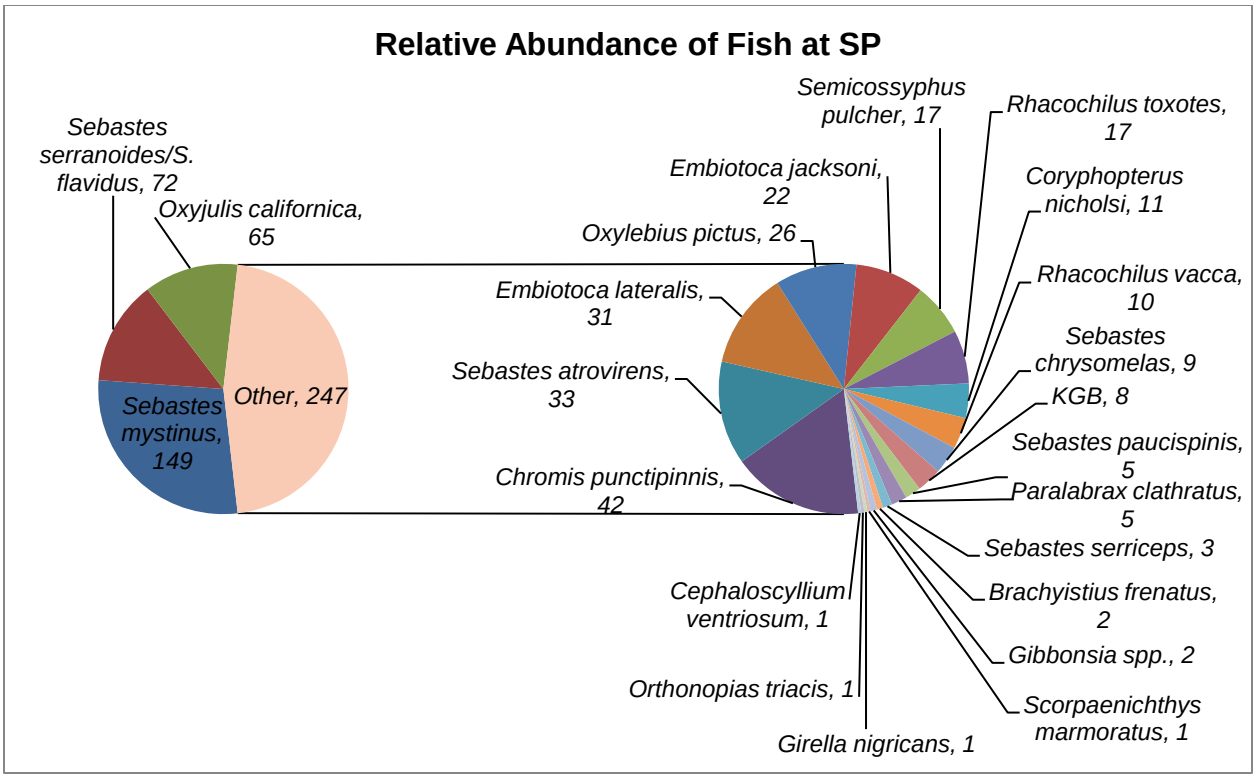
Species	Max Count	Species	Max Count
Artedius corallinus	4	*Scorpaenichthys marmoratus*	1
Aulorhynchus flavidus	22	*Sebastes atrovirens (adult)*	16
Chromis punctipinnis (adult)	6	*KGB*	1
Coryphopterus nicholsi	8	*Sebastes caurinus (juv)*	1
Embiotoca jacksoni (adult)	17	*Sebastes mystinus (adult)*	20
Embiotoca lateralis (adult)	30	*Sebastes mystinus (juv)*	159
Embiotoca lateralis (juv)	8	*Sebastes paucispinis (juv)*	5
Gibbonsia spp.	3	*Sebastes serranoides (adult)*	13
Hypsurus caryi	2	*Sebastes serranoides/S. flavidus (juv)*	42
Neoclinus spp.	1	*Sebastes serriceps (adult)*	1
Ophiodon elongatus	1	*Sebastes serriceps (juv)*	1
Orthonopias triacis	1	*Sebastes spp. (juv, unidentified)*	20
Oxylebius pictus	29	*Semicossyphus pulcher (female)*	17
Rhacochilus toxotes	3	*Semicossyphus pulcher (male)*	3
Rhacochilus vacca (adult)	3		



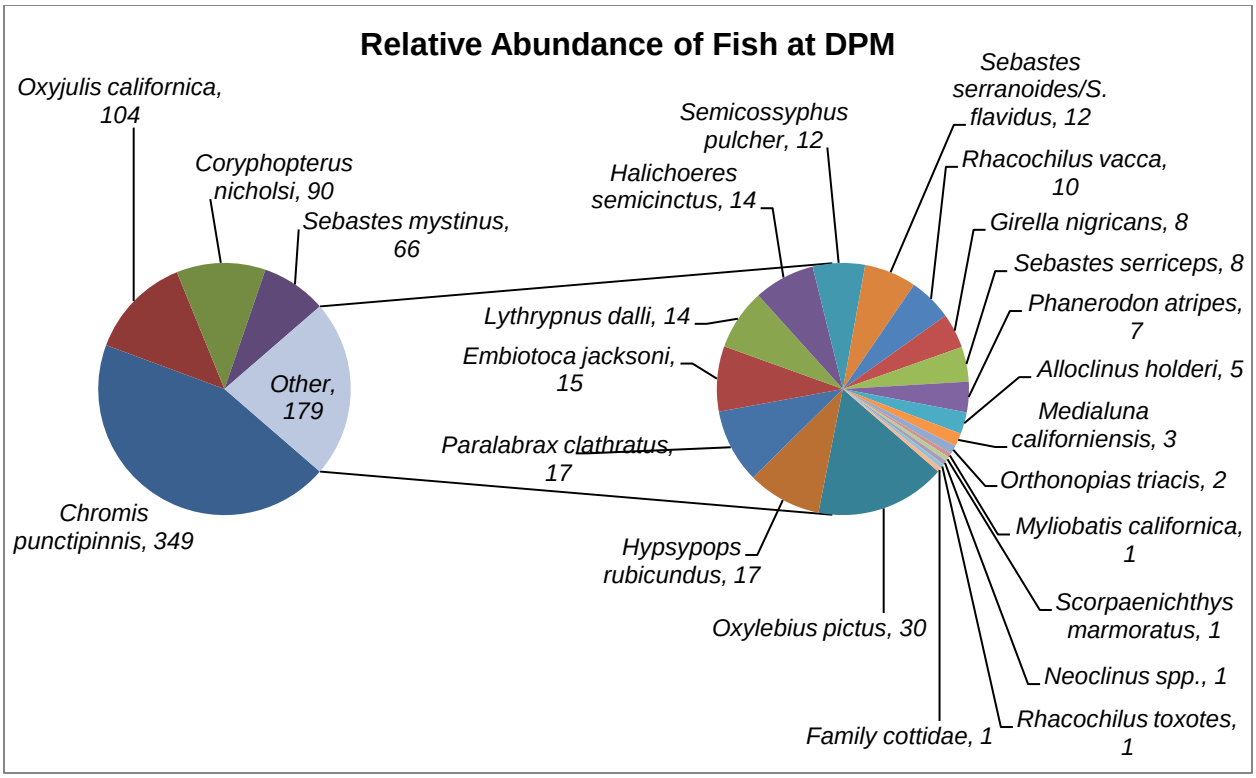
Species	Max Count	Species	Max Count
Brachyistius frenatus	16	*Rhacochilus vacca (adult)*	8
Chromis punctipinnis (adult)	70	*Scorpaenichthys marmoratus*	1
Coryphopterus nicholsi	15	*Sebastes atrovirens (adult)*	25
Embiotoca jacksoni (adult)	22	*Sebastes atrovirens (juv)*	16
Embiotoca jacksoni (juv)	6	*Sebastes caurinus (juv)*	2
Embiotoca lateralis (adult)	34	*Sebastes mystinus (adult)*	92
Embiotoca lateralis (juv)	12	*Sebastes mystinus (juv)*	396
Girella nigricans (adult)	5	*Sebastes paucispinis (juv)*	45
Hypsurus caryi	19	*Sebastes serranoides (adult)*	28
KGB	37	*Sebastes serranoides/S. flavidus (juv)*	84
Orthonopias triacis	1	*Sebastes serriceps (adult)*	2
Oxyjulis californica (adult)	56	*Sebastes serriceps (juv)*	2
Oxylebius pictus	51	*Semicossyphus pulcher (female)*	20
Rhacochilus toxotes	4	*Semicossyphus pulcher (male)*	4



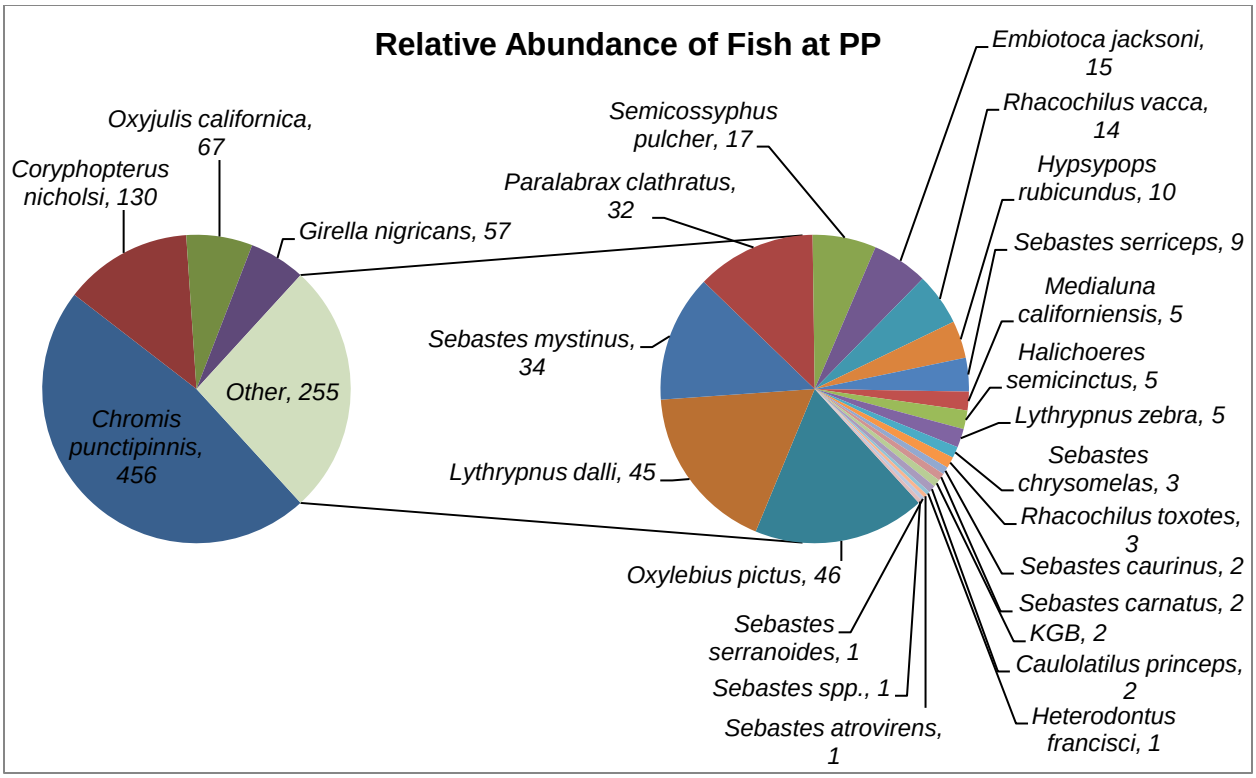
Species	Max Count	Species	Max Count
Aulorhynchus flavidus	1	*Rhacochilus vacca (adult)*	7
Brachyistius frenatus	18	*Rhacochilus vacca (juv)*	2
Chromis punctipinnis (adult)	17	*Scorpaenichthys marmoratus*	1
Citharichthys stigmaeus	2	*Sebastes atrovirens (adult)*	24
Coryphopterus nicholsi	12	*Sebastes atrovirens (juv)*	5
Embiotoca jacksoni (adult)	17	*Sebastes caurinus (juv)*	1
Embiotoca jacksoni (juv)	4	*Sebastes chrysomelas (adult)*	9
Embiotoca lateralis (adult)	30	*Sebastes mystinus (adult)*	36
Embiotoca lateralis (juv)	22	*Sebastes mystinus (juv)*	243
Girella nigricans (adult)	1	*Sebastes paucispinis (juv)*	47
Hypsurus caryi	3	*Sebastes serranoides (adult)*	7
KGB	13	*Sebastes serranoides/S. flavidus (juv)*	150
Ophiodon elongatus	1	*Sebastes serriceps (adult)*	1
Oxyjulis californica (adult)	24	*Sebastes serriceps (juv)*	2
Oxylebius pictus	51	*Semicossyphus pulcher (female)*	8
Paralabrax clathratus (adult)	1	*Semicossyphus pulcher (male)*	5



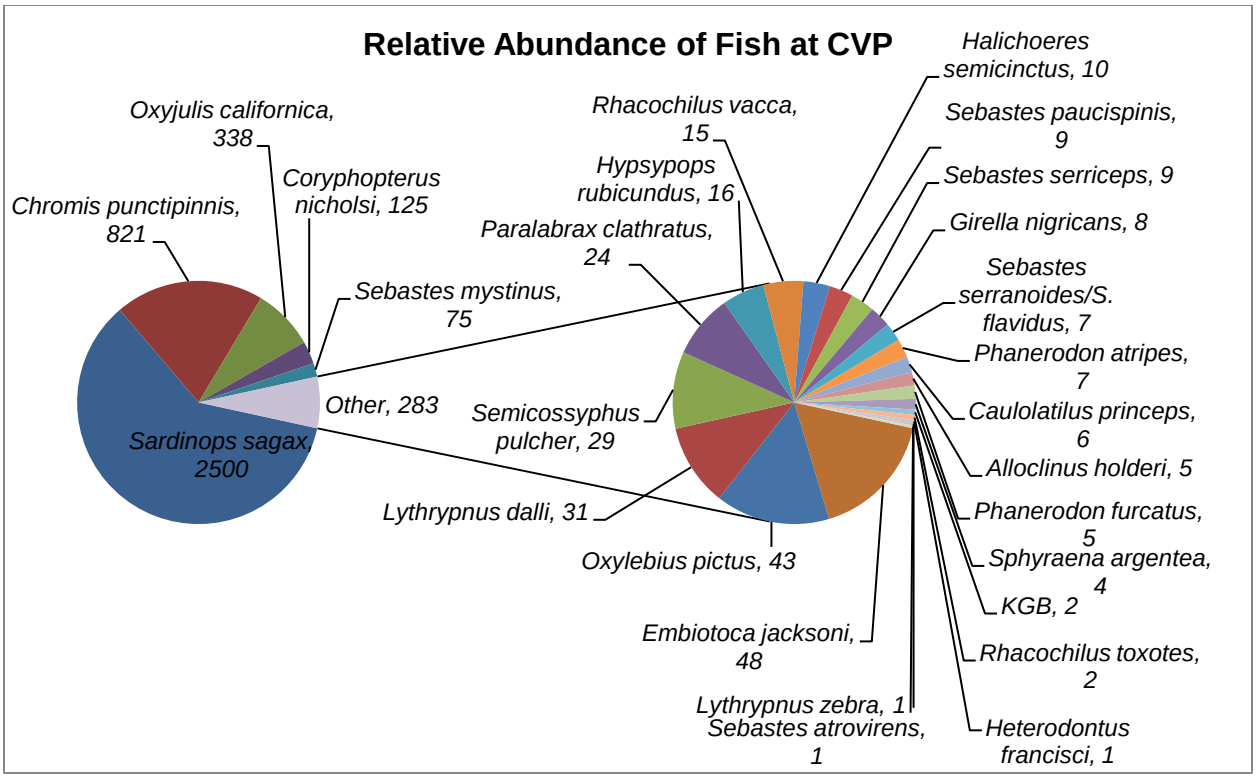
Species	Max Count	Species	Max Count
Brachyistius frenatus	2	*Rhacochilus toxotes*	17
Cephaloscyllium ventriosum	1	*Rhacochilus vacca (adult)*	9
Chromis punctipinnis (adult)	42	*Rhacochilus vacca (juv)*	1
Coryphopterus nicholsi	11	*Scorpaenichthys marmoratus*	1
Embiotoca jacksoni (adult)	17	*Sebastes atrovirens (adult)*	27
Embiotoca jacksoni (juv)	5	*Sebastes atrovirens (juv)*	6
Embiotoca lateralis (adult)	21	*Sebastes chrysomelas (adult)*	9
Embiotoca lateralis (juv)	10	*Sebastes mystinus (adult)*	26
Gibbonsia spp.	2	*Sebastes mystinus (juv)*	123
Girella nigricans (adult)	1	*Sebastes paucispinis (juv)*	5
KGB	8	*Sebastes serranoides (adult)*	24
Orthonopias triacis	1	*Sebastes serranoides/S. flavidus (juv)*	48
Oxyjulis californica (adult)	65	*Sebastes serriceps (juv)*	3
Oxylebius pictus	26	*Semicossyphus pulcher (female)*	10
Paralabrax clathratus (adult)	5	*Semicossyphus pulcher (male)*	7



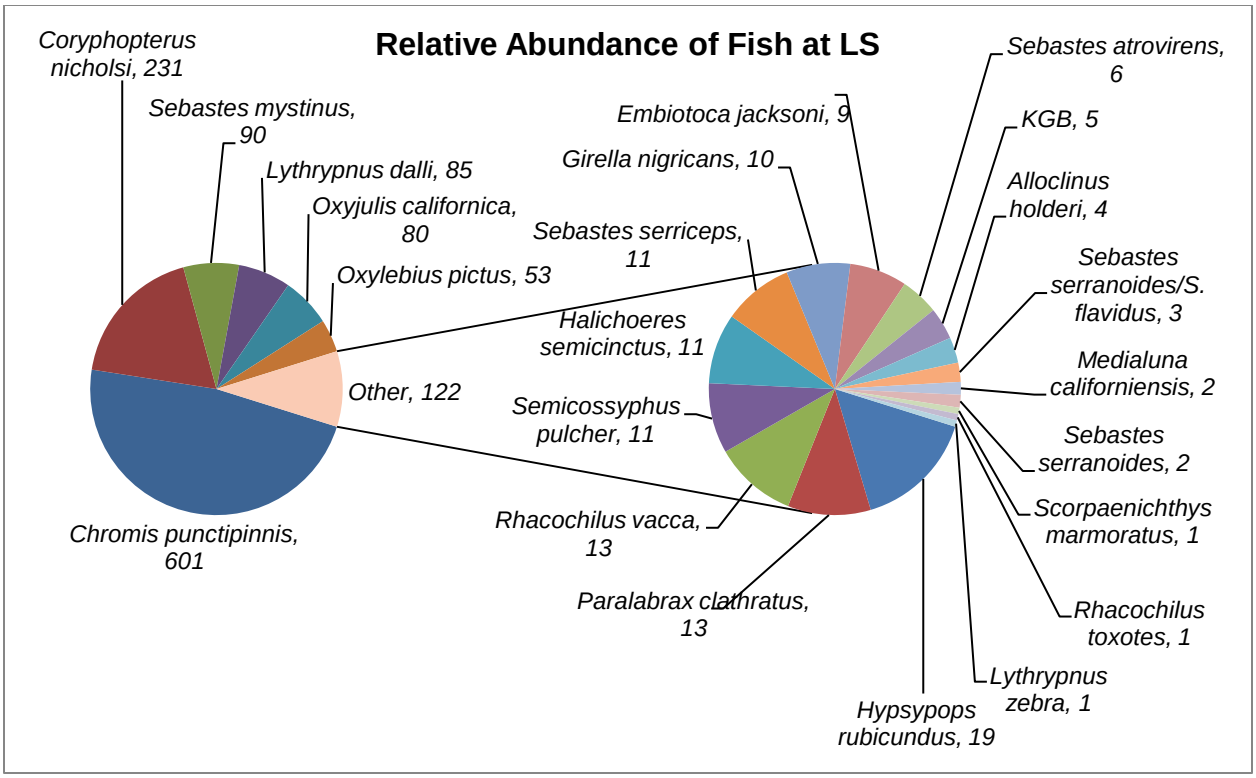
Species	Max Count	Species	Max Count
Alloclinus holderi	5	*Orthonopias triacis*	2
Chromis punctipinnis (adult)	349	*Oxyjulis californica (adult)*	104
Coryphopterus nicholsi	90	*Oxylebius pictus*	30
Embiotoca jacksoni (adult)	14	*Paralabrax clathratus (adult)*	17
Embiotoca jacksoni (juv)	1	*Phanerodon atripes*	7
Family cottidae	1	*Rhacochilus toxotes*	1
Girella nigricans (adult)	8	*Rhacochilus vacca (adult)*	10
Halichoeres semicinctus (female)	8	*Scorpaenichthys marmoratus*	1
Halichoeres semicinctus (male)	6	*Sebastes atrovirens (adult)*	6
Hypsypops rubicundus (adult)	17	*Sebastes mystinus (adult)*	1
Lythrypnus dalli	14	*Sebastes mystinus (juv)*	65
Medialuna californiensis	3	*Sebastes serranoides/S. flavidus (juv)*	6
Myliobatis californica	1	*Sebastes serriceps (adult)*	8
Neoclinus spp.	1	*Semicossyphus pulcher (female)*	12



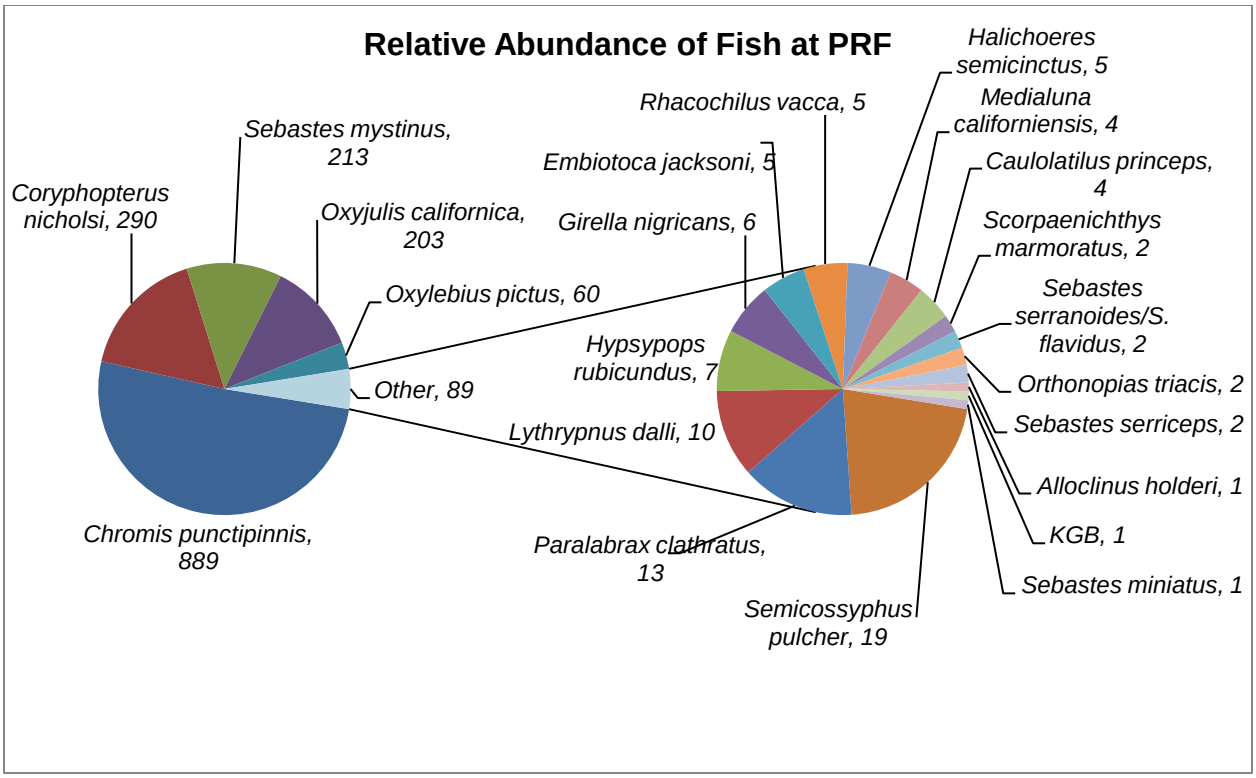
Species	Max Count	Species	Max Count
Caulolatilus princeps	2	*Oxylebius pictus*	46
Chromis punctipinnis (adult)	456	*Paralabrax clathratus (adult)*	32
Coryphopterus nicholsi	130	*Rhacochilus toxotes*	3
Embiotoca jacksoni (adult)	13	*Rhacochilus vacca (adult)*	14
Embiotoca jacksoni (juv)	2	*Sebastes atrovirens (adult)*	1
Girella nigricans (adult)	57	*Sebastes carnatus (adult)*	2
Halichoeres semicinctus (female)	2	*Sebastes caurinus (adult)*	2
Halichoeres semicinctus (male)	3	*Sebastes chrysomelas (adult)*	3
Heterodontus francisci	1	*Sebastes mystinus (adult)*	1
Hypsypops rubicundus (adult)	10	*Sebastes mystinus (juv)*	33
KGB	2	*Sebastes serranoides (adult)*	1
Lythrypnus dalli	45	*Sebastes serriceps (adult)*	5
Lythrypnus zebra	5	*Sebastes serriceps (juv)*	4
Medialuna californiensis	5	*Sebastes spp. (juv, unidentified)*	1
Oxyjulis californica (adult)	66	*Semicossyphus pulcher (female)*	15
Oxyjulis californica (juv)	1	*Semicossyphus pulcher (male)*	2



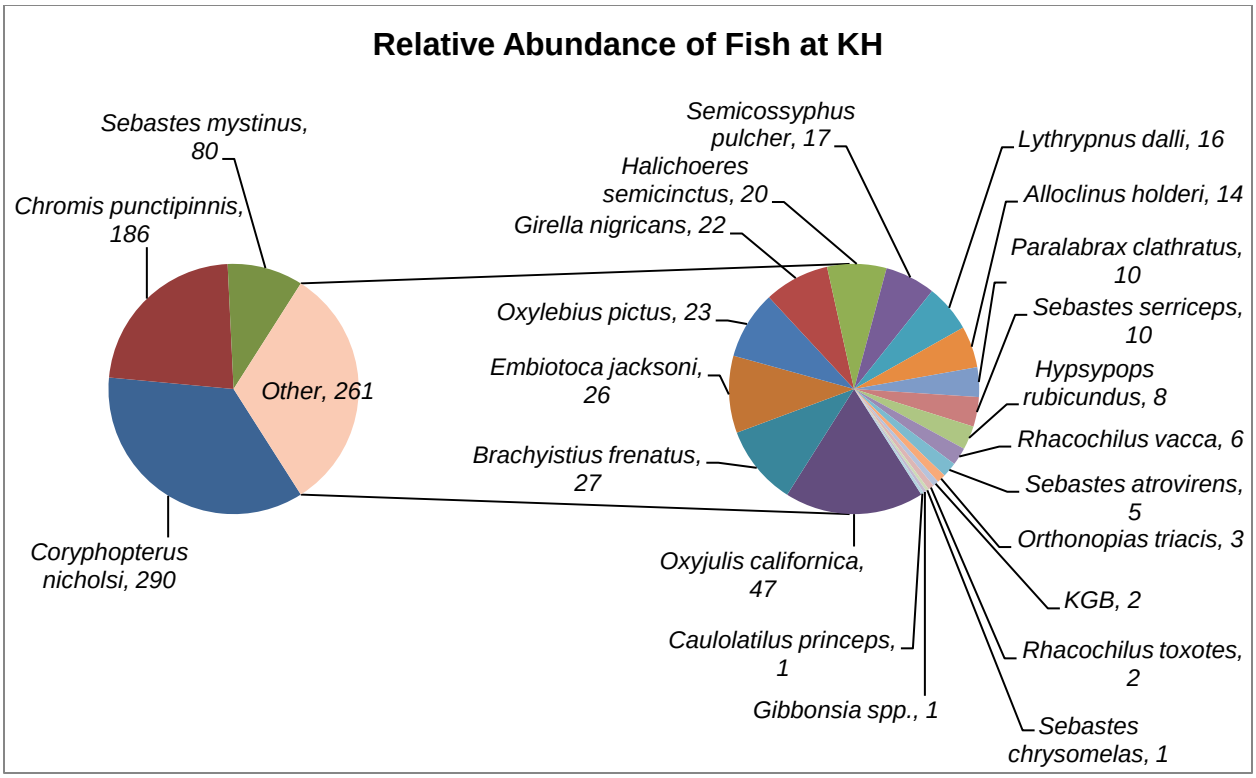
Species	Max Count	Species	Max Count
Alloclinus holderi	5	*Paralabrax clathratus (adult)*	24
Caulolatilus princeps	6	*Phanerodon atripes*	7
Chromis punctipinnis (adult)	821	*Phanerodon furcatus*	5
Coryphopterus nicholsi	125	*Rhacochilus toxotes*	2
Embiotoca jacksoni (adult)	47	*Rhacochilus vacca (adult)*	15
Embiotoca jacksoni (juv)	1	*Sardinops sagax*	2500
Girella nigricans (adult)	8	*Sebastes atrovirens (adult)*	1
Halichoeres semicinctus (female)	3	*Sebastes mystinus (juv)*	75
Halichoeres semicinctus (male)	7	*Sebastes paucispinis (juv)*	9
Heterodontus francisci	1	*Sebastes serranoides (adult)*	3
Hypsypops rubicundus (adult)	16	*Sebastes serranoides/S. flavidus (juv)*	4
KGB	2	*Sebastes serriceps (adult)*	4
Lythrypnus dalli	31	*Sebastes serriceps (juv)*	5
Lythrypnus zebra	1	*Semicossyphus pulcher (female)*	26
Oxyjulis californica (adult)	338	*Semicossyphus pulcher (male)*	3
Oxylebius pictus	43	*Sphyraena argentea*	4



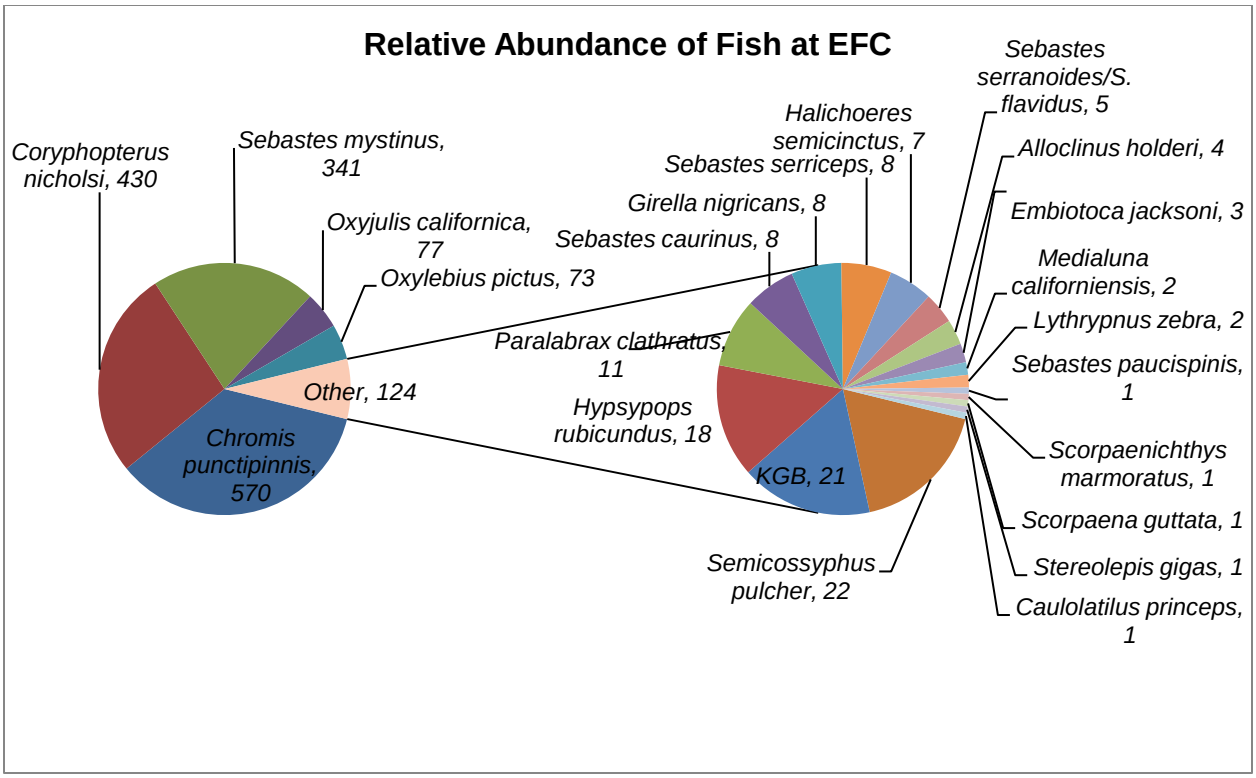
Species	Max Count	Species	Max Count
Alloclinus holderi	4	*Oxylebius pictus*	53
Chromis punctipinnis (adult)	601	*Paralabrax clathratus (adult)*	13
Coryphopterus nicholsi	231	*Rhacochilus toxotes*	1
Embiotoca jacksoni (adult)	9	*Rhacochilus vacca (adult)*	13
Girella nigricans (adult)	10	*Scorpaenichthys marmoratus*	1
Halichoeres semicinctus (female)	6	*Sebastes atrovirens (adult)*	6
Halichoeres semicinctus (male)	5	*Sebastes mystinus (adult)*	1
Hypsypops rubicundus (adult)	19	*Sebastes mystinus (juv)*	89
KGB	5	*Sebastes serranoides (adult)*	2
Lythrypnus dalli	85	*Sebastes serranoides/S. flavidus (juv)*	1
Lythrypnus zebra	1	*Sebastes serriceps (adult)*	9
Medialuna californiensis	2	*Sebastes serriceps (juv)*	2
Oxyjulis californica (adult)	80	*Semicossyphus pulcher (female)*	10
		Semicossyphus pulcher (juv)	1



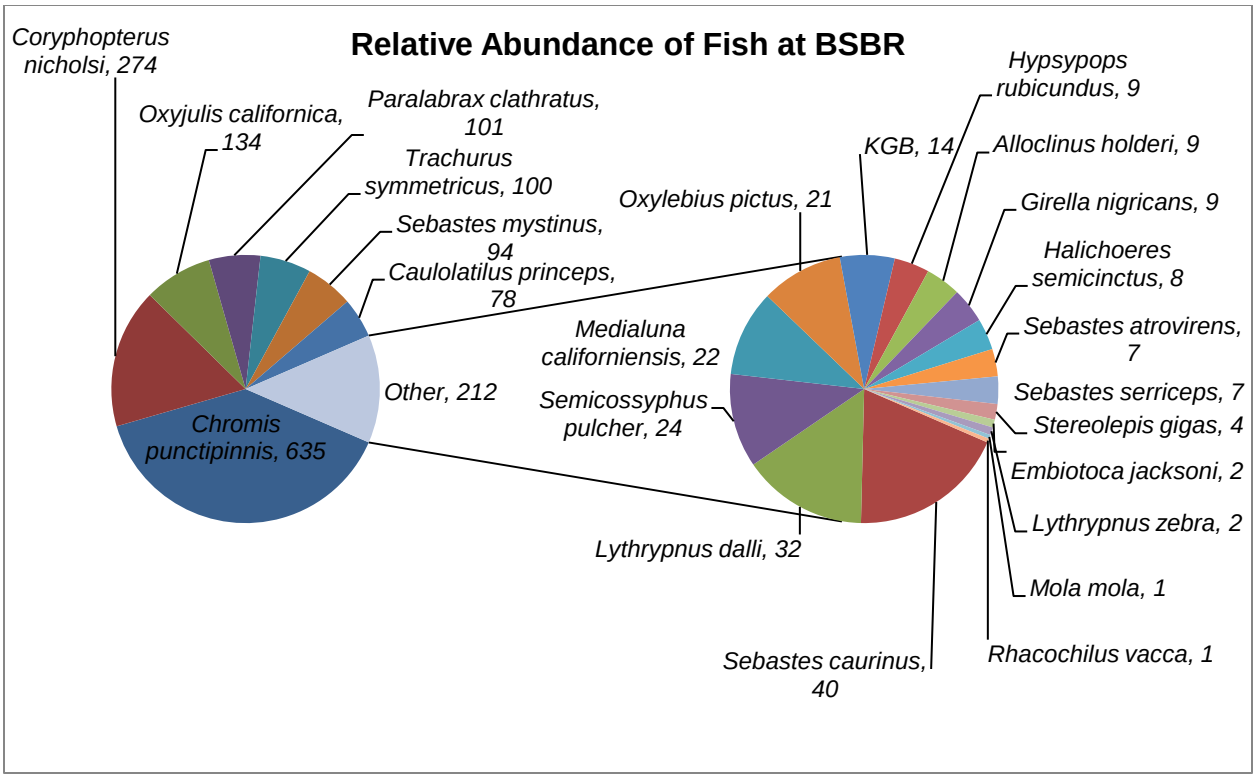
Species	Max Count	Species	Max Count
Alloclinus holderi	1	*Oxyjulis californica (adult)*	199
Caulolatilus princeps	4	*Oxyjulis californica (juv)*	4
Chromis punctipinnis (adult)	889	*Oxylebius pictus*	60
Coryphopterus nicholsi	290	*Paralabrax clathratus (adult)*	13
Embiotoca jacksoni (adult)	5	*Rhacochilus vacca (adult)*	5
Girella nigricans (adult)	6	*Scorpaenichthys marmoratus*	2
Halichoeres semicinctus (female)	5	*Sebastes miniatus (juv)*	1
Hypsypops rubicundus (adult)	7	*Sebastes mystinus (juv)*	213
KGB	1	*Sebastes serranoides/S. flavidus (juv)*	2
Lythrypnus dalli	10	*Sebastes serriceps (juv)*	2
Medialuna californiensis	4	*Semicossyphus pulcher (female)*	19
Orthonopias triacis	2		



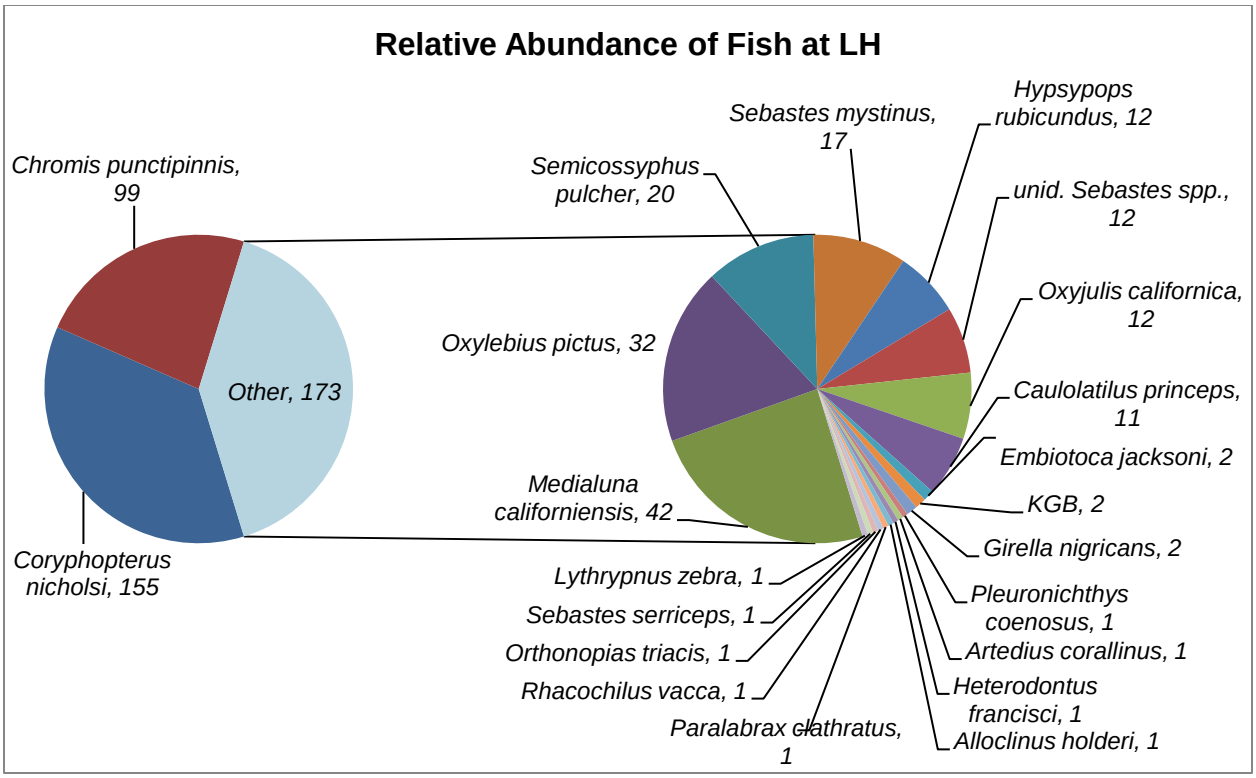
Species	Max Count	Species	Max Count
Alloclinus holderi	14	*Orthonopias triacis*	3
Brachyistius frenatus	27	*Oxyjulis californica (adult)*	47
Caulolatilus princeps	1	*Oxylebius pictus*	23
Chromis punctipinnis (adult)	186	*Paralabrax clathratus (adult)*	10
Coryphopterus nicholsi	290	*Rhacochilus toxotes*	2
Embiotoca jacksoni (adult)	16	*Rhacochilus vacca (adult)*	4
Embiotoca jacksoni (juv)	10	*Rhacochilus vacca (juv)*	2
Gibbonsia spp.	1	*Sebastes atrovirens (adult)*	5
Girella nigricans (adult)	22	*Sebastes chrysomelas (adult)*	1
Halichoeres semicinctus (female)	11	*Sebastes mystinus (juv)*	80
Halichoeres semicinctus (male)	9	*Sebastes serriceps (adult)*	5
Hypsypops rubicundus (adult)	8	*Sebastes serriceps (juv)*	5
KGB	2	*Semicossyphus pulcher (female)*	10
Lythrypnus dalli	16	*Semicossyphus pulcher (juv)*	6
		Semicossyphus pulcher (male)	1



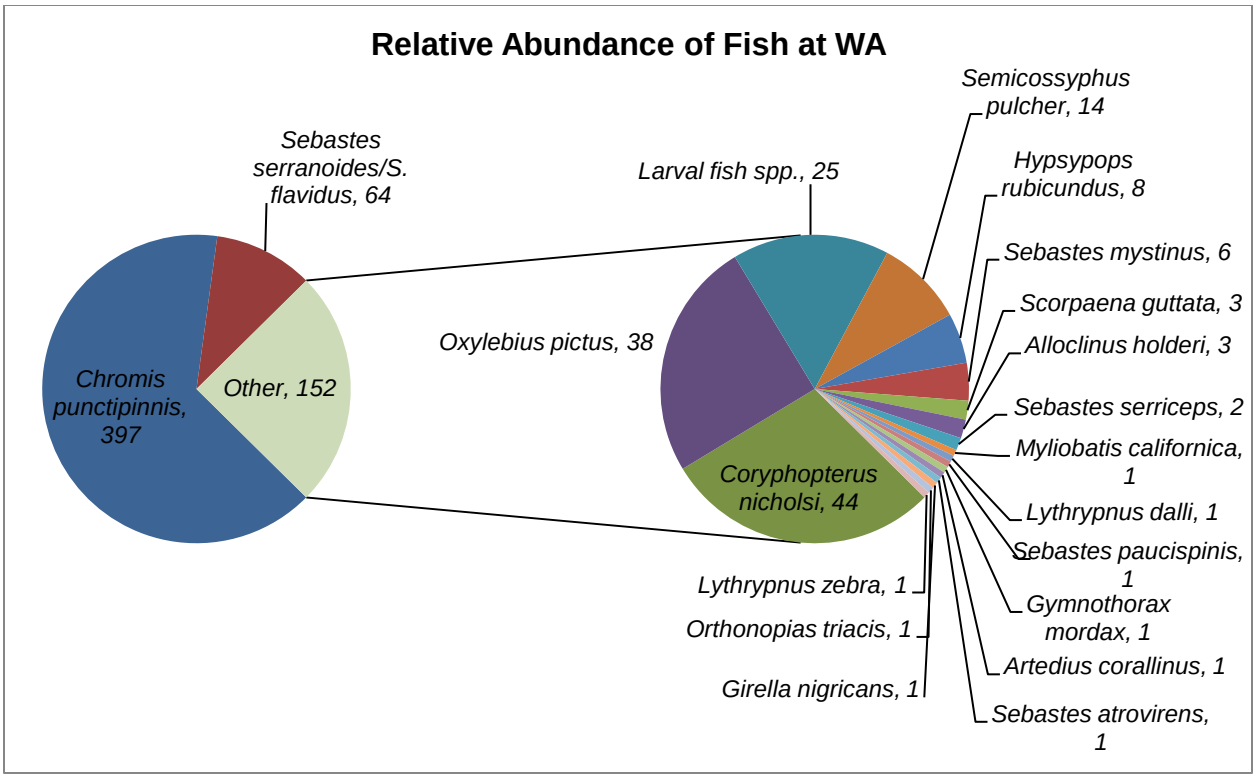
Species	Max Count	Species	Max Count
Alloclinus holderi	4	*Oxylebius pictus*	73
Caulolatilus princeps	1	*Paralabrax clathratus (adult)*	11
Chromis punctipinnis (adult)	570	*Scorpaena guttata*	1
Coryphopterus nicholsi	430	*Scorpaenichthys marmoratus*	1
Embiotoca jacksoni (adult)	3	*Sebastes caurinus (juv)*	8
Girella nigricans (adult)	8	*Sebastes mystinus (juv)*	341
Halichoeres semicinctus (female)	2	*Sebastes paucispinis (juv)*	1
Halichoeres semicinctus (male)	5	*Sebastes serranoides/S. flavidus (juv)*	5
Hypsypops rubicundus (adult)	18	*Sebastes serriceps (adult)*	1
KGB	21	*Sebastes serriceps (juv)*	7
Lythrypnus zebra	2	*Semicossyphus pulcher (female)*	19
Medialuna californiensis	2	*Semicossyphus pulcher (juv)*	3
Oxyjulis californica (adult)	77	*Stereolepis gigas*	1



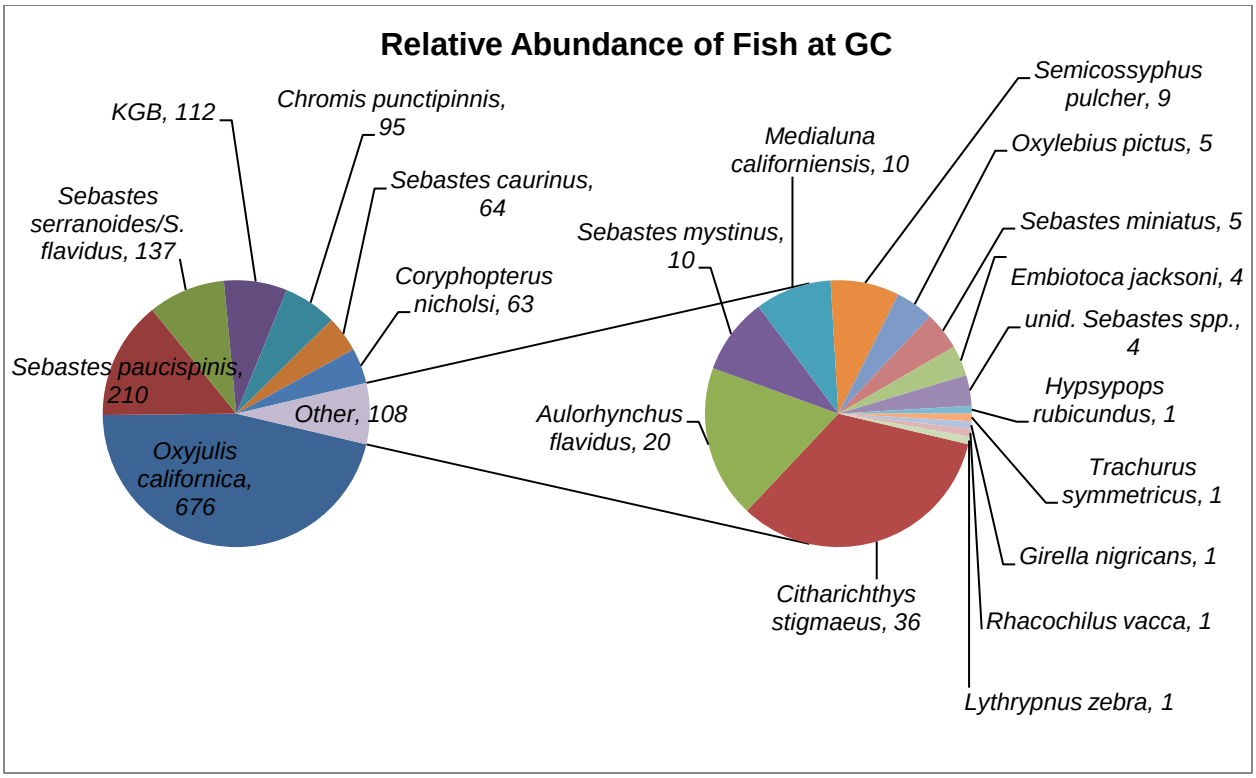
Species	Max Count	Species	Max Count
Alloclinus holderi	9	*Oxylebius pictus*	21
Caulolatilus princeps	78	*Paralabrax clathratus (adult)*	101
Chromis punctipinnis (adult)	635	*Rhacochilus vacca (adult)*	1
Coryphopterus nicholsi	274	*Sebastes atrovirens (adult)*	6
Embiotoca jacksoni (adult)	2	*Sebastes atrovirens (juv)*	1
Girella nigricans (adult)	9	*Sebastes caurinus (juv)*	40
Halichoeres semicinctus (female)	4	*Sebastes mystinus (juv)*	94
Halichoeres semicinctus (male)	4	*Sebastes serriceps (adult)*	1
Hypsypops rubicundus (adult)	9	*Sebastes serriceps (juv)*	6
KGB	14	*Semicossyphus pulcher (female)*	16
Lythrypnus dalli	32	*Semicossyphus pulcher (juv)*	1
Lythrypnus zebra	2	*Semicossyphus pulcher (male)*	7
Medialuna californiensis	22	*Stereolepis gigas*	4
Mola mola	1	*Trachurus symmetricus*	100
Oxyjulis californica (adult)	134		



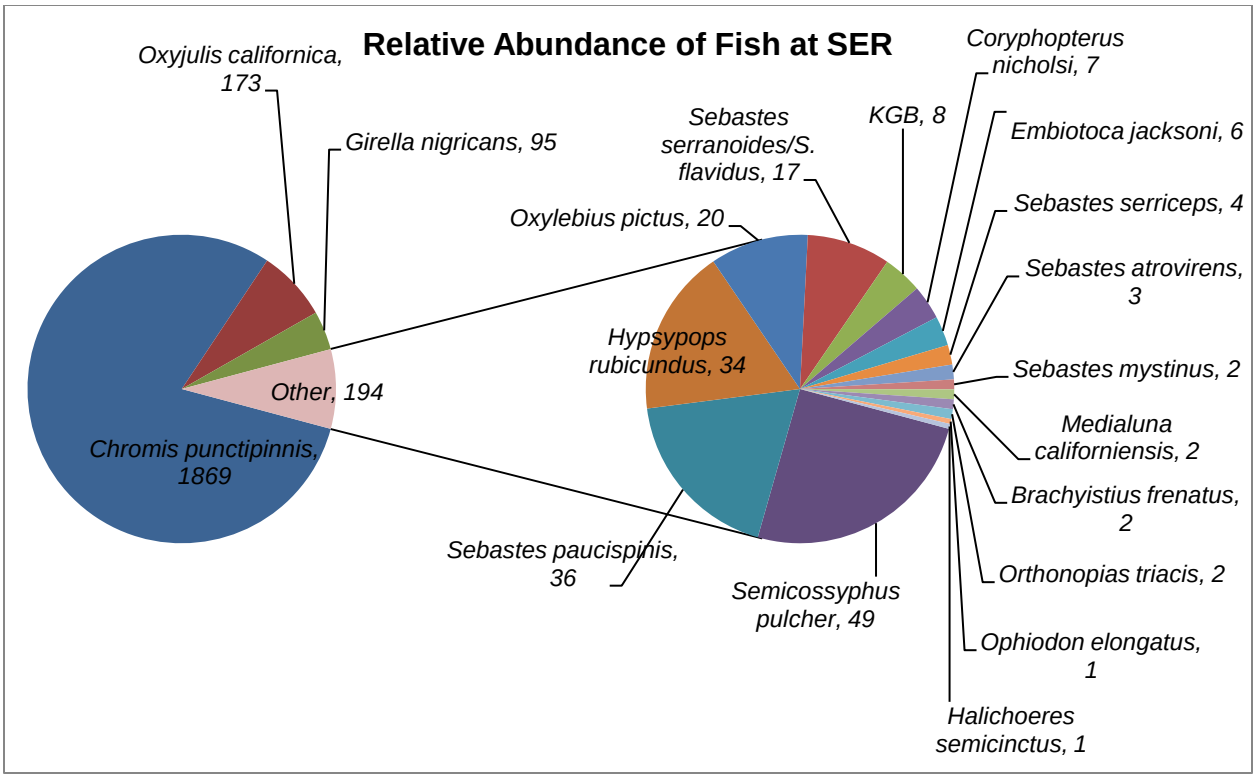
Species	MaxCount	Species	MaxCount
Alloclinus holderi	1	*Orthonopias triacis*	1
Artedius corallinus	1	*Oxyjulis californica (adult)*	12
Caulolatilus princeps	11	*Oxylebius pictus*	32
Chromis punctipinnis (adult)	99	*Paralabrax clathratus (adult)*	1
Coryphopterus nicholsi	155	*Pleuronichthys coenosus*	1
Embiotoca jacksoni (adult)	2	*Rhacochilus vacca (adult)*	1
Girella nigricans (adult)	2	*Sebastes mystinus (juv)*	17
Heterodontus francisci	1	*Sebastes serriceps (adult)*	1
Hypsypops rubicundus (adult)	12	*Sebastes spp. (juv, unidentified)*	12
KGB	2	*Semicossyphus pulcher (female)*	19
Lythrypnus zebra	1	*Semicossyphus pulcher (male)*	1
Medialuna californiensis	42		



Species	MaxCount	Species	MaxCount
Alloclinus holderi	3	*Orthonopias triacis*	1
Artedius corallinus	1	*Oxylebius pictus*	38
Chromis punctipinnis (adult)	397	*Scorpaena guttata*	3
Coryphopterus nicholsi	44	*Sebastes atrovirens (adult)*	1
Girella nigricans (adult)	1	*Sebastes mystinus (juv)*	6
Gymnothorax mordax	1	*Sebastes paucispinis (juv)*	1
Hypsypops rubicundus (adult)	8	*Sebastes serranoides/S. flavidus (juv)*	64
Larval fish spp.	25	*Sebastes serriceps (adult)*	1
Lythrypnus dalli	1	*Sebastes serriceps (juv)*	1
Lythrypnus zebra	1	*Semicossyphus pulcher (female)*	12
Myliobatis californica	1	*Semicossyphus pulcher (male)*	2



Species	Max Count	Species	Max Count
Aulorhynchus flavidus	20	*Oxylebius pictus*	5
Chromis punctipinnis (adult)	95	*Rhacochilus vacca (adult)*	1
Citharichthys stigmaeus	36	*Sebastes caurinus (juv)*	64
Coryphopterus nicholsi	63	*Sebastes miniatus (juv)*	5
Embiotoca jacksoni (adult)	3	*Sebastes mystinus (juv)*	10
Embiotoca jacksoni (juv)	1	*Sebastes paucispinis (juv)*	210
Girella nigricans (adult)	1	*Sebastes serranoides/S. flavidus (juv)*	137
Hypsypops rubicundus (adult)	1	*Sebastes spp. (juv, unidentified)*	4
KGB	112	*Semicossyphus pulcher (female)*	8
Lythrypnus zebra	1	*Semicossyphus pulcher (male)*	1
Medialuna californiensis	10	*Trachurus symmetricus*	1
Oxyjulis californica (adult)	676		



Species	Max Count	Species	Max Count
Brachyistius frenatus	2	*Oxyjulis californica (adult)*	171
Chromis punctipinnis (adult)	1869	*Oxyjulis californica (juv)*	2
Coryphopterus nicholsi	7	*Oxylebius pictus*	20
Embiotoca jacksoni (adult)	5	*Sebastes atrovirens (adult)*	3
Embiotoca jacksoni (juv)	1	*Sebastes mystinus (juv)*	2
Girella nigricans (adult)	95	*Sebastes paucispinis (juv)*	36
Halichoeres semicinctus (female)	1	*Sebastes serranoides (adult)*	6
Hypsypops rubicundus (adult)	32	*Sebastes serranoides/S. flavidus (juv)*	11
Hypsypops rubicundus (juv)	2	*Sebastes serriceps (adult)*	3
KGB	8	*Sebastes serriceps (juv)*	1
Medialuna californiensis	2	*Semicossyphus pulcher (female)*	41
Ophiodon elongatus	1	*Semicossyphus pulcher (juv)*	2
Orthonopias triacis	2	*Semicossyphus pulcher (male)*	6

Appendix I. Natural Habitat Size Frequencies Distributions

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Wyckoff Ledge

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	3.2%
30 - 39	3.2%
40 - 49	14.3%
50 - 59	11.1%
60 - 69	12.7%
70 - 79	22.2%
80 - 89	11.1%
90 - 99	12.7%
> 99	9.5%
(Cases) N=	63
mean	70
min size (mm)	21
max size (mm)	130

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	7.7%
80 - 89	23.1%
90 - 99	44.6%
100 - 109	21.5%
110 - 119	3.1%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	65
mean	93
min size (mm)	73
max size (mm)	112

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	100.0%
> 119	0.0%
(Cases) N=	2
mean	116
min size (mm)	115
max size (mm)	117

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.8%
115 - 124	0.8%
125 - 134	2.4%
135 - 144	2.4%
145 - 154	4.0%
155 - 164	4.8%
165 - 174	9.6%
175 - 184	16.8%
185 - 194	16.8%
>195	40.0%
(Cases) N=	125
mean	189
min size (mm)	114
max size (mm)	252

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	5.7%
50 - 59	43.4%
60 - 69	47.2%
70 - 79	3.8%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	53
mean	58
min size (mm)	41
max size (mm)	72

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	25.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	25.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	50.0%
(Cases) N=	4
mean	109
min size (mm)	39
max size (mm)	165

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Wyckoff Ledge

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	4.8%
60 - 69	19.4%
70 - 79	41.9%
80 - 89	29.0%
90 - 99	3.2%
> 99	1.6%
(Cases) N=	62
mean	75
min size (mm)	54
max size (mm)	102

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
9.5%	
60 - 79	30.0%
7.0%	
80 - 99	35.0%
25.1%	
100 - 119	20.0%
199	
120 - 139	5.0%
140 - 159	5.0%
160 - 179	0.0%
180 - 199	5.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	20
mean	96
min size (mm)	66
max size (mm)	181

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	8.3%
60 - 79	16.7%
80 - 99	50.0%
100 - 119	25.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	12
mean	89
min size (mm)	55
max size (mm)	115

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.5%
15 - 19	2.0%
20 - 24	0.5%
25 - 29	0.5%
30 - 34	1.0%
35 - 39	3.5%
40 - 44	3.0%
45 - 49	2.0%
50 - 54	1.0%
55 - 59	1.5%
60 - 64	2.0%
65 - 69	2.5%
70 - 74	5.5%
75 - 79	2.0%
80 - 84	6.0%
85 - 89	5.5%
90 - 94	8.0%
95 - 99	11.1%
100 – 104	
105 - 109	
> 109	
(Cases) N=	
mean	88
min size (mm)	13
max size (mm)	131

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS
San Miguel Island - Wyckoff Ledge

Strongylocentrotus purpuratus	
< 5	1.7%
5 - 9	1.7%
10 - 14	13.6%
15 - 19	20.3%
20 - 24	22.0%
25 - 29	10.2%
30 - 34	11.9%
35 - 39	6.8%
40 - 44	5.1%
45 - 49	1.7%
50 - 54	1.7%
55 - 59	1.7%
60 - 64	1.7%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	59
mean	25
min size (mm)	3
max size (mm)	60

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Hare Rock

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	7.1%
40 - 49	17.9%
50 - 59	14.3%
60 - 69	17.9%
70 - 79	17.9%
80 - 89	14.3%
90 - 99	10.7%
> 99	0.0%
(Cases) N=	28
mean	64
min size (mm)	30
max size (mm)	94

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	50.0%
80 - 89	50.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	2
mean	79
min size (mm)	78
max size (mm)	80

Patiria miniata

<10	0.0%
10 - 19	1.7%
20 - 29	5.0%
30 - 39	6.7%
40 - 49	20.0%
50 - 59	13.3%
60 - 69	26.7%
70 - 79	23.3%
80 - 89	1.7%
90 - 99	1.7%
> 99	0.0%
(Cases) N=	60
mean	58
min size (mm)	18
max size (mm)	96

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	3.3%
50 - 59	46.7%
60 - 69	48.3%
70 - 79	1.7%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	60
mean	60
min size (mm)	46
max size (mm)	70

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	40.0%
100 - 109	40.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	20.0%
(Cases) N=	5
mean	113
min size (mm)	95
max size (mm)	165

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	6.7%
80 - 99	18.3%
100 - 119	40.0%
120 - 139	21.7%
140 - 159	8.3%
160 - 179	1.7%
180 - 199	3.3%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60
mean	114
min size (mm)	69
max size (mm)	185

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Hare Rock

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	2.9%
60 - 79	8.8%
80 - 99	11.8%
100 - 119	20.6%
120 - 139	11.8%
140 - 159	14.7%
160 - 179	5.9%
180 - 199	8.8%
200 - 219	2.9%
220 - 239	2.9%
240 - 259	0.0%
260 - 279	2.9%
280 - 299	0.0%
> 299	5.9%
(Cases) N=	34
mean	145
min size (mm)	47
max size (mm)	322

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	2.5%
15 - 19	2.0%
20 - 24	1.0%
25 - 29	0.0%
30 - 34	2.0%
35 - 39	3.5%
40 - 44	1.5%
45 - 49	1.0%
50 - 54	2.5%
55 - 59	9.0%
60 - 64	14.9%
65 - 69	11.4%
70 - 74	8.0%
75 - 79	7.5%
80 - 84	8.0%
85 - 89	11.4%
90 - 94	4.5%
95 - 99	5.0%
100 - 104	1.0%
105 - 109	1.5%
> 109	2.0%
(Cases) N=	201
mean	69
min size (mm)	10
max size (mm)	113

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	2.8%
10 - 14	10.1%
15 - 19	19.6%
20 - 24	14.0%
25 - 29	11.2%
30 - 34	5.6%
35 - 39	8.4%
40 - 44	7.8%
45 - 49	10.6%
50 - 54	6.7%
55 - 59	3.4%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	179
mean	29
min size (mm)	5
max size (mm)	59

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	10.0%
30 - 39	3.3%
40 - 49	6.7%
50 - 59	3.3%
60 - 69	6.7%
70 - 79	26.7%
80 - 89	13.3%
90 - 99	10.0%
> 99	20.0%
(Cases) N=	60
mean	75
min size (mm)	22
max size (mm)	128

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	100.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	1
mean	115
min size (mm)	115
max size (mm)	115

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	5.0%
70 - 79	5.0%
80 - 89	20.0%
90 - 99	35.0%
100 - 109	25.0%
110 - 119	10.0%
> 119	0.0%
(Cases) N=	20
mean	94
min size (mm)	65
max size (mm)	118

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	2.8%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	2.8%
155 - 164	11.1%
165 - 174	8.3%
175 - 184	16.7%
185 - 194	11.1%
>195	41.7%
(Cases) N=	36
mean	185
min size (mm)	73
max size (mm)	218

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	100.0%
(Cases) N=	3
mean	138
min size (mm)	133
max size (mm)	142

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	5.0%
30 - 39	20.0%
40 - 49	30.0%
50 - 59	10.0%
60 - 69	5.0%
70 - 79	10.0%
80 - 89	10.0%
90 - 99	5.0%
100 - 109	5.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	20
mean	55
min size (mm)	27
max size (mm)	102

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.3%
40 - 49	15.0%
50 - 59	23.3%
60 - 69	25.0%
70 - 79	26.7%
80 - 89	6.7%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	60
mean	62
min size (mm)	32
max size (mm)	87

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	1.7%
4.5%	
60 - 79	11.7%
4.0%	
80 - 99	46.7%
2.0%	
100 - 119	30.0%
201	
120 - 139	8.3%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	1.7%
> 239	0.0%
(Cases) N=	60
mean	96
min size (mm)	53
max size (mm)	235

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	1.3%
60 - 79	10.3%
80 - 99	28.2%
100 - 119	17.9%
120 - 139	14.1%
140 - 159	11.5%
160 - 179	6.4%
180 - 199	2.6%
200 - 219	3.8%
220 - 239	3.8%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	78
mean	119
min size (mm)	55
max size (mm)	220

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.5%
15 - 19	2.5%
20 - 24	7.0%
25 - 29	4.5%
30 - 34	2.0%
35 - 39	4.0%
40 - 44	4.0%
45 - 49	2.5%
50 - 54	6.0%
55 - 59	2.5%
60 - 64	5.5%
65 - 69	4.0%
70 - 74	5.0%
75 - 79	10.0%
80 - 84	9.0%
85 - 89	8.5%
90 - 94	6.5%
95 - 99	6.0%
100 - 104	
105 – 109	
> 109	
(Cases) N=	
mean	67
min size (mm)	13
max size (mm)	118

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	1.3%
10 - 14	9.7%
15 - 19	12.8%
20 - 24	15.9%
25 - 29	15.0%
30 - 34	13.3%
35 - 39	11.5%
40 - 44	11.5%
45 - 49	4.9%
50 - 54	1.8%
55 - 59	1.3%
60 - 64	0.9%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	226
mean	29
min size (mm)	6
max size (mm)	64

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	1.7%
30 - 39	3.3%
40 - 49	5.0%
50 - 59	6.7%
60 - 69	13.3%
70 - 79	20.0%
80 - 89	5.0%
90 - 99	23.3%
> 99	21.7%
(Cases) N=	60
mean	81
min size (mm)	24
max size (mm)	125

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	8.3%
105 - 114	16.7%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	16.7%
155 - 164	0.0%
165 - 174	8.3%
175 - 184	16.7%
185 - 194	0.0%
>195	33.3%
(Cases) N=	12
mean	169
min size (mm)	104
max size (mm)	237

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	3.3%
60 - 69	6.7%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	6.7%
100 - 109	20.0%
110 - 119	53.3%
120 - 129	10.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	30
mean	106
min size (mm)	57
max size (mm)	124

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	100.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	92
min size (mm)	92
max size (mm)	92

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	14.3%
40 - 49	9.5%
50 - 59	23.8%
60 - 69	14.3%
70 - 79	0.0%
80 - 89	14.3%
90 - 99	4.8%
100 - 109	4.8%
110 - 119	9.5%
120 - 129	4.8%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	21
mean	69
min size (mm)	30
max size (mm)	129

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.3%
40 - 49	8.3%
50 - 59	10.0%
60 - 69	33.3%
70 - 79	33.3%
80 - 89	10.0%
90 - 99	1.7%
> 99	0.0%
(Cases) N=	60
mean	67
min size (mm)	31
max size (mm)	92

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	13.1%
80 - 99	42.6%
100 - 119	26.2%
120 - 139	4.9%
140 - 159	3.3%
160 - 179	4.9%
180 - 199	0.0%
200 - 219	3.3%
220 - 239	1.6%
> 239	0.0%
(Cases) N=	61
mean	106
min size (mm)	64
max size (mm)	220

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	9.4%
100 - 119	26.6%
120 - 139	31.3%
140 - 159	10.9%
160 - 179	7.8%
180 - 199	4.7%
200 - 219	6.3%
220 - 239	0.0%
240 - 259	1.6%
260 - 279	1.6%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	64
mean	137
min size (mm)	80
max size (mm)	265

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.8%
15 - 19	9.4%
20 - 24	10.2%
25 - 29	13.1%
30 - 34	12.7%
35 - 39	6.9%
40 - 44	3.3%
45 - 49	3.7%
50 - 54	4.1%
55 - 59	6.1%
60 - 64	2.4%
65 - 69	1.6%
70 - 74	1.2%
75 - 79	1.2%
80 - 84	2.9%
85 - 89	2.0%
90 - 94	2.4%
95 - 99	2.4%
100 - 104	2.4%
105 - 109	2.0%
> 109	9.0%
(Cases) N=	245
mean	51
min size (mm)	14
max size (mm)	125

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	0.5%
10 - 14	0.5%
15 - 19	9.4%
20 - 24	13.6%
25 - 29	15.5%
30 - 34	11.3%
35 - 39	12.2%
40 - 44	11.7%
45 - 49	9.4%
50 - 54	9.4%
55 - 59	3.3%
60 - 64	1.9%
65 - 69	1.4%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	213
mean	35
min size (mm)	7
max size (mm)	68

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Rodes Reef

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	3.6%
30 - 39	0.0%
40 - 49	14.3%
50 - 59	17.9%
60 - 69	21.4%
70 - 79	10.7%
80 - 89	14.3%
90 - 99	7.1%
> 99	10.7%
(Cases) N=	56
mean	69
min size (mm)	24
max size (mm)	119

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	30.0%
90 - 99	10.0%
100 - 109	10.0%
110 - 119	40.0%
120 - 129	0.0%
130 - 139	10.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	10
mean	104
min size (mm)	85
max size (mm)	130

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	100.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	41
min size (mm)	41
max size (mm)	41

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	5.3%
80 - 89	21.1%
90 - 99	42.1%
100 - 109	15.8%
110 - 119	15.8%
> 119	0.0%
(Cases) N=	19
mean	95
min size (mm)	73
max size (mm)	115

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	18.2%
50 - 59	9.1%
60 - 69	0.0%
70 - 79	18.2%
80 - 89	9.1%
90 - 99	9.1%
100 - 109	9.1%
110 - 119	9.1%
120 - 129	9.1%
130 - 139	0.0%
> 139	9.1%
(Cases) N=	11
mean	87
mean	87
min size (mm)	42
max size (mm)	142

Patiria miniata

<10	0.0%
10 - 19	5.7%
20 - 29	5.7%
30 - 39	14.3%
40 - 49	28.6%
50 - 59	28.6%
60 - 69	5.7%
70 - 79	5.7%
80 - 89	5.7%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	35
mean	48
min size (mm)	19
max size (mm)	88

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Rodes Reef

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	6.7%
80 - 99	50.0%
100 - 119	23.3%
120 - 139	3.3%
140 - 159	3.3%
160 - 179	6.7%
180 - 199	6.7%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	30
mean	110
min size (mm)	71
max size (mm)	192

Pycnopodia helianthoides

< 20	0.0%
20 - 39	12.9%
40 - 59	17.7%
60 - 79	17.7%
80 - 99	17.7%
100 - 119	6.5%
120 - 139	9.7%
140 - 159	6.5%
160 - 179	4.8%
180 - 199	1.6%
200 - 219	1.6%
220 - 239	1.6%
240 - 259	0.0%
260 - 279	1.6%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	62
mean	94
min size (mm)	23
max size (mm)	270

Strongylocentrotus franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	1.0%
15 - 19	3.6%
20 - 24	3.3%
25 - 29	2.3%
30 - 34	9.1%
35 - 39	13.0%
40 - 44	16.6%
45 - 49	11.1%
50 - 54	5.9%
55 - 59	4.9%
60 - 64	3.9%
65 - 69	2.0%
70 - 74	1.3%
75 - 79	2.9%
80 - 84	3.9%
85 - 89	4.6%
90 - 94	5.2%
95 - 99	2.3%
100 - 104	1.6%
105 - 109	0.7%
> 109	1.0%
(Cases) N=	307
mean	52
min size (mm)	13
max size (mm)	111

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	20.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	20.0%
35 - 39	0.0%
40 - 44	10.0%
45 - 49	30.0%
50 - 54	0.0%
55 - 59	10.0%
60 - 64	10.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	10
mean	38
min size (mm)	10
max size (mm)	62

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	2.4%
30 - 39	12.9%
40 - 49	20.0%
50 - 59	17.6%
60 - 69	12.9%
70 - 79	14.1%
80 - 89	9.4%
90 - 99	5.9%
> 99	4.7%
(Cases) N=	85
mean	60
min size (mm)	23
max size (mm)	110

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	100.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	21
min size (mm)	21
max size (mm)	21

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.8%
30 - 39	8.8%
40 - 49	10.5%
50 - 59	36.8%
60 - 69	24.6%
70 - 79	17.5%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	57
mean	57
min size (mm)	24
max size (mm)	77

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	22.2%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	33.3%
110 - 119	22.2%
> 119	22.2%
(Cases) N=	9
mean	102
min size (mm)	60
max size (mm)	142

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	20.0%
50 - 59	26.7%
60 - 69	6.7%
70 - 79	0.0%
80 - 89	33.3%
90 - 99	0.0%
100 - 109	6.7%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	6.7%
(Cases) N=	15
mean	72
min size (mm)	40
max size (mm)	140

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	2.3%
60 - 79	22.7%
80 - 99	47.7%
100 - 119	18.2%
120 - 139	4.5%
140 - 159	4.5%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	44
mean	92
min size (mm)	53
max size (mm)	159

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	14.3%
140 - 159	0.0%
160 - 179	28.6%
180 - 199	0.0%
200 - 219	28.6%
220 - 239	14.3%
240 - 259	14.3%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	7
mean	196
min size (mm)	138
max size (mm)	240

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	1.0%
15 - 19	0.0%
20 - 24	8.9%
25 - 29	4.2%
30 - 34	4.2%
35 - 39	3.1%
40 - 44	5.2%
45 - 49	4.2%
50 - 54	5.8%
55 - 59	1.0%
60 - 64	1.6%
65 - 69	5.8%
70 - 74	4.7%
75 - 79	3.7%
80 - 84	6.3%
85 - 89	7.9%
90 - 94	8.9%
95 - 99	6.3%
100 - 104	5.8%
105 - 109	4.7%
> 109	6.8%
(Cases) N=	191
mean	69
min size (mm)	10
max size (mm)	123

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	0.0%
10 - 14	3.4%
15 - 19	9.7%
20 - 24	19.3%
25 - 29	11.4%
30 - 34	15.3%
35 - 39	15.9%
40 - 44	11.9%
45 - 49	8.5%
50 - 54	1.7%
55 - 59	0.6%
60 - 64	1.1%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	1.1%
> 79	0.0%
(Cases) N=	176
mean	32
min size (mm)	10
max size (mm)	79

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

Tethya aurantia

<10	0.0%
10 - 19	4.3%
20 - 29	21.7%
30 - 39	17.4%
40 - 49	21.7%
50 - 59	26.1%
60 - 69	8.7%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	23
mean	42
min size (mm)	17
max size (mm)	64

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	100.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	1
mean	50
min size (mm)	50
max size (mm)	50

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	2.8%
60 - 69	16.7%
70 - 79	27.8%
80 - 89	36.1%
90 - 99	13.9%
100 - 109	2.8%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	36
mean	79
min size (mm)	59
max size (mm)	105

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	50.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	50.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	2
mean	78
min size (mm)	64
max size (mm)	92

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	100.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	1
mean	51
min size (mm)	51
max size (mm)	51

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	33.3%
120 - 139	22.2%
140 - 159	22.2%
160 - 179	22.2%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	9
mean	134
min size (mm)	100
max size (mm)	175

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	1.5%
10 - 14	3.7%
15 - 19	5.2%
20 - 24	9.0%
25 - 29	6.0%
30 - 34	3.7%
35 - 39	3.0%
40 - 44	1.5%
45 - 49	5.2%
50 - 54	3.7%
55 - 59	0.0%
60 - 64	2.2%
65 - 69	1.5%
70 - 74	3.0%
75 - 79	3.0%
80 - 84	4.5%
85 - 89	6.7%
90 - 94	10.4%
95 - 99	5.2%
100 - 104	10.4%
105 - 109	4.5%
> 109	6.0%
(Cases) N=	134
mean	66
min size (mm)	7
max size (mm)	130

Strongylocentrotus purpuratus	
< 5	0.5%
5 - 9	3.4%
10 - 14	7.7%
15 - 19	9.1%
20 - 24	16.3%
25 - 29	13.0%
30 - 34	17.3%
35 - 39	13.9%
40 - 44	8.7%
45 - 49	3.8%
50 - 54	2.9%
55 - 59	1.4%
60 - 64	1.9%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	208
mean	29
min size (mm)	4
max size (mm)	64

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pelican Bay

Tethya aurantia

<10	0.0%
10 - 19	2.6%
20 - 29	5.3%
30 - 39	10.5%
40 - 49	34.2%
50 - 59	26.3%
60 - 69	7.9%
70 - 79	5.3%
80 - 89	7.9%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	38
mean	50
min size (mm)	13
max size (mm)	86

Kelletia kelletii

< 40	12.5%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	37.5%
80 - 89	12.5%
90 - 99	0.0%
100 - 109	25.0%
110 - 119	12.5%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	8
mean	81
min size (mm)	14
max size (mm)	118

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	33.3%
30 - 39	16.7%
40 - 49	33.3%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	16.7%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	6
mean	45
min size (mm)	26
max size (mm)	86

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	20.0%
80 - 89	26.7%
90 - 99	46.7%
100 - 109	6.7%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	15
mean	88
min size (mm)	70
max size (mm)	103

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	33.3%
50 - 59	16.7%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	8.3%
110 - 119	8.3%
120 - 129	33.3%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	12
mean	84
min size (mm)	45
max size (mm)	125

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	14.3%
45 - 49	0.0%
50 - 54	57.1%
55 - 59	28.6%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	7
mean	52
min size (mm)	42
max size (mm)	57

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pelican Bay

Patiria miniata	
<10	0.0%
10 - 19	1.7%
20 - 29	8.3%
30 - 39	5.0%
40 - 49	6.7%
50 - 59	11.7%
60 - 69	16.7%
70 - 79	23.3%
80 - 89	13.3%
90 - 99	10.0%
> 99	3.3%
(Cases) N=	60
mean	65
min size (mm)	18
max size (mm)	104

Pisaster giganteus	
< 20	0.0%
20 - 39	4.4%
40 - 59	7.4%
0.0%	
60 - 79	0.0%
80 - 99	8.8%
100 - 119	10.3%
120 - 139	25.0%
140 - 159	23.5%
160 - 179	14.7%
180 - 199	5.9%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	68
mean	128
min size (mm)	30
max size (mm)	192

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	9.1%
220 - 239	0.0%
240 - 259	27.3%
260 - 279	27.3%
280 - 299	27.3%
> 299	9.1%
(Cases) N=	11
mean	263
min size (mm)	210
max size (mm)	300

Lytechinus anamesus	
< 5	0.0%
5 - 9	0.0%
10 - 14	12.5%
15 - 19	50.0%
20 - 24	37.5%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	8
mean	18
min size (mm)	10
max size (mm)	24

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	2.6%
15 - 19	3.1%
20 - 24	4.6%
25 - 29	6.1%
30 - 34	9.7%
35 - 39	11.2%
40 - 44	9.2%
45 - 49	7.7%
50 - 54	9.7%
55 - 59	6.6%
60 - 64	6.1%
65 - 69	4.6%
70 - 74	6.6%
75 - 79	6.6%
80 - 84	3.1%
85 - 89	1.0%
90 - 94	1.5%
95 - 99	0.0%
100 - 104	
105 - 109	0.0%
> 109	0.0%
(Cases) N=	196
mean	48
min size (mm)	10
max size (mm)	91

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pelican Bay

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	1.7%
10 - 14	1.7%
15 - 19	6.1%
20 - 24	13.3%
25 - 29	17.1%
30 - 34	32.0%
35 - 39	17.1%
40 - 44	7.2%
45 - 49	3.9%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	181
mean	30
min size (mm)	5
max size (mm)	49

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

Tethya aurantia

<10	0.0%
10 - 19	4.2%
20 - 29	5.6%
30 - 39	9.9%
40 - 49	15.5%
50 - 59	14.1%
60 - 69	22.5%
70 - 79	19.7%
80 - 89	5.6%
90 - 99	2.8%
> 99	0.0%
(Cases) N=	71
mean	56
min size (mm)	10
max size (mm)	94

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	3.4%
30 - 39	17.2%
40 - 49	6.9%
50 - 59	3.4%
60 - 69	3.4%
70 - 79	3.4%
80 - 89	17.2%
90 - 99	37.9%
100 - 109	6.9%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	29
mean	74
min size (mm)	23
max size (mm)	109

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	1.6%
40 - 49	1.6%
50 - 59	7.8%
60 - 69	17.2%
70 - 79	39.1%
80 - 89	31.3%
90 - 99	1.6%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	64
mean	74
min size (mm)	35
max size (mm)	90

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	50.0%
110 - 119	0.0%
120 - 129	50.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	2
mean	119
min size (mm)	109
max size (mm)	129

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	100.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	1
mean	55
min size (mm)	55
max size (mm)	

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.1%
30 - 39	5.6%
40 - 49	5.6%
50 - 59	12.4%
60 - 69	38.2%
70 - 79	29.2%
80 - 89	7.9%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	89
mean	64
min size (mm)	23
max size (mm)	88

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	5.9%
80 - 99	39.2%
100 - 119	41.2%
120 - 139	11.8%
140 - 159	2.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	51
mean	103
min size (mm)	69
max size (mm)	142

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.5%
20 - 24	0.5%
25 - 29	1.4%
30 - 34	1.4%
35 - 39	6.7%
40 - 44	14.8%
45 - 49	19.0%
50 - 54	13.8%
55 - 59	6.2%
60 - 64	3.8%
65 - 69	2.4%
70 - 74	4.3%
75 - 79	4.8%
80 - 84	4.3%
85 - 89	3.8%
90 - 94	5.2%
95 - 99	2.4%
100 - 104	2.9%
105 - 109	1.9%
> 109	0.0%
(Cases) N=	210
mean	59
min size (mm)	15
max size (mm)	109

Strongylocentrotus purpuratus	
< 5	1.1%
5 - 9	3.2%
10 - 14	1.1%
15 - 19	1.6%
20 - 24	1.6%
25 - 29	17.7%
30 - 34	42.5%
35 - 39	15.1%
40 - 44	6.5%
45 - 49	3.2%
50 - 54	3.2%
55 - 59	3.2%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	186
mean	33
min size (mm)	4
max size (mm)	58

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	6.6%
30 - 39	8.2%
40 - 49	18.0%
50 - 59	9.8%
60 - 69	18.0%
70 - 79	11.5%
80 - 89	19.7%
90 - 99	4.9%
> 99	3.3%
(Cases) N=	61
mean	63
min size (mm)	20
max size (mm)	109

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	15.4%
70 - 79	7.7%
80 - 89	10.3%
90 - 99	25.6%
100 - 109	15.4%
110 - 119	20.5%
120 - 129	5.1%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	39
mean	94
min size (mm)	61
max size (mm)	122

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.4%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	6.9%
70 - 79	6.9%
80 - 89	10.3%
90 - 99	6.9%
100 - 109	17.2%
110 - 119	13.8%
> 119	34.5%
(Cases) N=	29
mean	102
min size (mm)	35
max size (mm)	129

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	10.0%
30 - 39	10.0%
40 - 49	10.0%
50 - 59	0.0%
60 - 69	10.0%
70 - 79	40.0%
80 - 89	20.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	10
mean	62
min size (mm)	21
max size (mm)	82

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	50.0%
70 - 79	25.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	25.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	4
mean	81
min size (mm)	61
max size (mm)	121

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	50.0%
50 - 54	50.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	2
mean	49
min size (mm)	47
max size (mm)	51

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	3.3%
30 - 39	8.3%
40 - 49	10.0%
50 - 59	15.0%
60 - 69	20.0%
70 - 79	20.0%
80 - 89	18.3%
90 - 99	3.3%
> 99	1.7%
(Cases) N=	60
mean	64
min size (mm)	24
max size (mm)	100

Pisaster giganteus

< 20	0.0%
20 - 39	6.3%
40 - 59	31.3%
60 - 79	31.3%
80 - 99	25.0%
100 - 119	0.0%
120 - 139	6.3%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	16
mean	68
min size (mm)	36
max size (mm)	122

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	7.7%
220 - 239	15.4%
240 - 259	15.4%
260 - 279	23.1%
280 - 299	15.4%
> 299	23.1%
(Cases) N=	13
mean	270
min size (mm)	200
max size (mm)	330

Lytechinus anamesus

< 5	0.0%
5 - 9	9.1%
10 - 14	59.6%
15 - 19	26.3%
20 - 24	4.0%
25 - 29	1.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	99
mean	13
min size (mm)	7
max size (mm)	28

Strongylocentrotus franciscanus

< 5	0.0%
5 - 9	0.4%
10 - 14	2.0%
15 - 19	11.6%
20 - 24	15.1%
25 - 29	15.5%
30 - 34	17.1%
35 - 39	9.2%
40 - 44	6.0%
45 - 49	4.0%
50 - 54	2.4%
55 - 59	0.4%
60 - 64	1.6%
65 - 69	0.8%
70 - 74	0.8%
75 - 79	1.2%
80 - 84	2.4%
85 - 89	1.6%
90 - 94	3.2%
95 - 99	2.4%
100 - 104	1.2%
105 - 109	0.4%
> 109	0.8%
(Cases) N=	251
mean	39
min size (mm)	7
max size (mm)	111

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

Strongylocentrotus purpuratus

< 5	0.8%
5 - 9	4.6%
10 - 14	8.5%
15 - 19	30.8%
20 - 24	16.2%
25 - 29	11.2%
30 - 34	9.2%
35 - 39	4.6%
40 - 44	7.3%
45 - 49	2.7%
50 - 54	3.5%
55 - 59	0.8%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	260
mean	24
min size (mm)	3
max size (mm)	55

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Admiral's Reef

Tethya aurantia

<10	0.0%
10 - 19	1.6%
20 - 29	4.9%
30 - 39	6.6%
40 - 49	13.1%
50 - 59	19.7%
60 - 69	23.0%
70 - 79	18.0%
80 - 89	9.8%
90 - 99	3.3%
> 99	0.0%
(Cases) N=	61
mean	59
min size (mm)	12
max size (mm)	90

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	2.3%
70 - 79	6.8%
80 - 89	31.8%
90 - 99	18.2%
100 - 109	22.7%
110 - 119	15.9%
120 - 129	0.0%
130 - 139	2.3%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	44
mean	95
min size (mm)	69
max size (mm)	133

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	8.3%
60 - 69	8.3%
70 - 79	41.7%
80 - 89	25.0%
90 - 99	16.7%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	12
mean	78
min size (mm)	50
max size (mm)	93

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	6.4%
50 - 59	27.7%
60 - 69	17.0%
70 - 79	21.3%
80 - 89	19.1%
90 - 99	4.3%
100 - 109	0.0%
110 - 119	0.0%
> 119	4.3%
(Cases) N=	47
mean	70
min size (mm)	47
max size (mm)	139

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	10.0%
50 - 59	10.0%
60 - 69	30.0%
70 - 79	20.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	10.0%
110 - 119	10.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	10.0%
(Cases) N=	10
mean	82
min size (mm)	42
max size (mm)	151

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	5.3%
50 - 54	57.9%
55 - 59	31.6%
60 - 64	0.0%
65 - 69	5.3%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	19
mean	54
min size (mm)	48
max size (mm)	65

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Admiral's Reef

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	1.7%
30 - 39	8.3%
40 - 49	10.0%
50 - 59	16.7%
60 - 69	23.3%
70 - 79	18.3%
80 - 89	6.7%
90 - 99	11.7%
> 99	3.3%
(Cases) N=	60
mean	65
min size (mm)	27
max size (mm)	109

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	3.3%
80 - 99	0.0%
100 - 119	3.3%
120 - 139	26.7%
140 - 159	18.3%
160 - 179	36.7%
180 - 199	8.3%
200 - 219	1.7%
220 - 239	1.7%
> 239	0.0%
(Cases) N=	60
mean	153
min size (mm)	77
max size (mm)	220

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	2.7%
20 - 24	5.4%
25 - 29	5.4%
30 - 34	12.2%
35 - 39	22.1%
40 - 44	18.5%
45 - 49	12.6%
50 - 54	7.7%
55 - 59	3.6%
60 - 64	3.6%
65 - 69	4.1%
70 - 74	1.4%
75 - 79	0.5%
80 - 84	0.0%
85 - 89	0.5%
90 – 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	222
mean	41
min size (mm)	17
max size (mm)	85

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	0.8%
10 - 14	0.0%
15 - 19	11.9%
20 - 24	18.6%
25 - 29	30.4%
30 - 34	15.0%
35 - 39	12.3%
40 - 44	9.1%
45 - 49	2.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	253
mean	28
min size (mm)	8
max size (mm)	47
max size (mm)	47

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Cathedral Cove

Haliotis corrugata

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	25.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	25.0%
95 - 104	25.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	25.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	4
mean	96
min size (mm)	48
max size (mm)	147

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	11.7%
30 - 39	3.3%
40 - 49	11.7%
50 - 59	6.7%
60 - 69	6.7%
70 - 79	8.3%
80 - 89	11.7%
90 - 99	10.0%
100 - 109	13.3%
110 - 119	15.0%
> 119	1.7%
(Cases) N=	60
mean	76
min size (mm)	21
max size (mm)	123

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	8.7%
40 - 49	13.0%
50 - 59	13.0%
60 - 69	8.7%
70 - 79	8.7%
80 - 89	13.0%
90 - 99	13.0%
100 - 109	4.3%
110 - 119	8.7%
120 - 129	4.3%
130 - 139	0.0%
> 139	4.3%
(Cases) N=	23
mean	77
min size (mm)	35
max size (mm)	144

Strongylocentrotus franciscanus

< 5	0.0%
5 - 9	1.5%
10 - 14	3.3%
15 - 19	4.4%
20 - 24	2.9%
25 - 29	2.5%
30 - 34	4.4%
35 - 39	1.8%
40 - 44	1.5%
45 - 49	1.5%
50 - 54	1.1%
55 - 59	4.7%
60 - 64	2.5%
65 - 69	5.5%
70 - 74	3.3%
75 - 79	4.4%
80 - 84	7.6%
85 - 89	7.3%
90 - 94	2.2%
95 - 99	5.8%
100 - 104	8.7%
105 - 109	6.9%
> 109	16.4%
(Cases) N=	275
mean	76
min size (mm)	7
max size (mm)	135

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Cathedral Cove

Strongylocentrotus purpuratus

< 5	0.4%
5 - 9	5.9%
10 - 14	10.5%
15 - 19	9.3%
20 - 24	8.0%
25 - 29	5.5%
30 - 34	9.7%
35 - 39	8.0%
40 - 44	11.8%
45 - 49	10.1%
50 - 54	7.6%
55 - 59	6.8%
60 - 64	3.0%
65 - 69	2.5%
70 - 74	0.8%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	237
mean	34
min size (mm)	4
max size (mm)	72

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Landing Cove

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	25.0%
50 - 59	25.0%
60 - 69	0.0%
70 - 79	50.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	4
mean	61
min size (mm)	42
max size (mm)	77

Kelletia kelletii

< 40	0.0%
40 - 49	33.3%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	33.3%
80 - 89	0.0%
90 - 99	33.3%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	3
mean	71
min size (mm)	44
max size (mm)	94

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	14.3%
60 - 69	0.0%
70 - 79	14.3%
80 - 89	0.0%
90 - 99	71.4%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	7
mean	85
min size (mm)	50
max size (mm)	99

Haliotis corrugata

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	33.3%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	66.7%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	3
mean	127
min size (mm)	80
max size (mm)	153

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	5.3%
30 - 39	0.0%
40 - 49	10.5%
50 - 59	10.5%
60 - 69	26.3%
70 - 79	21.1%
80 - 89	15.8%
90 - 99	10.5%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	19
mean	68
min size (mm)	22
max size (mm)	98

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	4.3%
30 - 39	14.3%
40 - 49	18.6%
50 - 59	12.9%
60 - 69	21.4%
70 - 79	7.1%
80 - 89	2.9%
90 - 99	4.3%
100 - 109	2.9%
110 - 119	2.9%
120 - 129	2.9%
130 - 139	4.3%
> 139	1.4%
(Cases) N=	70
mean	65
min size (mm)	26
max size (mm)	153

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Landing Cove

Tegula regina	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	100.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	1
mean	49
min size (mm)	49
max size (mm)	49

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	25.0%
60 - 79	8.3%
80 - 99	8.3%
100 - 119	16.7%
120 - 139	8.3%
140 - 159	25.0%
160 - 179	0.0%
180 - 199	8.3%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	12
mean	109
min size (mm)	41
max size (mm)	192

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	1.5%
10 - 14	4.5%
15 - 19	1.0%
20 - 24	4.5%
25 - 29	3.5%
30 - 34	0.5%
35 - 39	0.5%
40 - 44	0.5%
45 - 49	1.0%
50 - 54	2.5%
55 - 59	2.0%
60 - 64	1.5%
65 - 69	3.5%
70 - 74	1.5%
75 - 79	6.1%
80 - 84	7.1%
85 - 89	6.6%
90 - 94	12.6%
95 - 99	5.6%
100 - 104	8.1%
105 - 109	8.1%
> 109	17.2%
(Cases) N=	198
mean	81
min size (mm)	7
max size (mm)	133

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	5.3%
10 - 14	10.7%
15 - 19	9.7%
20 - 24	4.9%
25 - 29	5.8%
30 - 34	7.8%
35 - 39	6.3%
40 - 44	11.7%
45 - 49	10.2%
50 - 54	9.7%
55 - 59	7.8%
60 - 64	5.3%
65 - 69	3.9%
70 - 74	0.5%
75 - 79	0.5%
> 79	0.0%
(Cases) N=	206
mean	36
min size (mm)	6
max size (mm)	79

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - SE Sea Lion Rookery

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	3.8%
30 - 39	18.9%
40 - 49	18.9%
50 - 59	17.0%
60 - 69	13.2%
70 - 79	15.1%
80 - 89	7.5%
90 - 99	5.7%
> 99	0.0%
(Cases) N=	53
mean	57
min size (mm)	23
max size (mm)	98

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	9.1%
30 - 39	0.0%
40 - 49	9.1%
50 - 59	9.1%
60 - 69	36.4%
70 - 79	27.3%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	9.1%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	11
mean	64
min size (mm)	25
max size (mm)	103

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	100.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	45
min size (mm)	45
max size (mm)	45

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	100.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	1
mean	88
min size (mm)	88
max size (mm)	88

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	54.5%
50 - 54	45.5%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	11
(Cases) N=	11
mean	49
min size (mm)	45
max size (mm)	
max size (mm)	54

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	5.0%
40 - 49	3.3%
50 - 59	3.3%
60 - 69	11.7%
70 - 79	36.7%
80 - 89	21.7%
90 - 99	11.7%
> 99	6.7%
(Cases) N=	60
mean	76
min size (mm)	32
max size (mm)	104

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - SE Sea Lion Rookery

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	50.0%
120 - 139	50.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	4
mean	117
min size (mm)	104
max size (mm)	133

Lytechinus anamesus	
< 5	0.0%
5 - 9	0.0%
10 - 14	16.7%
15 - 19	50.0%
20 - 24	33.3%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	12
mean	18
min size (mm)	12
max size (mm)	23

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	2.8%
15 - 19	2.8%
20 - 24	4.4%
25 - 29	23.2%
30 - 34	37.0%
35 - 39	23.2%
40 - 44	3.3%
45 - 49	2.2%
50 - 54	0.6%
55 - 59	0.6%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	181
mean	32
min size (mm)	10
max size (mm)	55

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	1.1%
10 - 14	13.1%
15 - 19	21.7%
20 - 24	34.5%
25 - 29	22.8%
30 - 34	6.7%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	267
mean	21
min size (mm)	6
max size (mm)	34
max size (mm)	34

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Arch Point

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	4.3%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	2.2%
70 - 79	13.0%
80 - 89	39.1%
90 - 99	10.9%
100 - 109	13.0%
110 - 119	17.4%
> 119	0.0%
(Cases) N=	46
mean	90
min size (mm)	35
max size (mm)	115

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	100.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	69
min size (mm)	69
max size (mm)	69

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	100.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	1
mean	58
min size (mm)	58
max size (mm)	58

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	1.0%
35 - 39	2.0%
40 - 44	29.3%
45 - 49	46.5%
50 - 54	21.2%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	99
mean	46
min size (mm)	31
max size (mm)	54

Patiria miniata

<10	0.0%
10 - 19	1.5%
20 - 29	25.8%
30 - 39	30.3%
40 - 49	18.2%
50 - 59	10.6%
60 - 69	7.6%
70 - 79	6.1%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	66
mean	40
min size (mm)	16
max size (mm)	78

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	17.5%
100 - 119	36.5%
120 - 139	36.5%
140 - 159	7.9%
160 - 179	0.0%
180 - 199	1.6%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	63
mean	118
min size (mm)	83
max size (mm)	193

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Arch Point

Lytechinus anamesus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	50.0%
30 - 34	50.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	2
mean	29
min size (mm)	27
max size (mm)	30

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	1.0%
15 - 19	5.4%
20 - 24	4.4%
25 - 29	5.9%
30 - 34	13.8%
35 - 39	13.8%
40 - 44	11.3%
45 - 49	16.7%
50 - 54	8.4%
55 - 59	3.4%
60 - 64	3.4%
65 - 69	2.5%
70 - 74	2.0%
75 - 79	2.0%
80 - 84	2.5%
85 - 89	1.5%
90 - 94	2.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	203
mean	44
min size (mm)	12
max size (mm)	93

Strongylocentrotus purpuratus	
< 5	0.3%
5 - 9	15.6%
10 - 14	35.5%
15 - 19	23.5%
20 - 24	17.7%
25 - 29	5.8%
30 - 34	1.2%
35 - 39	0.3%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	327
mean	15
min size (mm)	4
max size (mm)	38

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Cat Canyon

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	1.6%
40 - 49	7.8%
50 - 59	37.5%
60 - 69	31.3%
70 - 79	17.2%
80 - 89	3.1%
90 - 99	0.0%
100 - 109	1.6%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	64
mean	62
min size (mm)	35
max size (mm)	106

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	100.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	1
mean	82
min size (mm)	82
max size (mm)	82

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	1.4%
35 - 39	11.4%
40 - 44	14.3%
45 - 49	21.4%
50 - 54	41.4%
55 - 59	10.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	70
mean	48
min size (mm)	34
max size (mm)	57

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	7.5%
30 - 39	10.0%
40 - 49	20.0%
50 - 59	20.0%
60 - 69	22.5%
70 - 79	10.0%
80 - 89	5.0%
90 - 99	5.0%
> 99	0.0%
(Cases) N=	40
mean	56
min size (mm)	22
max size (mm)	91

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	11.9%
60 - 79	14.3%
80 - 99	19.0%
100 - 119	28.6%
120 - 139	16.7%
140 - 159	9.5%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	42
mean	101
min size (mm)	48
max size (mm)	155

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Cat Canyon

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	1.8%
10 - 14	10.0%
15 - 19	5.0%
20 - 24	5.0%
25 - 29	13.6%
30 - 34	15.4%
35 - 39	24.4%
40 - 44	15.8%
45 - 49	5.9%
50 - 54	2.7%
55 - 59	0.5%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	221
mean	32
min size (mm)	6
max size (mm)	55

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	5.2%
10 - 14	11.1%
15 - 19	33.1%
20 - 24	35.9%
25 - 29	11.1%
30 - 34	2.4%
35 - 39	1.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	287
mean	20
min size (mm)	5
max size (mm)	36

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.3%
40 - 49	5.0%
50 - 59	6.7%
60 - 69	5.0%
70 - 79	13.3%
80 - 89	30.0%
90 - 99	11.7%
> 99	25.0%
(Cases) N=	60
mean	86
min size (mm)	30
max size (mm)	141

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	100.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	2
mean	104
min size (mm)	100
max size (mm)	108

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	5.9%
80 - 89	0.0%
90 - 99	17.6%
100 - 109	47.1%
110 - 119	17.6%
> 119	11.8%
(Cases) N=	17
mean	105
min size (mm)	70
max size (mm)	131

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	1.8%
105 - 114	0.9%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	1.8%
145 - 154	6.1%
155 - 164	8.8%
165 - 174	7.0%
175 - 184	22.8%
185 - 194	13.2%
>195	36.8%
(Cases) N=	114
mean	184
min size (mm)	96
max size (mm)	240

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	1.7%
40 - 49	25.0%
50 - 59	65.0%
60 - 69	8.3%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	60
mean	53
min size (mm)	38
max size (mm)	65

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	50.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	25.0%
90 - 99	0.0%
100 - 109	25.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	4
mean	75
min size (mm)	54
max size (mm)	109

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	1.7%
30 - 39	3.3%
40 - 49	16.7%
50 - 59	26.7%
60 - 69	35.0%
70 - 79	11.7%
80 - 89	5.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	60
mean	59
min size (mm)	25
max size (mm)	84

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	3.3%
60 - 79	50.0%
80 - 99	45.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	1.7%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60
mean	79
min size (mm)	54
max size (mm)	193

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	25.0%
60 - 79	25.0%
80 - 99	50.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	4
mean	72
min size (mm)	55
max size (mm)	85

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.9%
20 - 24	0.4%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.4%
40 - 44	1.3%
45 - 49	1.3%
50 - 54	2.6%
55 - 59	0.9%
60 - 64	3.4%
65 - 69	6.0%
70 - 74	8.1%
75 - 79	5.1%
80 - 84	9.4%
85 - 89	13.2%
90 - 94	15.7%
95 - 99	10.2%
100 - 104	7.2%
105 - 109	5.1%
> 109	8.9%
(Cases) N=	235
mean	86
min size (mm)	15
max size (mm)	126

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	3.8%
15 - 19	3.8%
20 - 24	5.8%
25 - 29	7.7%
30 - 34	13.5%
35 - 39	1.9%
40 - 44	7.7%
45 - 49	3.8%
50 - 54	9.6%
55 - 59	9.6%
60 - 64	1.9%
65 - 69	9.6%
70 - 74	15.4%
75 - 79	1.9%
> 79	3.8%
(Cases) N=	52
mean	48
min size (mm)	13
max size (mm)	98

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Cluster Point

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	1.4%
30 - 39	1.4%
40 - 49	7.1%
50 - 59	14.3%
60 - 69	21.4%
70 - 79	18.6%
80 - 89	14.3%
90 - 99	5.7%
> 99	15.7%
(Cases) N=	70
mean	73
min size (mm)	29
max size (mm)	133

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	17.9%
100 - 109	57.1%
110 - 119	25.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	28
mean	105
min size (mm)	93
max size (mm)	117

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	13.6%
80 - 89	36.4%
90 - 99	22.7%
100 - 109	27.3%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	44
mean	90
min size (mm)	70
max size (mm)	107

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	25.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	25.0%
185 - 194	50.0%
>195	0.0%
(Cases) N=	4
mean	174
min size (mm)	144
max size (mm)	190

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	100.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	62
min size (mm)	62
max size (mm)	62

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	11.8%
40 - 49	0.0%
50 - 59	17.6%
60 - 69	23.5%
70 - 79	11.8%
80 - 89	0.0%
90 - 99	5.9%
100 - 109	5.9%
110 - 119	11.8%
120 - 129	0.0%
130 - 139	5.9%
> 139	5.9%
(Cases) N=	17
mean	79
min size (mm)	38
max size (mm)	140

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Cluster Point

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	2.8%
30 - 39	11.9%
40 - 49	23.9%
50 - 59	28.4%
60 - 69	25.7%
70 - 79	5.5%
80 - 89	1.8%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	109
mean	53
min size (mm)	21
max size (mm)	82

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	4.8%
60 - 79	43.8%
80 - 99	33.3%
100 - 119	8.6%
120 - 139	5.7%
140 - 159	1.9%
160 - 179	1.0%
180 - 199	1.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	105
mean	86
min size (mm)	54
max size (mm)	191

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	11.1%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	16.7%
160 - 179	16.7%
180 - 199	5.6%
200 - 219	16.7%
220 - 239	22.2%
240 - 259	11.1%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	18
mean	188
min size (mm)	95
max size (mm)	251

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	1.3%
15 - 19	3.0%
20 - 24	6.4%
25 - 29	4.7%
30 - 34	1.7%
35 - 39	2.6%
40 - 44	4.7%
45 - 49	5.5%
50 - 54	6.0%
55 - 59	3.0%
60 - 64	6.0%
65 - 69	6.8%
70 - 74	8.5%
75 - 79	8.1%
80 - 84	6.8%
85 - 89	5.1%
90 - 94	8.5%
95 - 99	4.7%
100 - 104	1.3%
105 - 109	3.0%
> 109	2.6%
(Cases) N=	235
mean	65
min size (mm)	12
max size (mm)	125

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS
Santa Rosa Island - Cluster Point

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.9%
10 - 14	2.3%
15 - 19	1.8%
20 - 24	6.5%
25 - 29	5.1%
30 - 34	12.0%
35 - 39	13.8%
40 - 44	19.8%
45 - 49	13.8%
50 - 54	10.6%
55 - 59	7.4%
60 - 64	3.2%
65 - 69	2.3%
70 - 74	0.5%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	217
mean	41
min size (mm)	7
max size (mm)	70

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Trancion Canyon

Tethya aurantia

<10	0.0%
10 - 19	3.0%
20 - 29	0.0%
30 - 39	1.5%
40 - 49	0.0%
50 - 59	6.0%
60 - 69	1.5%
70 - 79	16.4%
80 - 89	19.4%
90 - 99	19.4%
> 99	32.8%
(Cases) N=	67
mean	88
min size (mm)	13
max size (mm)	140

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	100.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	1
mean	131
min size (mm)	131
max size (mm)	131

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	3.0%
60 - 69	0.0%
70 - 79	9.1%
80 - 89	12.1%
90 - 99	6.1%
100 - 109	30.3%
110 - 119	21.2%
> 119	18.2%
(Cases) N=	33
mean	103
min size (mm)	56
max size (mm)	134

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	100.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	1
mean	179
min size (mm)	179
max size (mm)	179

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	100.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	2
mean	54
min size (mm)	50
max size (mm)	58

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	50.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	50.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	2
mean	96
min size (mm)	73
max size (mm)	118

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Trancion Canyon

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	5.0%
40 - 49	18.3%
50 - 59	28.3%
60 - 69	26.7%
70 - 79	15.0%
80 - 89	5.0%
90 - 99	1.7%
> 99	0.0%
(Cases) N=	60
mean	59
min size (mm)	33
max size (mm)	92

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	3.1%
60 - 79	35.9%
80 - 99	35.9%
100 - 119	3.1%
120 - 139	7.8%
140 - 159	6.3%
160 - 179	4.7%
180 - 199	0.0%
200 - 219	3.1%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	64
mean	96
min size (mm)	53
max size (mm)	200

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	44.4%
180 - 199	22.2%
200 - 219	11.1%
220 - 239	0.0%
240 - 259	22.2%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	9
mean	194
min size (mm)	168
max size (mm)	243

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.5%
10 - 14	2.9%
15 - 19	5.4%
20 - 24	3.9%
25 - 29	6.3%
30 - 34	8.3%
35 - 39	3.9%
40 - 44	5.4%
45 - 49	2.4%
50 - 54	3.4%
55 - 59	2.4%
60 - 64	4.4%
65 - 69	2.4%
70 - 74	2.4%
75 - 79	2.4%
80 - 84	4.9%
85 - 89	4.9%
90 - 94	8.8%
95 - 99	5.4%
100 - 104	6.8%
105 - 109	6.8%
> 109	5.9%
(Cases) N=	205
mean	65
min size (mm)	7
max size (mm)	126

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Trancion Canyon

Strongylocentrotus purpuratus

< 5	1.5%
5 - 9	4.4%
10 - 14	6.3%
15 - 19	6.6%
20 - 24	9.9%
25 - 29	12.9%
30 - 34	18.0%
35 - 39	12.1%
40 - 44	13.6%
45 - 49	6.3%
50 - 54	5.5%
55 - 59	2.2%
60 - 64	0.4%
65 - 69	0.4%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	272
mean	31
min size (mm)	3
max size (mm)	67

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS
Santa Rosa Island - Chickasaw

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	6.7%
30 - 39	5.0%
40 - 49	5.0%
50 - 59	5.0%
60 - 69	8.3%
70 - 79	16.7%
80 - 89	18.3%
90 - 99	10.0%
> 99	25.0%
(Cases) N=	60
mean	78
min size (mm)	22
max size (mm)	146

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	2.1%
55 - 64	4.3%
65 - 74	0.0%
75 - 84	2.1%
85 - 94	2.1%
95 - 104	0.0%
105 - 114	2.1%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	2.1%
165 - 174	2.1%
175 - 184	19.1%
185 - 194	21.3%
>195	42.6%
(Cases) N=	47
mean	181
min size (mm)	46
max size (mm)	228

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	100.0%
(Cases) N=	2
mean	126
min size (mm)	123
max size (mm)	128

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	7.1%
60 - 69	7.1%
70 - 79	0.0%
80 - 89	7.1%
90 - 99	21.4%
100 - 109	21.4%
110 - 119	28.6%
> 119	7.1%
(Cases) N=	14
mean	98
min size (mm)	50
max size (mm)	122

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	2.6%
30 - 39	10.3%
40 - 49	15.4%
50 - 59	25.6%
60 - 69	15.4%
70 - 79	12.8%
80 - 89	10.3%
90 - 99	5.1%
100 - 109	0.0%
110 - 119	2.6%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	39
mean	61
mean	61
min size (mm)	24
max size (mm)	115

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	5.0%
40 - 49	20.0%
50 - 59	18.3%
60 - 69	30.0%
70 - 79	16.7%
80 - 89	10.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	60
mean	61
min size (mm)	32
max size (mm)	89

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Chickasaw

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	20.0%
80 - 99	51.7%
100 - 119	13.3%
120 - 139	8.3%
140 - 159	3.3%
160 - 179	1.7%
180 - 199	1.7%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60
mean	98
min size (mm)	63
max size (mm)	190

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	12.5%
80 - 99	0.0%
100 - 119	12.5%
120 - 139	0.0%
140 - 159	12.5%
160 - 179	25.0%
180 - 199	12.5%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	12.5%
280 - 299	0.0%
> 299	12.5%
(Cases) N=	8
mean	175
min size (mm)	65
max size (mm)	305

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.8%
15 - 19	5.0%
20 - 24	5.9%
25 - 29	5.9%
30 - 34	5.0%
35 - 39	2.1%
40 - 44	4.2%
45 - 49	1.7%
50 - 54	3.8%
55 - 59	2.5%
60 - 64	3.8%
65 - 69	3.3%
70 - 74	1.3%
75 - 79	4.6%
80 - 84	5.0%
85 - 89	4.6%
90 - 94	6.3%
95 - 99	5.0%
100 - 104	7.1%
105 - 109	3.8%
> 109	18.4%
(Cases) N=	239
mean	73
min size (mm)	12
max size (mm)	134

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	2.8%
10 - 14	11.1%
15 - 19	9.7%
20 - 24	15.7%
25 - 29	11.1%
30 - 34	8.8%
35 - 39	14.3%
40 - 44	10.6%
45 - 49	8.8%
50 - 54	4.6%
55 - 59	1.4%
60 - 64	1.4%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	217
mean	30
min size (mm)	6
max size (mm)	64
max size (mm)	64

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - South Point

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	1.6%
30 - 39	1.6%
40 - 49	6.3%
50 - 59	4.8%
60 - 69	7.9%
70 - 79	14.3%
80 - 89	20.6%
90 - 99	14.3%
> 99	28.6%
(Cases) N=	63
mean	85
min size (mm)	28
max size (mm)	137

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	1.8%
115 - 124	1.8%
125 - 134	0.9%
135 - 144	2.8%
145 - 154	5.5%
155 - 164	3.7%
165 - 174	13.8%
175 - 184	12.8%
185 - 194	25.7%
>195	30.3%
(Cases) N=	109
mean	185
min size (mm)	110
max size (mm)	240

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	33.3%
110 - 119	0.0%
120 - 129	66.7%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	3
mean	120
min size (mm)	107
max size (mm)	129

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	100.0%
(Cases) N=	5
mean	129
min size (mm)	125
max size (mm)	138

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	50.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	50.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	2
mean	86
mean	86
min size (mm)	67
max size (mm)	105

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.7%
30 - 39	0.0%
40 - 49	8.3%
50 - 59	13.3%
60 - 69	33.3%
70 - 79	31.7%
80 - 89	6.7%
90 - 99	5.0%
> 99	0.0%
(Cases) N=	60
mean	67
min size (mm)	23
max size (mm)	95

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - South Point

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	16.7%
80 - 99	35.0%
100 - 119	30.0%
120 - 139	13.3%
140 - 159	1.7%
160 - 179	1.7%
180 - 199	1.7%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60
mean	101
min size (mm)	65
max size (mm)	184

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	17.6%
120 - 139	0.0%
140 - 159	5.9%
160 - 179	17.6%
180 - 199	23.5%
200 - 219	17.6%
220 - 239	17.6%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	17
mean	178
min size (mm)	100
max size (mm)	235

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	1.5%
15 - 19	2.3%
20 - 24	3.8%
25 - 29	2.6%
30 - 34	1.9%
35 - 39	4.5%
40 - 44	3.8%
45 - 49	2.6%
50 - 54	5.3%
55 - 59	6.4%
60 - 64	5.7%
65 - 69	6.0%
70 - 74	3.8%
75 - 79	1.9%
80 - 84	4.9%
85 - 89	4.9%
90 - 94	4.9%
95 - 99	4.2%
100 - 104	7.9%
105 - 109	5.7%
> 109	15.5%
(Cases) N=	265
mean	74
min size (mm)	12
max size (mm)	134

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	0.0%
10 - 14	1.6%
15 - 19	6.7%
20 - 24	9.1%
25 - 29	11.9%
30 - 34	14.3%
35 - 39	19.0%
40 - 44	20.6%
45 - 49	7.5%
50 - 54	6.0%
55 - 59	2.8%
60 - 64	0.4%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	252
mean	35
min size (mm)	10
max size (mm)	63
max size (mm)	63

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Devil's Peak Member

Tethya aurantia

<10	0.0%
10 - 19	3.3%
20 - 29	8.2%
30 - 39	21.3%
40 - 49	29.5%
50 - 59	23.0%
60 - 69	11.5%
70 - 79	3.3%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	61
mean	45
min size (mm)	17
max size (mm)	70

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	7.7%
70 - 79	15.4%
80 - 89	15.4%
90 - 99	38.5%
100 - 109	23.1%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	13
mean	89
min size (mm)	69
max size (mm)	103

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	1.5%
50 - 59	3.0%
60 - 69	4.5%
70 - 79	34.8%
80 - 89	36.4%
90 - 99	16.7%
100 - 109	3.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	66
mean	80
min size (mm)	49
max size (mm)	103

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	7.7%
60 - 69	7.7%
70 - 79	7.7%
80 - 89	15.4%
90 - 99	30.8%
100 - 109	7.7%
110 - 119	7.7%
120 - 129	7.7%
130 - 139	0.0%
> 139	7.7%
(Cases) N=	13
mean	95
min size (mm)	56
max size (mm)	144

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	52.6%
55 - 59	47.4%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	19
(Cases) N=	19
mean	54
min size (mm)	50
max size (mm)	
max size (mm)	58

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.3%
40 - 49	6.7%
50 - 59	20.0%
60 - 69	26.7%
70 - 79	31.7%
80 - 89	11.7%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	60
mean	65
min size (mm)	33
max size (mm)	85

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Devil's Peak Member

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	1.8%
80 - 99	10.9%
100 - 119	36.4%
120 - 139	29.1%
140 - 159	18.2%
160 - 179	1.8%
180 - 199	1.8%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	55
mean	123
min size (mm)	75
max size (mm)	194

Lytechinus anamesus	
< 5	0.0%
5 - 9	0.0%
10 - 14	50.0%
15 - 19	50.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	2
mean	15
min size (mm)	14
max size (mm)	15

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.4%
20 - 24	0.9%
25 - 29	1.3%
30 - 34	8.4%
35 - 39	15.9%
40 - 44	17.3%
45 - 49	21.7%
50 - 54	15.9%
55 - 59	12.8%
60 - 64	4.0%
65 - 69	1.3%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	226
mean	46
min size (mm)	17
max size (mm)	68

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	20.0%
160 - 179	0.0%
180 - 199	20.0%
200 - 219	0.0%
220 - 239	20.0%
240 - 259	40.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	5
mean	214
min size (mm)	159
max size (mm)	256

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Devil's Peak Member

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.4%
10 - 14	0.4%
15 - 19	1.8%
20 - 24	14.7%
25 - 29	40.4%
30 - 34	27.1%
35 - 39	12.0%
40 - 44	2.7%
45 - 49	0.4%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	225
mean	29
min size (mm)	6
max size (mm)	45

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Potato Pasture

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	3.1%
30 - 39	30.8%
40 - 49	27.7%
50 - 59	13.8%
60 - 69	15.4%
70 - 79	9.2%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	65
mean	48
min size (mm)	22
max size (mm)	79

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	50.0%
80 - 89	0.0%
90 - 99	25.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	25.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	4
mean	92
min size (mm)	72
max size (mm)	127

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	15.0%
30 - 39	5.0%
40 - 49	35.0%
50 - 59	20.0%
60 - 69	5.0%
70 - 79	5.0%
80 - 89	5.0%
90 - 99	10.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	20
mean	53
min size (mm)	23
max size (mm)	97

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.8%
40 - 49	3.8%
50 - 59	7.7%
60 - 69	7.7%
70 - 79	23.1%
80 - 89	42.3%
90 - 99	11.5%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	26
mean	77
min size (mm)	35
max size (mm)	97

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	3.6%
30 - 39	3.6%
40 - 49	3.6%
50 - 59	3.6%
60 - 69	3.6%
70 - 79	7.3%
80 - 89	7.3%
90 - 99	3.6%
100 - 109	10.9%
110 - 119	7.3%
120 - 129	10.9%
130 - 139	16.4%
> 139	18.2%
(Cases) N=	55
mean	106
mean	106
min size (mm)	21
max size (mm)	181

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	2.0%
40 - 44	4.1%
45 - 49	38.8%
50 - 54	53.1%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	2.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	49
mean	50
min size (mm)	38
max size (mm)	65

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Potato Pasture

Patiria miniata

<10	0.0%
10 - 19	1.7%
20 - 29	10.0%
30 - 39	23.3%
40 - 49	28.3%
50 - 59	23.3%
60 - 69	8.3%
70 - 79	5.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	60
mean	45
min size (mm)	18
max size (mm)	77

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	1.7%
80 - 99	0.0%
100 - 119	5.0%
120 - 139	16.7%
140 - 159	26.7%
160 - 179	16.7%
180 - 199	16.7%
200 - 219	15.0%
220 - 239	0.0%
> 239	1.7%
(Cases) N=	60
mean	164
min size (mm)	71
max size (mm)	269

Lytechinus anamesus

< 5	0.0%
5 - 9	16.7%
10 - 14	33.3%
15 - 19	33.3%
20 - 24	16.7%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	6
mean	15
min size (mm)	8
max size (mm)	22

Strongylocentrotus franciscanus

< 5	0.0%
5 - 9	0.5%
10 - 14	0.5%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	3.3%
30 - 34	3.7%
35 - 39	8.9%
40 - 44	19.6%
45 - 49	28.0%
50 - 54	21.5%
55 - 59	9.3%
60 - 64	4.2%
65 - 69	0.5%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	214
mean	46
min size (mm)	9
max size (mm)	69

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Potato Pasture

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	2.4%
10 - 14	2.0%
15 - 19	1.6%
20 - 24	0.4%
25 - 29	4.7%
30 - 34	36.1%
35 - 39	42.4%
40 - 44	9.8%
45 - 49	0.8%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	255
mean	34
min size (mm)	6
max size (mm)	47

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Cavern Point

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	1.4%
30 - 39	11.1%
40 - 49	33.3%
50 - 59	15.3%
60 - 69	20.8%
70 - 79	9.7%
80 - 89	5.6%
90 - 99	2.8%
> 99	0.0%
(Cases) N=	72
mean	55
min size (mm)	28
max size (mm)	91

Megastraea undosa

<10	4.2%
10 - 19	0.0%
20 - 29	4.2%
30 - 39	12.5%
40 - 49	20.8%
50 - 59	4.2%
60 - 69	8.3%
70 - 79	12.5%
80 - 89	20.8%
90 - 99	4.2%
100 - 109	8.3%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	24
mean	62
min size (mm)	7
max size (mm)	107

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	3.3%
70 - 79	10.0%
80 - 89	30.0%
90 - 99	13.3%
100 - 109	20.0%
110 - 119	20.0%
> 119	3.3%
(Cases) N=	30
mean	95
min size (mm)	66
max size (mm)	120

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	1.7%
40 - 49	0.0%
50 - 59	17.2%
60 - 69	3.4%
70 - 79	15.5%
80 - 89	5.2%
90 - 99	5.2%
100 - 109	12.1%
110 - 119	13.8%
120 - 129	10.3%
130 - 139	3.4%
> 139	12.1%
(Cases) N=	58
mean	97
min size (mm)	35
max size (mm)	169

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	30.0%
50 - 54	50.0%
55 - 59	20.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	10
(Cases) N=	10
mean	52
min size (mm)	48
max size (mm)	
max size (mm)	56

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	3.3%
30 - 39	1.7%
40 - 49	1.7%
50 - 59	11.7%
60 - 69	15.0%
70 - 79	36.7%
80 - 89	25.0%
90 - 99	1.7%
> 99	3.3%
(Cases) N=	60
mean	71
min size (mm)	24
max size (mm)	105

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Cavern Point

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	1.7%
60 - 79	3.3%
80 - 99	3.3%
100 - 119	16.7%
120 - 139	25.0%
140 - 159	23.3%
160 - 179	6.7%
180 - 199	16.7%
200 - 219	3.3%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60
mean	143
min size (mm)	57
max size (mm)	208

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	1.0%
10 - 14	0.0%
15 - 19	1.5%
20 - 24	1.5%
25 - 29	1.0%
30 - 34	2.9%
35 - 39	5.4%
40 - 44	7.8%
45 - 49	9.8%
50 - 54	22.4%
55 - 59	16.6%
60 - 64	11.7%
65 - 69	7.3%
70 - 74	5.9%
75 - 79	1.0%
80 - 84	3.4%
85 - 89	1.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	205
mean	54
min size (mm)	5
max size (mm)	87

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	0.4%
10 - 14	0.0%
15 - 19	0.9%
20 - 24	0.0%
25 - 29	7.4%
30 - 34	30.7%
35 - 39	43.3%
40 - 44	14.7%
45 - 49	2.2%
50 - 54	0.4%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	231
mean	35
min size (mm)	7
max size (mm)	52

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Little Scorpion

Tethya aurantia

<10	0.0%
10 - 19	2.1%
20 - 29	4.3%
30 - 39	8.5%
40 - 49	4.3%
50 - 59	29.8%
60 - 69	23.4%
70 - 79	21.3%
80 - 89	6.4%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	47
mean	58
min size (mm)	15
max size (mm)	87

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	12.5%
80 - 89	18.8%
90 - 99	6.3%
100 - 109	12.5%
110 - 119	25.0%
120 - 129	25.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	16
mean	104
min size (mm)	71
max size (mm)	128

Megastraea undosa

<10	0.0%
10 - 19	2.8%
20 - 29	12.7%
30 - 39	15.5%
40 - 49	32.4%
50 - 59	5.6%
60 - 69	11.3%
70 - 79	1.4%
80 - 89	7.0%
90 - 99	8.5%
100 - 109	2.8%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	71
mean	52
min size (mm)	18
max size (mm)	107

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	4.2%
50 - 59	2.8%
60 - 69	12.7%
70 - 79	46.5%
80 - 89	33.8%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	71
mean	75
min size (mm)	42
max size (mm)	89

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	4.2%
30 - 39	12.5%
40 - 49	33.3%
50 - 59	0.0%
60 - 69	12.5%
70 - 79	12.5%
80 - 89	4.2%
90 - 99	8.3%
100 - 109	0.0%
110 - 119	4.2%
120 - 129	4.2%
130 - 139	4.2%
> 139	0.0%
(Cases) N=	24
mean	64
mean	64
min size (mm)	28
max size (mm)	134

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	7.0%
45 - 49	7.0%
50 - 54	46.5%
55 - 59	34.9%
60 - 64	4.7%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	43
mean	53
min size (mm)	41
max size (mm)	62

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Little Scorpion

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	2.5%
30 - 39	10.0%
40 - 49	14.2%
50 - 59	18.3%
60 - 69	29.2%
70 - 79	15.0%
80 - 89	9.2%
90 - 99	1.7%
> 99	0.0%
(Cases) N=	120
mean	59
min size (mm)	23
max size (mm)	94

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	7.4%
100 - 119	5.9%
120 - 139	11.8%
140 - 159	17.6%
160 - 179	17.6%
180 - 199	19.1%
200 - 219	13.2%
220 - 239	1.5%
> 239	5.9%
(Cases) N=	68
mean	167
min size (mm)	83
max size (mm)	285

Lytechinus anamesus	
< 5	0.0%
5 - 9	0.0%
10 - 14	4.3%
15 - 19	13.9%
20 - 24	22.5%
25 - 29	54.1%
30 - 34	5.3%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	209
mean	24
min size (mm)	12
max size (mm)	31

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	1.0%
10 - 14	0.0%
15 - 19	0.5%
20 - 24	0.5%
25 - 29	1.0%
30 - 34	2.9%
35 - 39	6.2%
40 - 44	6.7%
45 - 49	16.2%
50 - 54	10.0%
55 - 59	18.1%
60 - 64	20.0%
65 - 69	9.0%
70 - 74	3.3%
75 - 79	2.9%
80 - 84	1.9%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	210
mean	54
min size (mm)	5
max size (mm)	82

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Little Scorpion

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.4%
15 - 19	1.3%
20 - 24	5.4%
25 - 29	11.6%
30 - 34	17.0%
35 - 39	15.2%
40 - 44	16.1%
45 - 49	15.2%
50 - 54	10.3%
55 - 59	5.4%
60 - 64	1.8%
65 - 69	0.4%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	224
mean	39
min size (mm)	11
max size (mm)	66

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pedro Reef

Tethya aurantia

<10	1.3%
10 - 19	1.3%
20 - 29	6.3%
30 - 39	11.3%
40 - 49	25.0%
50 - 59	21.3%
60 - 69	13.8%
70 - 79	8.8%
80 - 89	3.8%
90 - 99	7.5%
> 99	0.0%
(Cases) N=	80
mean	54
min size (mm)	9
max size (mm)	95

Megastraea undosa

<10	1.6%
10 - 19	3.2%
20 - 29	20.6%
30 - 39	34.9%
40 - 49	12.7%
50 - 59	0.0%
60 - 69	3.2%
70 - 79	12.7%
80 - 89	7.9%
90 - 99	3.2%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	63
mean	43
min size (mm)	6
max size (mm)	94

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	1.3%
40 - 49	4.0%
50 - 59	5.3%
60 - 69	17.3%
70 - 79	40.0%
80 - 89	29.3%
90 - 99	2.7%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	75
mean	74
min size (mm)	39
max size (mm)	99

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	42.9%
80 - 89	28.6%
90 - 99	14.3%
100 - 109	14.3%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	7
mean	83
min size (mm)	73
max size (mm)	100

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	100.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	51
min size (mm)	51
max size (mm)	51

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	7.1%
40 - 49	28.6%
50 - 59	14.3%
60 - 69	7.1%
70 - 79	7.1%
80 - 89	14.3%
90 - 99	7.1%
100 - 109	0.0%
110 - 119	7.1%
120 - 129	0.0%
130 - 139	7.1%
> 139	0.0%
(Cases) N=	14
mean	70
min size (mm)	33
max size (mm)	139

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pedro Reef

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	10.0%
40 - 49	16.7%
50 - 59	26.7%
60 - 69	16.7%
70 - 79	20.0%
80 - 89	6.7%
90 - 99	3.3%
> 99	0.0%
(Cases) N=	60
mean	60
min size (mm)	32
max size (mm)	92

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	3.3%
100 - 119	13.3%
120 - 139	16.7%
140 - 159	31.7%
160 - 179	15.0%
180 - 199	8.3%
200 - 219	8.3%
220 - 239	1.7%
> 239	1.7%
(Cases) N=	60
mean	152
min size (mm)	96
max size (mm)	243

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	25.0%
120 - 139	0.0%
140 - 159	25.0%
160 - 179	50.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	4
mean	145
min size (mm)	105
max size (mm)	163

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	4.0%
15 - 19	27.7%
20 - 24	25.7%
25 - 29	38.1%
30 - 34	4.5%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	202
mean	22
min size (mm)	11
max size (mm)	33

Strongylocentrotus franciscanus

< 5	0.5%
5 - 9	0.0%
10 - 14	3.2%
15 - 19	6.8%
20 - 24	12.8%
25 - 29	26.5%
30 - 34	21.0%
35 - 39	16.9%
40 - 44	6.4%
45 - 49	3.2%
50 - 54	1.8%
55 - 59	0.5%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.5%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	219
mean	30
min size (mm)	3
max size (mm)	74

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Pedro Reef

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.4%
10 - 14	11.6%
15 - 19	50.2%
20 - 24	35.5%
25 - 29	1.6%
30 - 34	0.8%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	251
mean	18
min size (mm)	9
max size (mm)	30

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	50.0%
50 - 59	0.0%
60 - 69	50.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	2
mean	53
min size (mm)	41
max size (mm)	64

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	25.0%
80 - 89	25.0%
90 - 99	25.0%
100 - 109	0.0%
110 - 119	25.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	4
mean	90
min size (mm)	79
max size (mm)	110

Megastraea undosa

<10	1.6%
10 - 19	1.6%
20 - 29	3.3%
30 - 39	6.6%
40 - 49	23.0%
50 - 59	3.3%
60 - 69	24.6%
70 - 79	16.4%
80 - 89	9.8%
90 - 99	4.9%
100 - 109	3.3%
110 - 119	1.6%
> 119	0.0%
(Cases) N=	61
mean	62
min size (mm)	9
max size (mm)	110

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	57.1%
70 - 79	21.4%
80 - 89	14.3%
90 - 99	7.1%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	14
mean	71
min size (mm)	60
max size (mm)	91

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	9.5%
50 - 59	4.8%
60 - 69	14.3%
70 - 79	4.8%
80 - 89	14.3%
90 - 99	23.8%
100 - 109	0.0%
110 - 119	9.5%
120 - 129	4.8%
130 - 139	9.5%
> 139	4.8%
(Cases) N=	21
mean	90
mean	90
min size (mm)	41
max size (mm)	141

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	1.6%
45 - 49	43.5%
50 - 54	45.2%
55 - 59	9.7%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	62
mean	50
min size (mm)	43
max size (mm)	57

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	8.8%
30 - 39	29.4%
40 - 49	17.6%
50 - 59	16.2%
60 - 69	16.2%
70 - 79	5.9%
80 - 89	5.9%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	68
mean	49
min size (mm)	22
max size (mm)	89

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	4.9%
80 - 99	3.3%
100 - 119	9.8%
120 - 139	27.9%
140 - 159	19.7%
160 - 179	8.2%
180 - 199	9.8%
200 - 219	9.8%
220 - 239	3.3%
> 239	3.3%
(Cases) N=	61
mean	152
min size (mm)	70
max size (mm)	273

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	3.9%
20 - 24	20.7%
25 - 29	57.6%
30 - 34	17.7%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	203
mean	27
min size (mm)	18
max size (mm)	34

Strongylocentrotus franciscanus

< 5	0.5%
5 - 9	0.9%
10 - 14	4.1%
15 - 19	8.6%
20 - 24	5.4%
25 - 29	2.7%
30 - 34	5.0%
35 - 39	7.7%
40 - 44	6.8%
45 - 49	3.2%
50 - 54	8.6%
55 - 59	5.4%
60 - 64	7.2%
65 - 69	6.3%
70 - 74	6.3%
75 - 79	7.2%
80 - 84	6.3%
85 - 89	3.6%
90 - 94	2.3%
95 - 99	1.8%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	221
mean	51
min size (mm)	3
max size (mm)	98

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

Strongylocentrotus purpuratus

< 5	0.5%
5 - 9	9.3%
10 - 14	2.0%
15 - 19	5.4%
20 - 24	15.6%
25 - 29	22.4%
30 - 34	18.5%
35 - 39	18.5%
40 - 44	5.4%
45 - 49	2.4%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	205
mean	27
min size (mm)	3
max size (mm)	49

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

Tethya aurantia

<10	0.0%
10 - 19	4.3%
20 - 29	13.0%
30 - 39	21.7%
40 - 49	26.1%
50 - 59	4.3%
60 - 69	17.4%
70 - 79	4.3%
80 - 89	8.7%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	23
mean	47
min size (mm)	16
max size (mm)	85

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	2.2%
70 - 79	6.5%
80 - 89	17.4%
90 - 99	6.5%
100 - 109	21.7%
110 - 119	28.3%
120 - 129	13.0%
130 - 139	4.3%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	46
mean	104
min size (mm)	69
max size (mm)	134

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	6.3%
30 - 39	15.6%
40 - 49	17.2%
50 - 59	31.3%
60 - 69	20.3%
70 - 79	9.4%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	64
mean	52
min size (mm)	25
max size (mm)	75

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	1.7%
40 - 49	6.7%
50 - 59	35.0%
60 - 69	41.7%
70 - 79	11.7%
80 - 89	3.3%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	60
mean	61
min size (mm)	36
max size (mm)	83

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	14.3%
40 - 49	14.3%
50 - 59	0.0%
60 - 69	28.6%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	28.6%
120 - 129	0.0%
130 - 139	0.0%
> 139	14.3%
(Cases) N=	7
mean	85
mean	85
min size (mm)	37
max size (mm)	152

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	50.0%
55 - 59	50.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	6
mean	55
min size (mm)	52
max size (mm)	58

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

Patiria miniata	
<10	0.0%
10 - 19	1.5%
20 - 29	6.2%
30 - 39	12.3%
40 - 49	7.7%
50 - 59	10.8%
60 - 69	18.5%
70 - 79	16.9%
80 - 89	21.5%
90 - 99	3.1%
> 99	1.5%
(Cases) N=	65
mean	62
min size (mm)	19
max size (mm)	108

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	7.8%
140 - 159	28.1%
160 - 179	25.0%
180 - 199	21.9%
200 - 219	15.6%
220 - 239	0.0%
> 239	1.6%
(Cases) N=	64
mean	173
min size (mm)	127
max size (mm)	260

Lytechinus anamesus	
< 5	0.0%
5 - 9	0.0%
10 - 14	4.5%
15 - 19	16.5%
20 - 24	52.5%
25 - 29	22.0%
30 - 34	4.5%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	200
mean	22
min size (mm)	11
max size (mm)	33

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	2.0%
10 - 14	0.5%
15 - 19	8.9%
20 - 24	18.8%
25 - 29	39.6%
30 - 34	21.3%
35 - 39	7.9%
40 - 44	1.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	202
mean	27
min size (mm)	5
max size (mm)	43

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

Strongylocentrotus purpuratus

< 5	0.4%
5 - 9	11.2%
10 - 14	16.8%
15 - 19	44.8%
20 - 24	22.0%
25 - 29	3.4%
30 - 34	1.3%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	232
mean	16
min size (mm)	4
max size (mm)	34

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Black Sea Bass Reef

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	1.9%
30 - 39	5.6%
40 - 49	22.2%
50 - 59	9.3%
60 - 69	22.2%
70 - 79	13.0%
80 - 89	14.8%
90 - 99	9.3%
> 99	1.9%
(Cases) N=	54
mean	64
min size (mm)	29
max size (mm)	103

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	12.5%
120 - 129	68.8%
130 - 139	12.5%
140 - 149	6.3%
> 149	0.0%
(Cases) N=	16
mean	126
min size (mm)	114
max size (mm)	141

Megastraea undosa

<10	0.0%
10 - 19	11.1%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	22.2%
50 - 59	0.0%
60 - 69	22.2%
70 - 79	11.1%
80 - 89	11.1%
90 - 99	11.1%
100 - 109	11.1%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	9
mean	65
min size (mm)	19
max size (mm)	109

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	11.1%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	5.6%
70 - 79	16.7%
80 - 89	27.8%
90 - 99	38.9%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	18
mean	81
min size (mm)	37
max size (mm)	97

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	11.1%
40 - 49	11.1%
50 - 59	11.1%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	11.1%
90 - 99	0.0%
100 - 109	11.1%
110 - 119	22.2%
120 - 129	0.0%
130 - 139	11.1%
> 139	11.1%
(Cases) N=	9
mean	93
mean	93
min size (mm)	35
max size (mm)	153

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	10.0%
45 - 49	40.0%
50 - 54	50.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	10
mean	48
min size (mm)	40
max size (mm)	52

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Black Sea Bass Reef

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	2.2%
30 - 39	2.2%
40 - 49	8.7%
50 - 59	6.5%
60 - 69	10.9%
70 - 79	26.1%
80 - 89	19.6%
90 - 99	13.0%
> 99	10.9%
(Cases) N=	46
mean	75
min size (mm)	24
max size (mm)	106

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	4.1%
100 - 119	4.1%
120 - 139	6.1%
140 - 159	26.5%
160 - 179	32.7%
180 - 199	8.2%
200 - 219	12.2%
220 - 239	2.0%
> 239	4.1%
(Cases) N=	49
mean	167
min size (mm)	91
max size (mm)	268

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	5.2%
10 - 14	27.3%
15 - 19	15.6%
20 - 24	6.1%
25 - 29	4.8%
30 - 34	5.6%
35 - 39	4.3%
40 - 44	3.0%
45 - 49	3.5%
50 - 54	2.2%
55 - 59	5.2%
60 - 64	4.8%
65 - 69	4.3%
70 - 74	3.0%
75 - 79	3.0%
80 - 84	1.7%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.4%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	231
mean	32
min size (mm)	7
max size (mm)	96

Strongylocentrotus purpuratus	
< 5	1.6%
5 - 9	33.6%
10 - 14	12.4%
15 - 19	11.6%
20 - 24	8.0%
25 - 29	8.8%
30 - 34	5.6%
35 - 39	6.4%
40 - 44	6.4%
45 - 49	4.4%
50 - 54	1.2%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	250
mean	20
mean	20
min size (mm)	4
min size (mm)	4
max size (mm)	52
max size (mm)	52

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Lighthouse

Tethya aurantia

<10	0.0%
10 - 19	1.5%
20 - 29	6.2%
30 - 39	10.8%
40 - 49	9.2%
50 - 59	13.8%
60 - 69	23.1%
70 - 79	16.9%
80 - 89	10.8%
90 - 99	4.6%
> 99	3.1%
(Cases) N=	65
mean	61
min size (mm)	17
max size (mm)	111

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	23.5%
50 - 59	0.0%
60 - 69	29.4%
70 - 79	17.6%
80 - 89	11.8%
90 - 99	11.8%
100 - 109	0.0%
110 - 119	5.9%
> 119	0.0%
(Cases) N=	17
mean	70
min size (mm)	41
max size (mm)	111

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	1.6%
60 - 69	22.6%
70 - 79	48.4%
80 - 89	25.8%
90 - 99	1.6%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	62
mean	75
min size (mm)	59
max size (mm)	91

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	14.3%
90 - 99	0.0%
100 - 109	14.3%
110 - 119	14.3%
120 - 129	0.0%
130 - 139	28.6%
> 139	28.6%
(Cases) N=	7
mean	124
min size (mm)	82
max size (mm)	154

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	100.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	2
(Cases) N=	2
mean	61
min size (mm)	61
max size (mm)	
max size (mm)	61

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	5.8%
30 - 39	4.3%
40 - 49	14.5%
50 - 59	17.4%
60 - 69	14.5%
70 - 79	15.9%
80 - 89	18.8%
90 - 99	8.7%
> 99	0.0%
(Cases) N=	69
mean	64
min size (mm)	25
max size (mm)	97

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Lighthouse

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	10.9%
100 - 119	20.3%
120 - 139	50.0%
140 - 159	10.9%
160 - 179	6.3%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	1.6%
> 239	0.0%
(Cases) N=	64
mean	126
min size (mm)	87
max size (mm)	222

Lytechinus anamesus	
< 5	0.0%
5 - 9	0.0%
10 - 14	6.0%
15 - 19	22.0%
20 - 24	30.0%
25 - 29	38.0%
30 - 34	4.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	50
mean	23
min size (mm)	13
max size (mm)	33

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.5%
10 - 14	2.0%
15 - 19	3.5%
20 - 24	2.0%
25 - 29	13.4%
30 - 34	22.3%
35 - 39	29.2%
40 - 44	15.3%
45 - 49	4.0%
50 - 54	1.5%
55 - 59	1.0%
60 - 64	0.5%
65 - 69	1.0%
70 - 74	1.5%
75 - 79	0.5%
80 - 84	0.5%
85 - 89	0.5%
90 - 94	1.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	202
mean	37
min size (mm)	5
max size (mm)	93

Strongylocentrotus purpuratus	
< 5	0.4%
5 - 9	2.2%
10 - 14	16.5%
15 - 19	13.5%
20 - 24	23.5%
25 - 29	27.0%
30 - 34	13.9%
35 - 39	2.6%
40 - 44	0.4%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	230
mean	23
min size (mm)	4
max size (mm)	43
max size (mm)	43

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Webster's Arch

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	25.0%
40 - 49	0.0%
50 - 59	25.0%
60 - 69	0.0%
70 - 79	25.0%
80 - 89	0.0%
90 - 99	25.0%
> 99	0.0%
(Cases) N=	4
mean	66
min size (mm)	39
max size (mm)	95

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	4.7%
50 - 59	6.3%
60 - 69	39.1%
70 - 79	23.4%
80 - 89	18.8%
90 - 99	7.8%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	64
mean	71
min size (mm)	40
max size (mm)	95

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	2.7%
60 - 69	4.1%
70 - 79	18.9%
80 - 89	44.6%
90 - 99	23.0%
100 - 109	5.4%
110 - 119	1.4%
> 119	0.0%
(Cases) N=	74
mean	85
min size (mm)	54
max size (mm)	110

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	33.3%
120 - 129	66.7%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	3
mean	120
min size (mm)	117
max size (mm)	124

Astraea gibberosa

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	50.0%
50 - 59	50.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	10
mean	49
min size (mm)	42
max size (mm)	54

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	1.5%
35 - 39	1.5%
40 - 44	37.3%
45 - 49	49.3%
50 - 54	10.4%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	67
mean	45
min size (mm)	30
max size (mm)	52

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Webster's Arch

Patiria miniata	
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	5.0%
40 - 49	11.7%
50 - 59	26.7%
60 - 69	40.0%
70 - 79	11.7%
80 - 89	5.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	60
mean	60
min size (mm)	34
max size (mm)	86

Pisaster giganteus	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	10.0%
100 - 119	40.0%
120 - 139	21.7%
140 - 159	13.3%
160 - 179	8.3%
180 - 199	5.0%
200 - 219	1.7%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60
mean	127
min size (mm)	90
max size (mm)	211

Pycnopodia helianthoides	
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	25.0%
280 - 299	37.5%
> 299	37.5%
(Cases) N=	8
mean	298
min size (mm)	267
max size (mm)	327

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	0.0%
10 - 14	2.0%
15 - 19	2.4%
20 - 24	3.9%
25 - 29	10.2%
30 - 34	22.4%
35 - 39	30.7%
40 - 44	21.0%
45 - 49	5.9%
50 - 54	1.0%
55 - 59	0.5%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	205
mean	35
min size (mm)	13
max size (mm)	55

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Webster's Arch

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.5%
10 - 14	7.7%
15 - 19	17.7%
20 - 24	51.8%
25 - 29	17.3%
30 - 34	5.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	220
mean	21
min size (mm)	9
max size (mm)	33

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

Tethya aurantia

<10	0.0%
10 - 19	12.7%
20 - 29	3.6%
30 - 39	9.1%
40 - 49	18.2%
50 - 59	21.8%
60 - 69	3.6%
70 - 79	18.2%
80 - 89	9.1%
90 - 99	0.0%
> 99	3.6%
(Cases) N=	55
mean	53
min size (mm)	13
max size (mm)	113

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	100.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	77
min size (mm)	77
max size (mm)	77

Patiria miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	8.3%
50 - 59	11.7%
60 - 69	13.3%
70 - 79	21.7%
80 - 89	21.7%
90 - 99	21.7%
> 99	1.7%
(Cases) N=	60
mean	75
min size (mm)	40
max size (mm)	106

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	7.7%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	15.4%
70 - 79	23.1%
80 - 89	7.7%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	46.2%
> 119	0.0%
(Cases) N=	13
mean	87
min size (mm)	27
max size (mm)	113

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	14.3%
50 - 59	14.3%
60 - 69	0.0%
70 - 79	14.3%
80 - 89	14.3%
90 - 99	14.3%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	14.3%
130 - 139	14.3%
> 139	0.0%
(Cases) N=	7
mean	88
min size (mm)	47
max size (mm)	135

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	20.0%
100 - 119	50.0%
120 - 139	10.0%
140 - 159	20.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	10
mean	116
min size (mm)	92
max size (mm)	159

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

Lytechinus anamesus	
< 5	0.0%
5 - 9	2.4%
10 - 14	7.3%
15 - 19	19.5%
20 - 24	58.5%
25 - 29	12.2%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	41
mean	21
min size (mm)	8
max size (mm)	27

Strongylocentrotus franciscanus	
< 5	0.4%
5 - 9	0.8%
10 - 14	13.3%
15 - 19	12.5%
20 - 24	9.1%
25 - 29	9.9%
30 - 34	12.2%
35 - 39	13.7%
40 - 44	12.5%
45 - 49	8.0%
50 - 54	4.6%
55 - 59	1.5%
60 - 64	1.5%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	263
mean	31
min size (mm)	3
max size (mm)	63

Strongylocentrotus purpuratus	
< 5	2.4%
5 - 9	5.2%
10 - 14	28.2%
15 - 19	32.4%
20 - 24	23.3%
25 - 29	7.0%
30 - 34	1.5%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	330
mean	17
min size (mm)	2
max size (mm)	33

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Southeast Reef

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	33.3%
40 - 49	33.3%
50 - 59	33.3%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	3
mean	46
min size (mm)	37
max size (mm)	58

Megastraea undosa

<10	0.0%
10 - 19	0.0%
20 - 29	5.9%
30 - 39	5.9%
40 - 49	0.0%
50 - 59	11.8%
60 - 69	5.9%
70 - 79	35.3%
80 - 89	11.8%
90 - 99	5.9%
100 - 109	17.6%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	17
mean	73
min size (mm)	20
max size (mm)	104

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	100.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	2
mean	64
min size (mm)	63
max size (mm)	65

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	20.0%
70 - 79	20.0%
80 - 89	0.0%
90 - 99	40.0%
100 - 109	0.0%
110 - 119	20.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	5
mean	88
min size (mm)	61
max size (mm)	111

Tegula regina

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	6.7%
30 - 34	4.4%
35 - 39	4.4%
40 - 44	13.3%
45 - 49	55.6%
50 - 54	15.6%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	45
(Cases) N=	45
mean	45
min size (mm)	29
max size (mm)	
max size (mm)	54

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	2.1%
60 - 79	2.1%
80 - 99	8.3%
100 - 119	33.3%
120 - 139	22.9%
140 - 159	10.4%
160 - 179	10.4%
180 - 199	8.3%
200 - 219	2.1%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	48
mean	129
min size (mm)	53
max size (mm)	212

2010 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Southeast Reef

Strongylocentrotus franciscanus	
< 5	0.0%
5 - 9	3.9%
10 - 14	10.6%
15 - 19	3.9%
20 - 24	2.1%
25 - 29	1.4%
30 - 34	2.8%
35 - 39	1.1%
40 - 44	1.1%
45 - 49	0.4%
50 - 54	2.8%
55 - 59	3.5%
60 - 64	6.7%
65 - 69	6.0%
70 - 74	10.3%
75 - 79	9.9%
80 - 84	10.3%
85 - 89	7.8%
90 - 94	6.4%
95 - 99	3.5%
100 - 104	3.2%
105 - 109	0.7%
> 109	1.4%
(Cases) N=	282
mean	62
min size (mm)	6
max size (mm)	124

Strongylocentrotus purpuratus	
< 5	0.0%
5 - 9	13.0%
10 - 14	31.8%
15 - 19	17.5%
20 - 24	11.2%
25 - 29	6.3%
30 - 34	5.8%
35 - 39	6.3%
40 - 44	3.6%
45 - 49	3.1%
50 - 54	1.3%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	223
mean	20
min size (mm)	5
max size (mm)	54

Appendix J. *Macrocystis pyrifera* Size Frequency Distributions

2010 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Wyckoff Ledge

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	13.7%	< 6	5.9%
3 - 5	20.6%	6 - 11	17.6%
6 - 8	19.6%	12 - 17	22.5%
9 - 11	13.7%	18 - 23	17.6%
12 - 14	8.8%	24 - 29	15.7%
15 - 17	8.8%	30 - 35	11.8%
18 - 20	6.9%	36 - 41	2.9%
21 - 23	2.0%	42 - 47	3.9%
24 - 26	2.0%	48 - 53	2.0%
27 - 29	1.0%	54 - 59	0.0%
30 - 32	2.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	1.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	102	(Cases) N=	102
mean	10	mean	20
min number	1	min width (cm)	3
max number	37	max width (cm)	53

Santa Rosa Island - Johnson's Lee North

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	2.0%	< 6	0.0%
3 - 5	17.0%	6 - 11	4.0%
6 - 8	25.0%	12 - 17	9.0%
9 - 11	25.0%	18 - 23	18.0%
12 - 14	16.0%	24 - 29	31.0%
15 - 17	9.0%	30 - 35	18.0%
18 - 20	3.0%	36 - 41	11.0%
21 - 23	1.0%	42 - 47	7.0%
24 - 26	1.0%	48 - 53	2.0%
27 - 29	1.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	100	(Cases) N=	100
mean	10	mean	27
min number	1	min width (cm)	6
max number	28	max width (cm)	52

2010 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	5.9%	< 6	1.0%
3 - 5	20.8%	6 - 11	2.0%
6 - 8	16.8%	12 - 17	0.0%
9 - 11	10.9%	18 - 23	1.0%
12 - 14	7.9%	24 - 29	5.0%
15 - 17	10.9%	30 - 35	7.9%
18 - 20	11.9%	36 - 41	11.9%
21 - 23	3.0%	42 - 47	14.9%
24 - 26	3.0%	48 - 53	14.9%
27 - 29	5.0%	54 - 59	16.8%
30 - 32	1.0%	60 - 65	10.9%
33 - 35	1.0%	66 - 71	5.9%
36 - 38	2.0%	72 - 77	6.9%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	1.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	101	(Cases) N=	101
mean	12	mean	49
min number	1	min width (cm)	4
max number	37	max width (cm)	86

Santa Rosa Island - Rodes Reef

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	100.0%	< 6	100.0%
3 - 5	0.0%	6 - 11	0.0%
6 - 8	0.0%	12 - 17	0.0%
9 - 11	0.0%	18 - 23	0.0%
12 - 14	0.0%	24 - 29	0.0%
15 - 17	0.0%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	3	(Cases) N=	3
mean	2	mean	4
min number	2	min width (cm)	1
max number	2	max width (cm)	5

2010 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	27.6%	< 6	2.9%
3 - 5	16.2%	6 - 11	20.0%
6 - 8	8.6%	12 - 17	19.0%
9 - 11	12.4%	18 - 23	12.4%
12 - 14	10.5%	24 - 29	19.0%
15 - 17	11.4%	30 - 35	13.3%
18 - 20	1.9%	36 - 41	6.7%
21 - 23	6.7%	42 - 47	3.8%
24 - 26	1.0%	48 - 53	1.0%
27 - 29	0.0%	54 - 59	1.9%
30 - 32	1.9%	60 - 65	0.0%
33 - 35	1.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	1.0%	> 89	0.0%
(Cases) N=	105	(Cases) N=	105
mean	10	mean	22
min number	1	min width (cm)	4
max number	48	max width (cm)	56

Santa Cruz Island - Fry's Harbor

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	1.7%	< 6	0.0%
3 - 5	6.8%	6 - 11	0.0%
6 - 8	12.0%	12 - 17	4.3%
9 - 11	10.3%	18 - 23	17.9%
12 - 14	18.8%	24 - 29	23.1%
15 - 17	12.0%	30 - 35	26.5%
18 - 20	11.1%	36 - 41	13.7%
21 - 23	8.5%	42 - 47	7.7%
24 - 26	6.0%	48 - 53	4.3%
27 - 29	4.3%	54 - 59	1.7%
30 - 32	2.6%	60 - 65	0.9%
33 - 35	2.6%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.9%	84 - 89	0.0%
> 44	2.6%	> 89	0.0%
(Cases) N=	117	(Cases) N=	117
mean	17	mean	31
min number	2	min width (cm)	14
max number	70	max width (cm)	62

2010 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pelican Bay

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	5.9%	< 6	0.0%
3 - 5	11.9%	6 - 11	2.0%
6 - 8	24.8%	12 - 17	27.7%
9 - 11	29.7%	18 - 23	32.7%
12 - 14	15.8%	24 - 29	25.7%
15 - 17	5.9%	30 - 35	8.9%
18 - 20	3.0%	36 - 41	2.0%
21 - 23	2.0%	42 - 47	1.0%
24 - 26	1.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	101	(Cases) N=	101
mean	10	mean	22
min number	1	min width (cm)	11
max number	25	max width (cm)	42

Santa Cruz Island - Yellow Banks

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	39.4%	< 6	2.9%
3 - 5	14.4%	6 - 11	26.0%
6 - 8	13.5%	12 - 17	21.2%
9 - 11	10.6%	18 - 23	9.6%
12 - 14	4.8%	24 - 29	14.4%
15 - 17	5.8%	30 - 35	8.7%
18 - 20	5.8%	36 - 41	8.7%
21 - 23	1.0%	42 - 47	2.9%
24 - 26	1.0%	48 - 53	3.8%
27 - 29	2.9%	54 - 59	1.0%
30 - 32	1.0%	60 - 65	1.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	104	(Cases) N=	104
mean	8	mean	22
min number	1	min width (cm)	4
max number	32	max width (cm)	63

2010 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Cathedral Cove

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	20.9%	< 6	2.2%
3 - 5	28.1%	6 - 11	35.3%
6 - 8	12.9%	12 - 17	30.2%
9 - 11	9.4%	18 - 23	14.4%
12 - 14	7.2%	24 - 29	12.2%
15 - 17	8.6%	30 - 35	2.9%
18 - 20	3.6%	36 - 41	1.4%
21 - 23	2.2%	42 - 47	1.4%
24 - 26	2.9%	48 - 53	0.0%
27 - 29	2.2%	54 - 59	0.0%
30 - 32	1.4%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.7%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	139	(Cases) N=	139
mean	9	mean	16
min number	1	min width (cm)	5
max number	38	max width (cm)	46

Anacapa Island - Landing Cove

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	39.8%	< 6	6.8%
3 - 5	28.8%	6 - 11	39.0%
6 - 8	8.5%	12 - 17	23.7%
9 - 11	7.6%	18 - 23	14.4%
12 - 14	4.2%	24 - 29	9.3%
15 - 17	4.2%	30 - 35	5.1%
18 - 20	2.5%	36 - 41	0.8%
21 - 23	0.8%	42 - 47	0.0%
24 - 26	1.7%	48 - 53	0.8%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	1.7%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	118	(Cases) N=	118
mean	6	mean	15
min number	1	min width (cm)	3
max number	32	max width (cm)	48

2010 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - SE Sea Lion Rookery

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	82.6%	< 6	34.8%
3 - 5	13.0%	6 - 11	60.9%
6 - 8	0.0%	12 - 17	4.3%
9 - 11	0.0%	18 - 23	0.0%
12 - 14	4.3%	24 - 29	0.0%
15 - 17	0.0%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	23	(Cases) N=	23
mean	3	mean	7
min number	1	min width (cm)	3
max number	12	max width (cm)	12

Santa Barbara Island - Arch Point

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	69.2%	< 6	7.7%
3 - 5	0.0%	6 - 11	61.5%
6 - 8	23.1%	12 - 17	30.8%
9 - 11	7.7%	18 - 23	0.0%
12 - 14	0.0%	24 - 29	0.0%
15 - 17	0.0%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	13	(Cases) N=	13
mean	4	mean	10
min number	2	min width (cm)	3
max number	10	max width (cm)	16

2010 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Cat Canyon

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	88.0%	< 6	25.0%
3 - 5	9.3%	6 - 11	62.0%
6 - 8	1.9%	12 - 17	13.0%
9 - 11	0.9%	18 - 23	0.0%
12 - 14	0.0%	24 - 29	0.0%
15 - 17	0.0%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	108	(Cases) N=	108
mean	2	mean	8
min number	1	min width (cm)	2
max number	9	max width (cm)	17

San Miguel Island - Miracle Mile

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	2.9%	< 6	1.9%
3 - 5	3.9%	6 - 11	2.9%
6 - 8	14.6%	12 - 17	8.7%
9 - 11	14.6%	18 - 23	24.3%
12 - 14	12.6%	24 - 29	20.4%
15 - 17	13.6%	30 - 35	12.6%
18 - 20	7.8%	36 - 41	16.5%
21 - 23	6.8%	42 - 47	5.8%
24 - 26	6.8%	48 - 53	2.9%
27 - 29	3.9%	54 - 59	0.0%
30 - 32	2.9%	60 - 65	0.0%
33 - 35	1.9%	66 - 71	1.9%
36 - 38	2.9%	72 - 77	1.9%
39 - 41	1.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	3.9%	> 89	0.0%
(Cases) N=	103	(Cases) N=	103
mean	17	mean	29
min number	1	min width (cm)	4
max number	54	max width (cm)	76

2010 Macrocystis pyrifera SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Cluster Point

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	2.7%	< 6	0.0%
3 - 5	3.5%	6 - 11	0.9%
6 - 8	8.8%	12 - 17	0.9%
9 - 11	12.4%	18 - 23	2.7%
12 - 14	11.5%	24 - 29	3.5%
15 - 17	16.8%	30 - 35	10.6%
18 - 20	13.3%	36 - 41	11.5%
21 - 23	8.0%	42 - 47	16.8%
24 - 26	7.1%	48 - 53	18.6%
27 - 29	6.2%	54 - 59	10.6%
30 - 32	2.7%	60 - 65	8.0%
33 - 35	2.7%	66 - 71	8.8%
36 - 38	0.9%	72 - 77	2.7%
39 - 41	1.8%	78 - 83	3.5%
42 - 44	0.9%	84 - 89	0.9%
> 44	0.9%	> 89	0.0%
(Cases) N=	113	(Cases) N=	113
mean	18	mean	49
min number	2	min width (cm)	7
max number	68	max width (cm)	87

Santa Rosa Island - Trancion Canyon

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	10.0%	< 6	2.0%
3 - 5	5.0%	6 - 11	7.0%
6 - 8	8.0%	12 - 17	1.0%
9 - 11	5.0%	18 - 23	3.0%
12 - 14	11.0%	24 - 29	9.0%
15 - 17	8.0%	30 - 35	7.0%
18 - 20	6.0%	36 - 41	10.0%
21 - 23	4.0%	42 - 47	13.0%
24 - 26	8.0%	48 - 53	13.0%
27 - 29	5.0%	54 - 59	10.0%
30 - 32	8.0%	60 - 65	8.0%
33 - 35	9.0%	66 - 71	5.0%
36 - 38	7.0%	72 - 77	8.0%
39 - 41	1.0%	78 - 83	2.0%
42 - 44	0.0%	84 - 89	1.0%
> 44	5.0%	> 89	1.0%
(Cases) N=	100	(Cases) N=	100
mean	21	mean	46
min number	1	min width (cm)	3
max number	64	max width (cm)	110

2010 Macrocystis pyrifera SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Chickasaw

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	2.0%	< 6	0.0%
3 - 5	6.0%	6 - 11	0.0%
6 - 8	10.0%	12 - 17	2.0%
9 - 11	13.0%	18 - 23	7.0%
12 - 14	12.0%	24 - 29	15.0%
15 - 17	17.0%	30 - 35	26.0%
18 - 20	15.0%	36 - 41	18.0%
21 - 23	3.0%	42 - 47	18.0%
24 - 26	6.0%	48 - 53	8.0%
27 - 29	5.0%	54 - 59	4.0%
30 - 32	5.0%	60 - 65	0.0%
33 - 35	3.0%	66 - 71	2.0%
36 - 38	3.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	100	(Cases) N=	100
mean	17	mean	37
min number	1	min width (cm)	16
max number	37	max width (cm)	70

Santa Rosa Island - South Point

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	1.0%	< 6	0.0%
3 - 5	8.6%	6 - 11	1.0%
6 - 8	8.6%	12 - 17	3.8%
9 - 11	6.7%	18 - 23	11.4%
12 - 14	11.4%	24 - 29	4.8%
15 - 17	19.0%	30 - 35	18.1%
18 - 20	5.7%	36 - 41	21.0%
21 - 23	7.6%	42 - 47	10.5%
24 - 26	13.3%	48 - 53	16.2%
27 - 29	3.8%	54 - 59	7.6%
30 - 32	3.8%	60 - 65	1.0%
33 - 35	2.9%	66 - 71	1.0%
36 - 38	1.9%	72 - 77	2.9%
39 - 41	1.9%	78 - 83	0.0%
42 - 44	1.0%	84 - 89	1.0%
> 44	2.9%	> 89	0.0%
(Cases) N=	105	(Cases) N=	105
mean	19	mean	40
min number	2	min width (cm)	11
max number	48	max width (cm)	89

2010 Macrocystis pyrifera SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Potato Pasture

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	39.0%	< 6	5.0%
3 - 5	38.0%	6 - 11	42.0%
6 - 8	18.0%	12 - 17	32.0%
9 - 11	3.0%	18 - 23	19.0%
12 - 14	2.0%	24 - 29	2.0%
15 - 17	0.0%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	100	(Cases) N=	100
mean	4	mean	13
min number	1	min width (cm)	4
max number	13	max width (cm)	26

Santa Cruz Island - Cavern Point

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	73.8%	< 6	3.3%
3 - 5	23.0%	6 - 11	49.2%
6 - 8	1.6%	12 - 17	39.3%
9 - 11	0.0%	18 - 23	4.9%
12 - 14	0.0%	24 - 29	3.3%
15 - 17	1.6%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	61	(Cases) N=	61
mean	3	mean	12
min number	1	min width (cm)	5
max number	15	max width (cm)	29

2010 Macrocystis pyrifera SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	36.0%	< 6	9.3%
3 - 5	30.0%	6 - 11	32.7%
6 - 8	7.3%	12 - 17	22.0%
9 - 11	6.7%	18 - 23	12.0%
12 - 14	6.7%	24 - 29	10.0%
15 - 17	4.0%	30 - 35	8.0%
18 - 20	3.3%	36 - 41	3.3%
21 - 23	1.3%	42 - 47	2.0%
24 - 26	2.0%	48 - 53	0.7%
27 - 29	1.3%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.7%	66 - 71	0.0%
36 - 38	0.7%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	150	(Cases) N=	150
mean	7	mean	16
min number	1	min width (cm)	3
max number	36	max width (cm)	48

Anacapa Island - Black Sea Bass Reef

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera* Ad.(>1m) holdfast diameters	
< 3	52.9%	< 6	28.8%
3 - 5	21.2%	6 - 11	38.5%
6 - 8	6.7%	12 - 17	13.5%
9 - 11	6.7%	18 - 23	9.6%
12 - 14	4.8%	24 - 29	5.8%
15 - 17	1.0%	30 - 35	1.0%
18 - 20	0.0%	36 - 41	1.9%
21 - 23	4.8%	42 - 47	0.0%
24 - 26	1.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	1.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	1.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	104	(Cases) N=	104
mean	5	mean	11
min number	1	min width (cm)	2
max number	34	max width (cm)	59

2010 Macrocystis pyrifera SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	78.6%	< 6	16.5%
3 - 5	17.5%	6 - 11	59.2%
6 - 8	2.9%	12 - 17	20.4%
9 - 11	0.0%	18 - 23	2.9%
12 - 14	0.0%	24 - 29	1.0%
15 - 17	0.0%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	1.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	103	(Cases) N=	103
mean	3	mean	9
min number	1	min width (cm)	3
max number	22	max width (cm)	26

Santa Barbara Island - Southeast Reef

***Macrocystis pyrifera* Ad.(>1m) number of stipes**		***Macrocystis pyrifera* Ad.(>1m) holdfast diameters**	
< 3	29.3%	< 6	4.1%
3 - 5	13.6%	6 - 11	31.3%
6 - 8	12.2%	12 - 17	13.6%
9 - 11	13.6%	18 - 23	13.6%
12 - 14	4.8%	24 - 29	15.0%
15 - 17	10.9%	30 - 35	11.6%
18 - 20	8.8%	36 - 41	6.1%
21 - 23	2.7%	42 - 47	4.1%
24 - 26	1.4%	48 - 53	0.0%
27 - 29	1.4%	54 - 59	0.7%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.7%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.7%	> 89	0.0%
(Cases) N=	147	(Cases) N=	147
mean	9	mean	20
min number	1	min width (cm)	2
max number	46	max width (cm)	57

Appendix K. Gorgonian/*Stylaster californica* Size Frequency Distributions

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

Lophogorgia chilensis heights		*Lophogorgia chilensis* widths	
< 5	0.0%	< 5	0.0%
5 - 8	1.6%	5 - 8	1.6%
9 - 12	0.0%	9 - 12	0.0%
13 - 16	0.0%	13 - 16	1.6%
17 - 20	0.0%	17 - 20	3.2%
21 - 24	0.0%	21 - 24	4.8%
25 - 28	0.0%	24 - 28	3.2%
29 - 32	6.3%	29 - 32	6.3%
33 - 36	14.3%	33 - 36	6.3%
37 - 40	9.5%	37 - 40	4.8%
41 - 44	11.1%	41 - 44	6.3%
45 - 48	7.9%	45 - 48	3.2%
49 - 52	1.6%	49 - 52	12.7%
53 - 56	12.7%	53 - 56	11.1%
57 - 60	7.9%	57 - 60	4.8%
61 - 64	11.1%	61 - 64	6.3%
65 - 68	7.9%	65 - 68	7.9%
69 - 72	1.6%	69 - 72	1.6%
73 - 76	1.6%	73 - 76	1.6%
77 - 80	3.2%	77 - 80	1.6%
81 - 84	1.6%	81 - 84	7.9%
85 - 88	0.0%	85 - 88	1.6%
89 - 92	0.0%	89 - 92	0.0%
93 - 96	0.0%	93 - 96	1.6%
97 - 100	0.0%	97 - 100	0.0%
> 100	0.0%	> 100	0.0%
(Cases) N=	63	(Cases) N=	63
mean	50	mean	50
min height (cm)	6	min width (cm)	5
max height (cm)	81	max width (cm)	94

Santa Cruz Island - Pelican Bay

Lophogorgia chilensis heights		*Lophogorgia chilensis* widths	
< 5	0.0%	< 5	6.7%
5 - 8	4.0%	5 - 8	5.3%
9 - 12	5.3%	9 - 12	4.0%
13 - 16	1.3%	13 - 16	4.0%
17 - 20	2.7%	17 - 20	10.7%
21 - 24	6.7%	21 - 24	8.0%
25 - 28	13.3%	24 - 28	8.0%
29 - 32	9.3%	29 - 32	4.0%
33 - 36	5.3%	33 - 36	6.7%
37 - 40	5.3%	37 - 40	8.0%
41 - 44	16.0%	41 - 44	9.3%
45 - 48	12.0%	45 - 48	4.0%
49 - 52	5.3%	49 - 52	4.0%
53 - 56	4.0%	53 - 56	2.7%
57 - 60	2.7%	57 - 60	9.3%
61 - 64	4.0%	61 - 64	1.3%
65 - 68	2.7%	65 - 68	2.7%
69 - 72	0.0%	69 - 72	1.3%
73 - 76	0.0%	73 - 76	0.0%
77 - 80	0.0%	77 - 80	0.0%
81 - 84	0.0%	81 - 84	0.0%
85 - 88	0.0%	85 - 88	0.0%
89 - 92	0.0%	89 - 92	0.0%
93 - 96	0.0%	93 - 96	0.0%
97 - 100	0.0%	97 - 100	0.0%
> 100	0.0%	> 100	0.0%
(Cases) N=	75	(Cases) N=	75
mean	36	mean	32
min height (cm)	5	min width (cm)	1
max height (cm)	66	max width (cm)	70

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

Lophogorgia chilensis heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	2.4%
17 - 20	7.3%
21 - 24	12.2%
25 - 28	9.8%
29 - 32	17.1%
33 - 36	14.6%
37 - 40	17.1%
41 - 44	2.4%
45 - 48	2.4%
49 - 52	2.4%
53 - 56	7.3%
57 - 60	2.4%
61 - 64	0.0%
65 - 68	2.4%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	41
mean	34
min height (cm)	15
max height (cm)	65

Lophogorgia chilensis widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	7.3%
13 - 16	12.2%
17 - 20	24.4%
21 - 24	14.6%
24 - 28	19.5%
29 - 32	7.3%
33 - 36	4.9%
37 - 40	0.0%
41 - 44	2.4%
45 - 48	4.9%
49 - 52	0.0%
53 - 56	2.4%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	41
mean	24
min width (cm)	10
max width (cm)	56

Muricea californica heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	10.7%
29 - 32	17.9%
33 - 36	7.1%
37 - 40	0.0%
41 - 44	17.9%
45 - 48	14.3%
49 - 52	0.0%
53 - 56	7.1%
57 - 60	14.3%
61 - 64	3.6%
65 - 68	3.6%
69 - 72	3.6%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	28
mean	44
min height (cm)	25
max height (cm)	71

Muricea californica widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	3.6%
33 - 36	0.0%
37 - 40	3.6%
41 - 44	10.7%
45 - 48	7.1%
49 - 52	10.7%
53 - 56	7.1%
57 - 60	7.1%
61 - 64	3.6%
65 - 68	0.0%
69 - 72	7.1%
73 - 76	3.6%
77 - 80	7.1%
81 - 84	7.1%
85 - 88	3.6%
89 - 92	3.6%
93 - 96	10.7%
97 - 100	3.6%
> 100	0.0%
(Cases) N=	28
mean	66
min width (cm)	30
max width (cm)	97

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Admiral's Reef

Lophogorgia chilensis heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	1.9%
13 - 16	0.0%
17 - 20	3.8%
21 - 24	3.8%
25 - 28	0.0%
29 - 32	7.5%
33 - 36	3.8%
37 - 40	7.5%
41 - 44	7.5%
45 - 48	9.4%
49 - 52	7.5%
53 - 56	9.4%
57 - 60	9.4%
61 - 64	7.5%
65 - 68	7.5%
69 - 72	0.0%
73 - 76	3.8%
77 - 80	1.9%
81 - 84	3.8%
85 - 88	1.9%
89 - 92	0.0%
93 - 96	1.9%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	53
mean	51
min height (cm)	10
max height (cm)	95

Lophogorgia chilensis widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	1.9%
13 - 16	1.9%
17 - 20	1.9%
21 - 24	1.9%
24 - 28	3.8%
29 - 32	7.5%
33 - 36	9.4%
37 - 40	5.7%
41 - 44	1.9%
45 - 48	3.8%
49 - 52	7.5%
53 - 56	7.5%
57 - 60	3.8%
61 - 64	1.9%
65 - 68	3.8%
69 - 72	7.5%
73 - 76	3.8%
77 - 80	7.5%
81 - 84	3.8%
85 - 88	0.0%
89 - 92	5.7%
93 - 96	1.9%
97 - 100	0.0%
> 100	5.7%
(Cases) N=	53
mean	57
min width (cm)	10
max width (cm)	124

Muricea fruticosa heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	50.0%
25 - 28	50.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	2
mean	26
min height (cm)	24
max height (cm)	28

Muricea fruticosa widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	50.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	50.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	2
mean	53
min width (cm)	42
max width (cm)	64

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	5.0%
25 - 28	15.0%
29 - 32	0.0%
33 - 36	5.0%
37 - 40	5.0%
41 - 44	10.0%
45 - 48	20.0%
49 - 52	5.0%
53 - 56	10.0%
57 - 60	5.0%
61 - 64	5.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	5.0%
77 - 80	5.0%
81 - 84	5.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	20
mean	48
min height (cm)	21
max height (cm)	83

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	5.0%
29 - 32	0.0%
33 - 36	5.0%
37 - 40	5.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	5.0%
57 - 60	10.0%
61 - 64	0.0%
65 - 68	5.0%
69 - 72	5.0%
73 - 76	10.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	15.0%
89 - 92	0.0%
93 - 96	10.0%
97 - 100	10.0%
> 100	15.0%
(Cases) N=	20
mean	78
min width (cm)	27
max width (cm)	132

Santa Barbara Island - SE Sea Lion Rookery

Lophogorgia chilensis heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	0.0%
29 - 32	0.0%
33 - 36	6.7%
37 - 40	20.0%
41 - 44	16.7%
45 - 48	30.0%
49 - 52	10.0%
53 - 56	13.3%
57 - 60	3.3%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	30
mean	46
min height (cm)	35
max height (cm)	58

Lophogorgia chilensis widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	16.7%
29 - 32	13.3%
33 - 36	20.0%
37 - 40	6.7%
41 - 44	20.0%
45 - 48	6.7%
49 - 52	3.3%
53 - 56	3.3%
57 - 60	6.7%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	3.3%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	30
mean	40
min width (cm)	25
max width (cm)	80

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Muricea fruticosa heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	66.7%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	33.3%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	3
mean	27
min height (cm)	15
max height (cm)	51

Muricea fruticosa widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	66.7%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	33.3%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	3
mean	42
min width (cm)	21
max width (cm)	82

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	16.7%
41 - 44	0.0%
45 - 48	16.7%
49 - 52	0.0%
53 - 56	16.7%
57 - 60	33.3%
61 - 64	0.0%
65 - 68	16.7%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	6
mean	55
min height (cm)	40
max height (cm)	66

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	16.7%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	16.7%
65 - 68	16.7%
69 - 72	0.0%
73 - 76	16.7%
77 - 80	16.7%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	16.7%
(Cases) N=	6
mean	75
min width (cm)	41
max width (cm)	126

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Devil's Peak Member

Lophogorgia chilensis heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	1.5%
13 - 16	0.0%
17 - 20	4.4%
21 - 24	4.4%
25 - 28	7.4%
29 - 32	11.8%
33 - 36	13.2%
37 - 40	10.3%
41 - 44	8.8%
45 - 48	13.2%
49 - 52	7.4%
53 - 56	4.4%
57 - 60	2.9%
61 - 64	2.9%
65 - 68	2.9%
69 - 72	1.5%
73 - 76	0.0%
77 - 80	1.5%
81 - 84	1.5%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	68
mean	41
min height (cm)	12
max height (cm)	81

Lophogorgia chilensis widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	1.5%
13 - 16	1.5%
17 - 20	4.4%
21 - 24	11.8%
24 - 28	8.8%
29 - 32	10.3%
33 - 36	8.8%
37 - 40	10.3%
41 - 44	16.2%
45 - 48	7.4%
49 - 52	0.0%
53 - 56	7.4%
57 - 60	2.9%
61 - 64	1.5%
65 - 68	1.5%
69 - 72	2.9%
73 - 76	1.5%
77 - 80	1.5%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	68
mean	39
min width (cm)	9
max width (cm)	80

Muricea fruticosa heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	33.3%
17 - 20	33.3%
21 - 24	0.0%
25 - 28	0.0%
29 - 32	33.3%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	3
mean	21
min height (cm)	15
max height (cm)	30

Muricea fruticosa widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	66.7%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	33.3%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	3
mean	32
min width (cm)	21
max width (cm)	54

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	6.7%
17 - 20	6.7%
21 - 24	13.3%
25 - 28	13.3%
29 - 32	6.7%
33 - 36	0.0%
37 - 40	13.3%
41 - 44	6.7%
45 - 48	6.7%
49 - 52	0.0%
53 - 56	6.7%
57 - 60	6.7%
61 - 64	6.7%
65 - 68	6.7%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	15
mean	38
min height (cm)	16
max height (cm)	65

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	6.7%
17 - 20	0.0%
21 - 24	6.7%
24 - 28	13.3%
29 - 32	6.7%
33 - 36	0.0%
37 - 40	6.7%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	6.7%
57 - 60	6.7%
61 - 64	6.7%
65 - 68	6.7%
69 - 72	6.7%
73 - 76	0.0%
77 - 80	6.7%
81 - 84	0.0%
85 - 88	6.7%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	6.7%
> 100	6.7%
(Cases) N=	15
mean	57
min width (cm)	15
max width (cm)	114

Santa Cruz Island - Little Scorpion

Lophogorgia chilensis heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	2.5%
25 - 28	5.0%
29 - 32	2.5%
33 - 36	15.0%
37 - 40	17.5%
41 - 44	12.5%
45 - 48	10.0%
49 - 52	15.0%
53 - 56	15.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	2.5%
69 - 72	2.5%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	40
mean	43
min height (cm)	24
max height (cm)	70

Lophogorgia chilensis widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	7.5%
21 - 24	2.5%
24 - 28	15.0%
29 - 32	7.5%
33 - 36	10.0%
37 - 40	7.5%
41 - 44	20.0%
45 - 48	5.0%
49 - 52	5.0%
53 - 56	7.5%
57 - 60	5.0%
61 - 64	2.5%
65 - 68	2.5%
69 - 72	2.5%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	40
mean	40
min width (cm)	17
max width (cm)	70

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pedro Reef

Lophogorgia chilensis heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	1.2%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	1.2%
29 - 32	2.5%
33 - 36	11.1%
37 - 40	18.5%
41 - 44	22.2%
45 - 48	11.1%
49 - 52	11.1%
53 - 56	7.4%
57 - 60	4.9%
61 - 64	2.5%
65 - 68	1.2%
69 - 72	0.0%
73 - 76	3.7%
77 - 80	0.0%
81 - 84	1.2%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	81
mean	45
min height (cm)	11
max height (cm)	81

Lophogorgia chilensis widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	1.2%
13 - 16	0.0%
17 - 20	1.2%
21 - 24	7.4%
24 - 28	7.4%
29 - 32	4.9%
33 - 36	14.8%
37 - 40	16.0%
41 - 44	8.6%
45 - 48	9.9%
49 - 52	4.9%
53 - 56	9.9%
57 - 60	1.2%
61 - 64	2.5%
65 - 68	2.5%
69 - 72	3.7%
73 - 76	0.0%
77 - 80	2.5%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	1.2%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	81
mean	42
min width (cm)	9
max width (cm)	93

Muricea californica heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	9.1%
29 - 32	9.1%
33 - 36	9.1%
37 - 40	18.2%
41 - 44	0.0%
45 - 48	27.3%
49 - 52	0.0%
53 - 56	9.1%
57 - 60	18.2%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	11
mean	44
min height (cm)	27
max height (cm)	59

Muricea californica widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	9.1%
41 - 44	9.1%
45 - 48	9.1%
49 - 52	0.0%
53 - 56	9.1%
57 - 60	0.0%
61 - 64	9.1%
65 - 68	9.1%
69 - 72	27.3%
73 - 76	0.0%
77 - 80	9.1%
81 - 84	0.0%
85 - 88	9.1%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	11
mean	62
min width (cm)	38
max width (cm)	85

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

Lophogorgia chilensis heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	2.0%
17 - 20	3.9%
21 - 24	5.9%
25 - 28	2.0%
29 - 32	15.7%
33 - 36	13.7%
37 - 40	19.6%
41 - 44	11.8%
45 - 48	2.0%
49 - 52	7.8%
53 - 56	11.8%
57 - 60	2.0%
61 - 64	0.0%
65 - 68	2.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	51
mean	39
min height (cm)	16
max height (cm)	66

Lophogorgia chilensis widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	3.9%
13 - 16	3.9%
17 - 20	7.8%
21 - 24	9.8%
24 - 28	15.7%
29 - 32	5.9%
33 - 36	5.9%
37 - 40	3.9%
41 - 44	19.6%
45 - 48	2.0%
49 - 52	7.8%
53 - 56	5.9%
57 - 60	0.0%
61 - 64	2.0%
65 - 68	2.0%
69 - 72	2.0%
73 - 76	0.0%
77 - 80	2.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	51
mean	36
min width (cm)	11
max width (cm)	78

Muricea californica heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	4.0%
21 - 24	8.0%
25 - 28	0.0%
29 - 32	0.0%
33 - 36	20.0%
37 - 40	24.0%
41 - 44	12.0%
45 - 48	16.0%
49 - 52	8.0%
53 - 56	8.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	25
mean	40
min height (cm)	18
max height (cm)	54

Muricea californica widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	4.0%
29 - 32	8.0%
33 - 36	4.0%
37 - 40	4.0%
41 - 44	8.0%
45 - 48	12.0%
49 - 52	12.0%
53 - 56	0.0%
57 - 60	8.0%
61 - 64	4.0%
65 - 68	4.0%
69 - 72	8.0%
73 - 76	4.0%
77 - 80	16.0%
81 - 84	4.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	25
mean	56
min width (cm)	27
max width (cm)	84

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

Lophogorgia chilensis heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	11.1%
29 - 32	0.0%
33 - 36	11.1%
37 - 40	16.7%
41 - 44	5.6%
45 - 48	27.8%
49 - 52	11.1%
53 - 56	16.7%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	18
mean	43
min height (cm)	25
max height (cm)	56

Lophogorgia chilensis widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	11.1%
29 - 32	5.6%
33 - 36	5.6%
37 - 40	11.1%
41 - 44	22.2%
45 - 48	27.8%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	11.1%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	5.6%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	18
mean	44
min width (cm)	26
max width (cm)	72

Muricea fruticosa heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	33.3%
21 - 24	0.0%
25 - 28	66.7%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	3
mean	23
min height (cm)	19
max height (cm)	26

Muricea fruticosa widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	33.3%
33 - 36	0.0%
37 - 40	33.3%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	33.3%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	3
mean	40
min width (cm)	29
max width (cm)	53

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	3.4%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	6.9%
25 - 28	0.0%
29 - 32	20.7%
33 - 36	13.8%
37 - 40	20.7%
41 - 44	6.9%
45 - 48	17.2%
49 - 52	0.0%
53 - 56	6.9%
57 - 60	3.4%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	29
mean	37
min height (cm)	9
max height (cm)	57

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	3.4%
13 - 16	0.0%
17 - 20	3.4%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	3.4%
33 - 36	3.4%
37 - 40	6.9%
41 - 44	6.9%
45 - 48	6.9%
49 - 52	3.4%
53 - 56	0.0%
57 - 60	3.4%
61 - 64	6.9%
65 - 68	6.9%
69 - 72	3.4%
73 - 76	3.4%
77 - 80	6.9%
81 - 84	17.2%
85 - 88	0.0%
89 - 92	3.4%
93 - 96	0.0%
97 - 100	3.4%
> 100	6.9%
(Cases) N=	29
mean	63
min width (cm)	10
max width (cm)	112

Anacapa Island - Lighthouse

Lophogorgia chilensis heights

< 5	0.0%
5 - 8	2.0%
9 - 12	0.0%
13 - 16	2.0%
17 - 20	9.8%
21 - 24	9.8%
25 - 28	17.6%
29 - 32	13.7%
33 - 36	21.6%
37 - 40	5.9%
41 - 44	11.8%
45 - 48	3.9%
49 - 52	2.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	51
mean	31
min height (cm)	8
max height (cm)	50

Lophogorgia chilensis widths

< 5	0.0%
5 - 8	5.9%
9 - 12	5.9%
13 - 16	5.9%
17 - 20	9.8%
21 - 24	21.6%
24 - 28	5.9%
29 - 32	7.8%
33 - 36	17.6%
37 - 40	5.9%
41 - 44	9.8%
45 - 48	2.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	2.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	51
mean	27
min width (cm)	5
max width (cm)	59

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Muricea fruticosa heights

< 5	0.0%
5 - 8	0.0%
9 - 12	40.0%
13 - 16	20.0%
17 - 20	20.0%
21 - 24	0.0%
25 - 28	0.0%
29 - 32	20.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	5
mean	17
min height (cm)	10
max height (cm)	29

Muricea fruticosa widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	20.0%
24 - 28	40.0%
29 - 32	20.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	20.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	5
mean	30
min width (cm)	22
max width (cm)	44

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	9.8%
21 - 24	9.8%
25 - 28	15.7%
29 - 32	17.6%
33 - 36	11.8%
37 - 40	13.7%
41 - 44	7.8%
45 - 48	3.9%
49 - 52	5.9%
53 - 56	0.0%
57 - 60	2.0%
61 - 64	0.0%
65 - 68	2.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	51
mean	33
min height (cm)	17
max height (cm)	68

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	2.0%
17 - 20	2.0%
21 - 24	0.0%
24 - 28	3.9%
29 - 32	2.0%
33 - 36	5.9%
37 - 40	7.8%
41 - 44	9.8%
45 - 48	3.9%
49 - 52	3.9%
53 - 56	7.8%
57 - 60	2.0%
61 - 64	11.8%
65 - 68	11.8%
69 - 72	3.9%
73 - 76	7.8%
77 - 80	2.0%
81 - 84	2.0%
85 - 88	5.9%
89 - 92	2.0%
93 - 96	0.0%
97 - 100	2.0%
> 100	0.0%
(Cases) N=	51
mean	57
min width (cm)	16
max width (cm)	97

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

Lophogorgia chilensis heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	4.4%
29 - 32	8.8%
33 - 36	17.6%
37 - 40	29.4%
41 - 44	17.6%
45 - 48	13.2%
49 - 52	5.9%
53 - 56	1.5%
57 - 60	0.0%
61 - 64	1.5%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	68
mean	40
min height (cm)	25
max height (cm)	63

Lophogorgia chilensis widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	1.5%
21 - 24	1.5%
24 - 28	8.8%
29 - 32	7.4%
33 - 36	16.2%
37 - 40	35.3%
41 - 44	5.9%
45 - 48	4.4%
49 - 52	8.8%
53 - 56	5.9%
57 - 60	1.5%
61 - 64	1.5%
65 - 68	1.5%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	68
mean	39
min width (cm)	19
max width (cm)	65

Muricea fruticosa heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	33.3%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	33.3%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	33.3%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	3
mean	30
min height (cm)	14
max height (cm)	49

Muricea fruticosa widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	33.3%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	33.3%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	33.3%
(Cases) N=	3
mean	64
min width (cm)	30
max width (cm)	101

2010 GORGONIAN/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Muricea californica heights	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	2.4%
21 - 24	4.9%
25 - 28	2.4%
29 - 32	14.6%
33 - 36	7.3%
37 - 40	19.5%
41 - 44	17.1%
45 - 48	19.5%
49 - 52	9.8%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	2.4%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	41
mean	40
min height (cm)	19
max height (cm)	64

Muricea californica widths	
< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	2.4%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	2.4%
37 - 40	0.0%
41 - 44	2.4%
45 - 48	0.0%
49 - 52	2.4%
53 - 56	2.4%
57 - 60	2.4%
61 - 64	2.4%
65 - 68	7.3%
69 - 72	4.9%
73 - 76	12.2%
77 - 80	9.8%
81 - 84	14.6%
85 - 88	12.2%
89 - 92	9.8%
93 - 96	2.4%
97 - 100	7.3%
> 100	2.4%
(Cases) N=	41
mean	77
min width (cm)	22
max width (cm)	110

Appendix L. Artificial Recruitment Modules Size Frequencies Distributions

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

Haliotis rufescens

Number of ARMs	9
<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	100.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	1
mean	108
min size (mm)	108
max size (mm)	108

Cypraea spadicea

Number of ARMs	9
<30	0.0%
30 - 32	0.0%
33 - 35	0.0%
36 - 38	1.8%
39 - 41	3.5%
42 - 44	17.5%
45 - 47	26.3%
48 - 50	24.6%
51 - 53	17.5%
54 - 56	8.8%
>56	0.0%
(Cases) N=	57
mean	48
min size (mm)	38
max size (mm)	54

Megathura crenulata

Number of ARMs	9
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	100.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	54
min size (mm)	54
max size (mm)	54

Crassedoma giganteum

Number of ARMs	9
<10	10.0%
10 - 19	10.0%
20 - 29	0.0%
30 - 39	10.0%
40 - 49	10.0%
50 - 59	10.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	10.0%
100 - 109	0.0%
110 - 119	30.0%
120 - 129	10.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	10
mean	70
min size (mm)	9
max size (mm)	128

Patiria miniata

Number of ARMs	9
<10	0.0%
10 - 19	3.1%
20 - 29	25.0%
30 - 39	28.1%
40 - 49	6.3%
50 - 59	21.9%
60 - 69	9.4%
70 - 79	6.3%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	32
mean	42
min size (mm)	10
max size (mm)	75

Pisaster giganteus

Number of ARMs	9
< 20	21.4%
20 - 39	21.4%
40 - 59	46.4%
60 - 79	10.7%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	28
mean	40
min size (mm)	13
max size (mm)	75

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Rosa Island - Johnson's Lee North

Pycnopodia helianthoides	
Number of ARMs	**9**
< 20	0.0%
20 - 39	12.5%
40 - 59	12.5%
60 - 79	25.0%
80 - 99	12.5%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	25.0%
160 - 179	12.5%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	8
mean	94
min size (mm)	27
max size (mm)	165

Strongylocentrotus franciscanus	
Number of ARMs	**9**
< 5	0.0%
5 - 9	0.0%
10 - 14	0.3%
15 - 19	1.4%
20 - 24	5.7%
25 - 29	7.4%
30 - 34	8.3%
35 - 39	8.8%
40 - 44	7.4%
45 - 49	3.7%
50 - 54	3.4%
55 - 59	6.0%
60 - 64	4.8%
65 - 69	7.4%
70 - 74	7.7%
75 - 79	8.8%
80 - 84	5.7%
85 - 89	4.0%
90 - 94	4.0%
95 - 99	3.1%
100 - 104	1.1%
105 - 109	0.3%
> 109	0.6%
(Cases) N=	351
mean	57
min size (mm)	12
max size (mm)	114

Strongylocentrotus purpuratus	
Number of ARMs	**9**
< 5	0.0%
5 - 9	0.8%
10 - 14	5.0%
15 - 19	12.4%
20 - 24	11.6%
25 - 29	22.3%
30 - 34	14.9%
35 - 39	12.4%
40 - 44	9.9%
45 - 49	5.0%
50 - 54	2.5%
55 - 59	1.7%
60 - 64	0.8%
65 - 69	0.8%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	121
mean	30
min size (mm)	8
max size (mm)	68

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Rosa Island - Johnson's Lee South

Haliotis rufescens

Number of ARMs	**7**
<25	0.0%
25 - 34	0.0%
35 - 44	100.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	1
mean	37
min size (mm)	37
max size (mm)	37

Cypraea spadicea

Number of ARMs	**7**
<30	0.0%
30 - 32	0.0%
33 - 35	0.0%
36 - 38	0.0%
39 - 41	5.6%
42 - 44	11.1%
45 - 47	38.9%
48 - 50	16.7%
51 - 53	27.8%
54 - 56	0.0%
>56	0.0%
(Cases) N=	18
mean	48
min size (mm)	41
max size (mm)	53

Megathura crenulata

Number of ARMs	**7**
<10	0.0%
10 - 19	0.0%
20 - 29	20.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	40.0%
60 - 69	20.0%
70 - 79	20.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	5
mean	54
min size (mm)	25
max size (mm)	70

Crassedoma giganteum

Number of ARMs	**7**
<10	0.0%
10 - 19	10.0%
20 - 29	10.0%
30 - 39	10.0%
40 - 49	10.0%
50 - 59	10.0%
60 - 69	10.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	10.0%
110 - 119	10.0%
120 - 129	10.0%
130 - 139	10.0%
> 139	0.0%
(Cases) N=	10
mean	71
min size (mm)	15
max size (mm)	134

Patiria miniata

Number of ARMs	**7**
<10	2.0%
10 - 19	10.0%
20 - 29	22.0%
30 - 39	16.0%
40 - 49	16.0%
50 - 59	14.0%
60 - 69	14.0%
70 - 79	6.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	50
mean	41
min size (mm)	5
max size (mm)	75

Pisaster giganteus

Number of ARMs	**7**
< 20	0.0%
20 - 39	0.0%
40 - 59	50.0%
60 - 79	40.0%
80 - 99	10.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	10
mean	62
min size (mm)	41
max size (mm)	84

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Rosa Island - Johnson's Lee South

Pycnopodia helianthoides	
Number of ARMs	**7**
< 20	0.0%
20 - 39	0.0%
40 - 59	7.7%
60 - 79	38.5%
80 - 99	30.8%
100 - 119	7.7%
120 - 139	7.7%
140 - 159	0.0%
160 - 179	7.7%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	13
mean	89
min size (mm)	44
max size (mm)	170

Strongylocentrotus franciscanus	
Number of ARMs	**7**
< 5	0.0%
5 - 9	0.0%
10 - 14	1.1%
15 - 19	5.0%
20 - 24	10.3%
25 - 29	6.0%
30 - 34	7.4%
35 - 39	8.2%
40 - 44	5.7%
45 - 49	5.3%
50 - 54	6.4%
55 - 59	4.3%
60 - 64	3.5%
65 - 69	2.8%
70 - 74	4.3%
75 - 79	6.0%
80 - 84	6.4%
85 - 89	5.3%
90 - 94	6.4%
95 - 99	2.1%
100 - 104	2.1%
105 - 109	0.0%
> 109	1.4%
(Cases) N=	282
mean	54
min size (mm)	12
max size (mm)	121

Strongylocentrotus purpuratus	
Number of ARMs	**7**
< 5	0.0%
5 - 9	0.0%
10 - 14	3.5%
15 - 19	3.5%
20 - 24	8.0%
25 - 29	7.1%
30 - 34	9.7%
35 - 39	6.2%
40 - 44	5.3%
45 - 49	11.5%
50 - 54	25.7%
55 - 59	8.0%
60 - 64	6.2%
65 - 69	4.4%
70 - 74	0.9%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	113
mean	43
min size (mm)	13
max size (mm)	71

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Gull Island South

Cypraea spadicea

Number of ARMs	**14**
<30	0.0%
30 - 32	0.6%
33 - 35	1.1%
36 - 38	6.8%
39 - 41	17.0%
42 - 44	28.4%
45 - 47	26.7%
48 - 50	16.5%
51 - 53	2.8%
54 - 56	0.0%
>56	0.0%
(Cases) N=	176
mean	44
min size (mm)	32
max size (mm)	52

Megathura crenulata

Number of ARMs	**14**
<10	0.0%
10 - 19	38.5%
20 - 29	38.5%
30 - 39	15.4%
40 - 49	7.7%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	13
mean	24
min size (mm)	12
max size (mm)	42

Crassedoma giganteum

Number of ARMs	**14**
<10	0.0%
10 - 19	5.6%
20 - 29	16.7%
30 - 39	16.7%
40 - 49	22.2%
50 - 59	5.6%
60 - 69	5.6%
70 - 79	11.1%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	16.7%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	18
mean	54
min size (mm)	15
max size (mm)	118

Patiria miniata

Number of ARMs	**14**
<10	4.4%
10 - 19	49.5%
20 - 29	26.4%
30 - 39	4.4%
40 - 49	5.5%
50 - 59	4.4%
60 - 69	4.4%
70 - 79	1.1%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	91
mean	24
min size (mm)	6
max size (mm)	72

Pisaster giganteus

Number of ARMs	**14**
< 20	14.8%
20 - 39	37.0%
40 - 59	14.8%
60 - 79	11.1%
80 - 99	11.1%
100 - 119	11.1%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	27
mean	49
min size (mm)	11
max size (mm)	110

Pycnopodia helianthoides

Number of ARMs	**14**
< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	100.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	1
mean	177
min size (mm)	177
max size (mm)	177

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Gull Island South

Strongylocentrotus franciscanus	
Number of ARMs	**14**
< 5	0.0%
5 - 9	3.6%
10 - 14	15.1%
15 - 19	11.4%
20 - 24	15.8%
25 - 29	13.2%
30 - 34	7.8%
35 - 39	7.4%
40 - 44	4.4%
45 - 49	2.7%
50 - 54	3.3%
55 - 59	3.6%
60 - 64	2.5%
65 - 69	3.4%
70 - 74	1.1%
75 - 79	2.2%
80 - 84	1.3%
85 - 89	0.5%
90 - 94	0.2%
95 - 99	0.4%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	551
mean	32
min size (mm)	7
max size (mm)	98

Strongylocentrotus purpuratus	
Number of ARMs	**14**
< 5	0.0%
5 - 9	5.3%
10 - 14	4.0%
15 - 19	21.9%
20 - 24	38.7%
25 - 29	17.1%
30 - 34	6.7%
35 - 39	2.9%
40 - 44	0.8%
45 - 49	1.6%
50 - 54	0.5%
55 - 59	0.3%
60 - 64	0.3%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	375
mean	23
min size (mm)	6
max size (mm)	60

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Fry's Harbor

Cypraea spadicea

Number of ARMs	**5**
<30	0.0%
30 - 32	0.0%
33 - 35	5.5%
36 - 38	13.7%
39 - 41	23.3%
42 - 44	28.8%
45 - 47	15.1%
48 - 50	9.6%
51 - 53	2.7%
54 - 56	1.4%
>56	0.0%
(Cases) N=	73
mean	42
min size (mm)	34
max size (mm)	54

Megathura crenulata

Number of ARMs	**5**
<10	0.0%
10 - 19	40.0%
20 - 29	40.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	20.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	5
mean	27
min size (mm)	14
max size (mm)	53

Crassedoma giganteum

Number of ARMs	**5**
<10	0.0%
10 - 19	23.3%
20 - 29	10.0%
30 - 39	0.0%
40 - 49	13.3%
50 - 59	6.7%
60 - 69	16.7%
70 - 79	3.3%
80 - 89	3.3%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	3.3%
120 - 129	6.7%
130 - 139	0.0%
> 139	13.3%
(Cases) N=	30
mean	63
min size (mm)	10
max size (mm)	150

Patiria miniata

Number of ARMs	**5**
<10	4.1%
10 - 19	24.5%
20 - 29	38.8%
30 - 39	22.4%
40 - 49	6.1%
50 - 59	4.1%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	49
mean	26
min size (mm)	7
max size (mm)	56

Pisaster giganteus

Number of ARMs	**5**
< 20	7.6%
20 - 39	62.1%
40 - 59	30.3%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	66
mean	34
min size (mm)	16
max size (mm)	57

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Fry's Harbor

Strongylocentrotus franciscanus	
Number of ARMs	**5**
< 5	0.0%
5 - 9	4.4%
10 - 14	10.6%
15 - 19	4.4%
20 - 24	6.2%
25 - 29	7.1%
30 - 34	5.3%
35 - 39	6.2%
40 - 44	7.1%
45 - 49	2.7%
50 - 54	5.3%
55 - 59	4.4%
60 - 64	7.1%
65 - 69	4.4%
70 - 74	2.7%
75 - 79	8.0%
80 - 84	7.1%
85 - 89	3.5%
90 - 94	3.5%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	113
mean	47
min size (mm)	8
max size (mm)	94

Strongylocentrotus purpuratus	
Number of ARMs	**5**
< 5	0.0%
5 - 9	4.2%
10 - 14	4.2%
15 - 19	14.6%
20 - 24	20.8%
25 - 29	8.3%
30 - 34	18.8%
35 - 39	10.4%
40 - 44	14.6%
45 - 49	4.2%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	48
mean	28
min size (mm)	5
max size (mm)	46

Centrostephanus coronatus	
Number of ARMs	**5**
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	100.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	1
mean	25
min size (mm)	25
max size (mm)	25

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Pelican Bay

Cypraea spadicea

Number of ARMs	6
<30	0.0%
30 - 32	0.0%
33 - 35	0.0%
36 - 38	3.6%
39 - 41	25.0%
42 - 44	32.1%
45 - 47	25.0%
48 - 50	14.3%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	28
mean	43
min size (mm)	38
max size (mm)	50

Megathura crenulata

Number of ARMs	6
<10	0.0%
10 - 19	50.0%
20 - 29	50.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	2
mean	21
min size (mm)	12
max size (mm)	29

Crassedoma giganteum

Number of ARMs	6
<10	0.0%
10 - 19	13.3%
20 - 29	13.3%
30 - 39	6.7%
40 - 49	10.0%
50 - 59	6.7%
60 - 69	6.7%
70 - 79	6.7%
80 - 89	3.3%
90 - 99	3.3%
100 - 109	0.0%
110 - 119	6.7%
120 - 129	6.7%
130 - 139	10.0%
> 139	6.7%
(Cases) N=	30
mean	71
min size (mm)	12
max size (mm)	164

Tegula regina

Number of ARMs	6
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	100.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	1
mean	28
min size (mm)	28
max size (mm)	28

Patiria miniata

Number of ARMs	6
<10	3.3%
10 - 19	36.4%
20 - 29	48.8%
30 - 39	9.9%
40 - 49	1.7%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	121
mean	21
min size (mm)	6
max size (mm)	44

Pisaster giganteus

Number of ARMs	6
< 20	1.6%
20 - 39	70.3%
40 - 59	26.6%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	1.6%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	64
mean	36
min size (mm)	16
max size (mm)	128

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Pelican Bay

Pycnopodia helianthoides	
Number of ARMs	**6**
< 20	0.0%
20 - 39	100.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	1
mean	26
min size (mm)	26
max size (mm)	26

Strongylocentrotus franciscanus	
Number of ARMs	**6**
< 5	0.0%
5 - 9	1.4%
10 - 14	1.4%
15 - 19	4.1%
20 - 24	8.8%
25 - 29	17.0%
30 - 34	13.6%
35 - 39	6.1%
40 - 44	7.5%
45 - 49	4.8%
50 - 54	4.8%
55 - 59	7.5%
60 - 64	10.9%
65 - 69	6.8%
70 - 74	4.8%
75 - 79	0.0%
80 - 84	0.7%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	147
mean	42
min size (mm)	8
max size (mm)	80

Strongylocentrotus purpuratus	
Number of ARMs	**6**
< 5	0.0%
5 - 9	1.4%
10 - 14	0.8%
15 - 19	0.6%
20 - 24	9.6%
25 - 29	31.0%
30 - 34	25.1%
35 - 39	18.6%
40 - 44	7.6%
45 - 49	2.5%
50 - 54	2.0%
55 - 59	0.8%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	355
mean	31
min size (mm)	7
max size (mm)	59

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Scorpion Anchorage

Cypraea spadicea

Number of ARMs	**7**
<30	4.1%
30 - 32	10.2%
33 - 35	16.3%
36 - 38	24.5%
39 - 41	22.4%
42 - 44	18.4%
45 - 47	4.1%
48 - 50	0.0%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	49
mean	38
min size (mm)	27
max size (mm)	47

Megathura crenulata

Number of ARMs	**7**
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	100.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	81
min size (mm)	81
max size (mm)	81

Crassedoma giganteum

Number of ARMs	**7**
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	33.3%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	66.7%
> 139	0.0%
(Cases) N=	3
mean	121
min size (mm)	101
max size (mm)	132

Patiria miniata

Number of ARMs	**7**
<10	0.0%
10 - 19	50.0%
20 - 29	0.0%
30 - 39	25.0%
40 - 49	25.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	4
mean	29
min size (mm)	18
max size (mm)	43

Pisaster giganteus

Number of ARMs	**7**
< 20	0.0%
20 - 39	85.7%
40 - 59	14.3%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	7
mean	31
min size (mm)	21
max size (mm)	41

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Scorpion Anchorage

Strongylocentrotus franciscanus	
Number of ARMs	**7**
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	13.3%
20 - 24	13.3%
25 - 29	6.7%
30 - 34	16.7%
35 - 39	26.7%
40 - 44	6.7%
45 - 49	10.0%
50 - 54	6.7%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	30
mean	33
min size (mm)	15
max size (mm)	53

Strongylocentrotus purpuratus	
Number of ARMs	**7**
< 5	0.0%
5 - 9	3.9%
10 - 14	3.6%
15 - 19	3.6%
20 - 24	3.3%
25 - 29	5.8%
30 - 34	10.6%
35 - 39	14.8%
40 - 44	19.1%
45 - 49	16.1%
50 - 54	10.3%
55 - 59	7.3%
60 - 64	1.5%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	330
mean	39
min size (mm)	5
max size (mm)	62

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Yellow Banks

Haliotis rufescens

Number of ARMs	15
<25	57.1%
25 - 34	42.9%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	7
mean	22
min size (mm)	12
max size (mm)	30

Haliotis corrugata

Number of ARMs	15
<25	0.0%
25 - 34	100.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	3
mean	28
min size (mm)	26
max size (mm)	30

Cypraea spadicea

Number of ARMs	15
<30	0.0%
30 - 32	0.0%
33 - 35	7.3%
36 - 38	32.7%
39 - 41	29.1%
42 - 44	21.8%
45 - 47	3.6%
48 - 50	5.5%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	55
mean	40
min size (mm)	34
max size (mm)	49

Megastraea undosa

Number of ARMs	15
<10	0.0%
10 - 19	0.0%
20 - 29	100.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	3
mean	26
min size (mm)	23
max size (mm)	29

Megathura crenulata

Number of ARMs	15
<10	0.0%
10 - 19	0.0%
20 - 29	58.8%
30 - 39	35.3%
40 - 49	5.9%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	17
mean	28
min size (mm)	20
max size (mm)	41

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Yellow Banks

Crassedoma giganteum	
Number of ARMs	**15**
<10	0.0%
10 - 19	0.0%
20 - 29	8.3%
30 - 39	0.0%
40 - 49	16.7%
50 - 59	8.3%
60 - 69	0.0%
70 - 79	8.3%
80 - 89	8.3%
90 - 99	8.3%
100 - 109	16.7%
110 - 119	16.7%
120 - 129	0.0%
130 - 139	8.3%
> 139	0.0%
(Cases) N=	12
mean	83
min size (mm)	27
max size (mm)	138

Patiria miniata	
Number of ARMs	**15**
<10	12.3%
10 - 19	56.6%
20 - 29	19.8%
30 - 39	4.7%
40 - 49	2.8%
50 - 59	0.0%
60 - 69	1.9%
70 - 79	1.9%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	106
mean	19
min size (mm)	5
max size (mm)	75

Pisaster giganteus	
Number of ARMs	**15**
< 20	57.1%
20 - 39	35.7%
40 - 59	7.1%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	42
mean	21
min size (mm)	10
max size (mm)	51

Strongylocentrotus franciscanus	
Number of ARMs	**8**
< 5	0.0%
5 - 9	11.2%
10 - 14	28.4%
15 - 19	25.0%
20 - 24	15.8%
25 - 29	9.3%
30 - 34	4.4%
35 - 39	3.0%
40 - 44	1.5%
45 - 49	0.6%
50 - 54	0.3%
55 - 59	0.1%
60 - 64	0.1%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.1%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.1%
(Cases) N=	689
mean	18
min size (mm)	5
max size (mm)	110

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Santa Cruz Island - Yellow Banks

Strongylocentrotus purpuratus	
Number of ARMs	**8**
< 5	3.5%
5 - 9	15.8%
10 - 14	5.6%
15 - 19	12.6%
20 - 24	18.4%
25 - 29	7.9%
30 - 34	5.3%
35 - 39	3.6%
40 - 44	4.0%
45 - 49	4.1%
50 - 54	5.7%
55 - 59	5.1%
60 - 64	4.8%
65 - 69	2.7%
70 - 74	0.7%
75 - 79	0.1%
> 79	0.0%
(Cases) N=	2274
mean	28
min size (mm)	2
max size (mm)	79

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Anacapa Island - Admiral's Reef

Cypraea spadicea

Number of ARMs	**6**
<30	0.0%
30 - 32	0.0%
33 - 35	0.0%
36 - 38	0.0%
39 - 41	0.0%
42 - 44	0.0%
45 - 47	25.0%
48 - 50	75.0%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	4
mean	48
min size (mm)	45
max size (mm)	49

Megathura crenulata

Number of ARMs	**6**
<10	0.0%
10 - 19	0.0%
20 - 29	50.0%
30 - 39	30.0%
40 - 49	10.0%
50 - 59	10.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	10
mean	33
min size (mm)	24
max size (mm)	52

Crassedoma giganteum

Number of ARMs	**6**
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	25.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	25.0%
70 - 79	0.0%
80 - 89	25.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	25.0%
> 139	0.0%
(Cases) N=	4
mean	79
min size (mm)	31
max size (mm)	137

Tegula regina

Number of ARMs	**6**
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	100.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
> 75	0.0%
(Cases) N=	1
mean	42
min size (mm)	42
max size (mm)	42

Patiria miniata

Number of ARMs	**6**
<10	3.4%
10 - 19	26.4%
20 - 29	34.5%
30 - 39	25.3%
40 - 49	6.9%
50 - 59	2.3%
60 - 69	1.1%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	87
mean	26
min size (mm)	8
max size (mm)	61

Strongylocentrotus franciscanus

Number of ARMs	**6**
< 5	0.0%
5 - 9	2.4%
10 - 14	30.1%
15 - 19	10.8%
20 - 24	27.7%
25 - 29	16.9%
30 - 34	6.0%
35 - 39	4.8%
40 - 44	1.2%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	83
mean	21
min size (mm)	8
max size (mm)	41

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Anacapa Island - Admiral's Reef

Strongylocentrotus purpuratus	
Number of ARMs	**6**
< 5	0.0%
5 - 9	14.7%
10 - 14	26.1%
15 - 19	16.8%
20 - 24	26.6%
25 - 29	13.6%
30 - 34	1.6%
35 - 39	0.5%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	184
mean	17
min size (mm)	7
max size (mm)	38

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Anacapa Island - Cathedral Cove

Cypraea spadicea

Number of ARMs	**7**
<30	1.4%
30 - 32	5.8%
33 - 35	13.0%
36 - 38	21.7%
39 - 41	13.0%
42 - 44	24.6%
45 - 47	15.9%
48 - 50	4.3%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	69
mean	40
min size (mm)	20
max size (mm)	50

Kelletia kelletii

Number of ARMs	**7**
< 40	0.0%
40 - 49	66.7%
50 - 59	0.0%
60 - 69	33.3%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	3
mean	52
min size (mm)	47
max size (mm)	61

Crassedoma giganteum

Number of ARMs	**7**
<10	31.4%
10 - 19	31.4%
20 - 29	0.0%
30 - 39	8.6%
40 - 49	11.4%
50 - 59	8.6%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	2.9%
100 - 109	0.0%
110 - 119	2.9%
120 - 129	2.9%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	35
mean	28
min size (mm)	6
max size (mm)	129

Patiria miniata

Number of ARMs	**7**
<10	25.0%
10 - 19	53.1%
20 - 29	21.9%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	32
mean	14
min size (mm)	6
max size (mm)	29

Pisaster giganteus

Number of ARMs	**7**
< 20	22.6%
20 - 39	66.0%
40 - 59	7.5%
60 - 79	0.0%
80 - 99	1.9%
100 - 119	1.9%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	53
mean	28
min size (mm)	9
max size (mm)	111

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Anacapa Island - Cathedral Cove

Strongylocentrotus franciscanus	
Number of ARMs	**7**
< 5	0.0%
5 - 9	11.6%
10 - 14	7.1%
15 - 19	6.2%
20 - 24	8.9%
25 - 29	0.9%
30 - 34	4.9%
35 - 39	4.9%
40 - 44	3.6%
45 - 49	3.6%
50 - 54	3.6%
55 - 59	3.1%
60 - 64	4.0%
65 - 69	6.2%
70 - 74	12.0%
75 - 79	8.0%
80 - 84	6.2%
85 - 89	3.6%
90 - 94	0.9%
95 - 99	0.9%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	225
mean	46
min size (mm)	5
max size (mm)	96

Strongylocentrotus purpuratus	
Number of ARMs	**7**
< 5	1.6%
5 - 9	22.2%
10 - 14	10.9%
15 - 19	4.6%
20 - 24	7.5%
25 - 29	7.1%
30 - 34	4.6%
35 - 39	5.1%
40 - 44	4.8%
45 - 49	6.9%
50 - 54	8.3%
55 - 59	5.5%
60 - 64	6.1%
65 - 69	3.4%
70 - 74	1.2%
75 - 79	0.2%
> 79	0.0%
(Cases) N=	495
mean	30
min size (mm)	4
max size (mm)	76

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Anacapa Island - Landing Cove

Haliotis corrugata

Number of ARMs	6
<25	83.3%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	16.7%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	6
mean	26
min size (mm)	17
max size (mm)	48

Cypraea spadicea

Number of ARMs	6
<30	8.6%
30 - 32	2.9%
33 - 35	11.4%
36 - 38	8.6%
39 - 41	17.1%
42 - 44	25.7%
45 - 47	8.6%
48 - 50	14.3%
51 - 53	0.0%
54 - 56	2.9%
>56	0.0%
(Cases) N=	35
mean	40
min size (mm)	23
max size (mm)	54

Kelletia kelletii

Number of ARMs	6
< 40	37.5%
40 - 49	0.0%
50 - 59	50.0%
60 - 69	0.0%
70 - 79	12.5%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	8
mean	46
min size (mm)	24
max size (mm)	70

Megastraea undosa

Number of ARMs	6
<10	0.0%
10 - 19	0.0%
20 - 29	100.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	27
min size (mm)	27
max size (mm)	27

Megathura crenulata

Number of ARMs	6
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	66.7%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	33.3%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	3
mean	43
min size (mm)	32
max size (mm)	65

Crassedoma giganteum

Number of ARMs	6
<10	0.0%
10 - 19	20.0%
20 - 29	11.4%
30 - 39	8.6%
40 - 49	5.7%
50 - 59	2.9%
60 - 69	2.9%
70 - 79	11.4%
80 - 89	5.7%
90 - 99	8.6%
100 - 109	5.7%
110 - 119	8.6%
120 - 129	8.6%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	35
mean	62
min size (mm)	11
max size (mm)	129

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
Anacapa Island - Landing Cove

Patiria miniata

Number of ARMs	**6**
<10	7.1%
10 - 19	69.0%
20 - 29	14.3%
30 - 39	9.5%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	42
mean	17
min size (mm)	9
max size (mm)	39

Pisaster giganteus

Number of ARMs	**6**
< 20	60.6%
20 - 39	36.4%
40 - 59	3.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	33
mean	20
min size (mm)	9
max size (mm)	43

Strongylocentrotus franciscanus

Number of ARMs	**6**
< 5	0.3%
5 - 9	28.5%
10 - 14	8.9%
15 - 19	7.6%
20 - 24	5.6%
25 - 29	4.6%
30 - 34	6.4%
35 - 39	3.8%
40 - 44	4.6%
45 - 49	2.5%
50 - 54	2.3%
55 - 59	1.3%
60 - 64	3.3%
65 - 69	3.1%
70 - 74	2.8%
75 - 79	3.6%
80 - 84	4.3%
85 - 89	3.8%
90 - 94	1.8%
95 - 99	0.3%
100 - 104	0.3%
105 - 109	0.3%
> 109	0.3%
(Cases) N=	393
mean	34
min size (mm)	4
max size (mm)	114

Strongylocentrotus purpuratus

Number of ARMs	**6**
< 5	1.9%
5 - 9	36.1%
10 - 14	12.0%
15 - 19	8.7%
20 - 24	6.0%
25 - 29	4.7%
30 - 34	3.8%
35 - 39	3.4%
40 - 44	4.9%
45 - 49	5.2%
50 - 54	4.7%
55 - 59	4.4%
60 - 64	2.4%
65 - 69	1.1%
70 - 74	0.5%
75 - 79	0.1%
> 79	0.0%
(Cases) N=	1394
mean	23
min size (mm)	mean3 23
min size (mm)	3
max size (mm)	78

Centrostephanus coronatus

Centrostephanus coronatus

Number of ARMs	**6**
< 5	0.0%
5 - 9	0.0%
10 - 14	100.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	1
mean	14
min size (mm)	14
max size (mm)	14

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
San Miguel Island - Miracle Mile

Haliotis rufescens

Number of ARMs	6
<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	25.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	50.0%
145 - 154	25.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	4
mean	133
min size (mm)	108
max size (mm)	146

Astraea gibberosa

Number of ARMs	6
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	33.3%
50 - 59	66.7%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	3
mean	52
min size (mm)	49
max size (mm)	55

Crassedoma giganteum

Number of ARMs	6
<10	0.0%
10 - 19	0.0%
20 - 29	50.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	50.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	2
mean	67
min size (mm)	23
max size (mm)	110

Patiria miniata

Number of ARMs	6
<10	0.0%
10 - 19	7.5%
20 - 29	32.5%
30 - 39	25.0%
40 - 49	15.0%
50 - 59	17.5%
60 - 69	2.5%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	40
mean	35
min size (mm)	10
max size (mm)	69

Pisaster giganteus

Number of ARMs	6
< 20	33.3%
20 - 39	0.0%
40 - 59	33.3%
60 - 79	33.3%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	3
mean	45
min size (mm)	13
max size (mm)	67

Pycnopodia helianthoides

Number of ARMs	6
< 20	0.0%
20 - 39	0.0%
40 - 59	100.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	1
mean	43
min size (mm)	43
max size (mm)	43

2010 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS
San Miguel Island - Miracle Mile

Strongylocentrotus franciscanus	
Number of ARMs	**6**
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	9.1%
65 - 69	9.1%
70 - 74	0.0%
75 - 79	9.1%
80 - 84	9.1%
85 - 89	9.1%
90 - 94	0.0%
95 - 99	22.7%
100 - 104	22.7%
105 - 109	4.5%
> 109	4.5%
(Cases) N=	22
mean	89
min size (mm)	62
max size (mm)	119

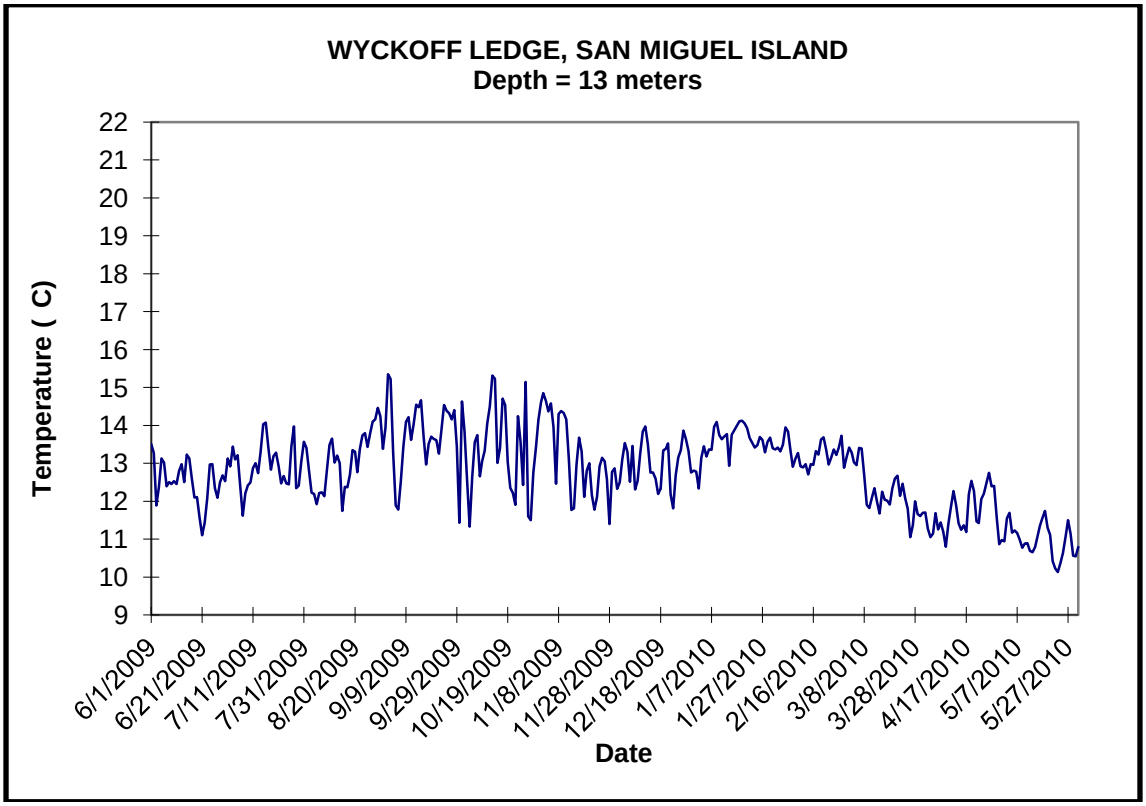
Strongylocentrotus purpuratus	
Number of ARMs	**6**
< 5	0.0%
5 - 9	0.0%
10 - 14	28.6%
15 - 19	42.9%
20 - 24	0.0%
25 - 29	14.3%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	14.3%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	7
mean	21
min size (mm)	11
max size (mm)	48

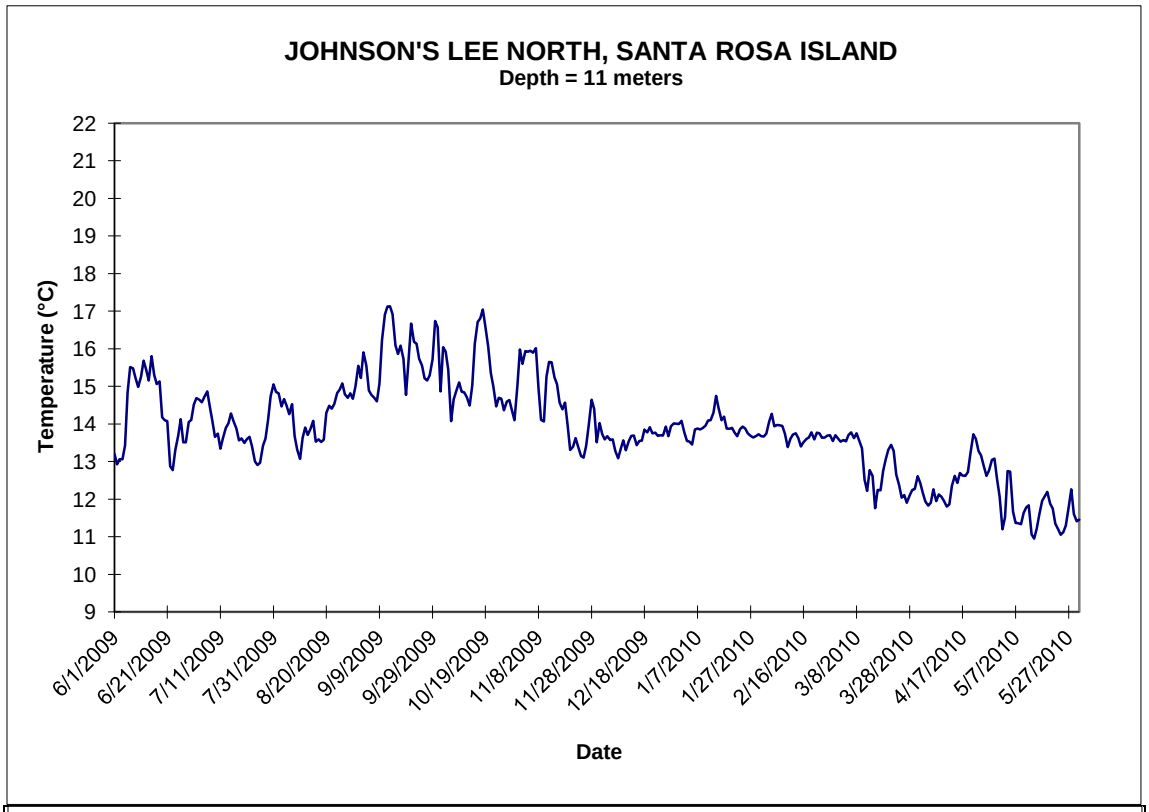
Appendix M. Temperature Data Graphs

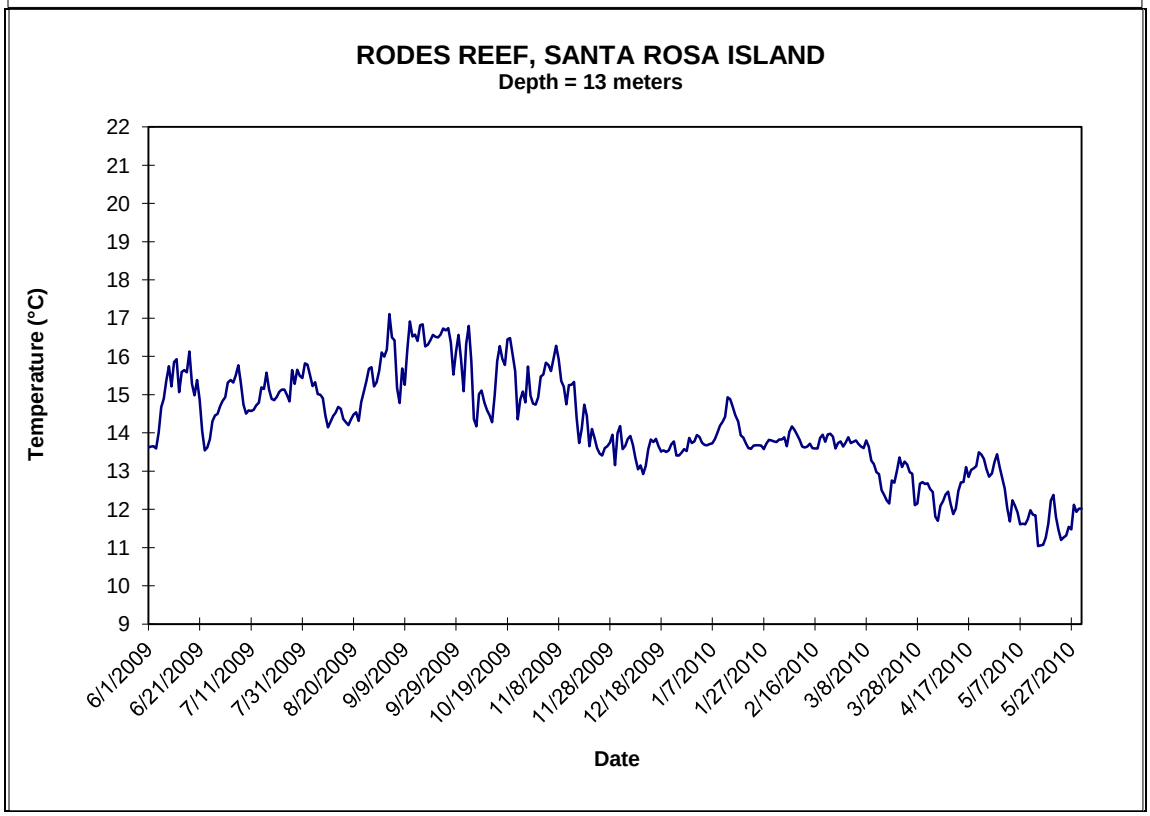
2010 TEMPERATURE DATA GRAPHS

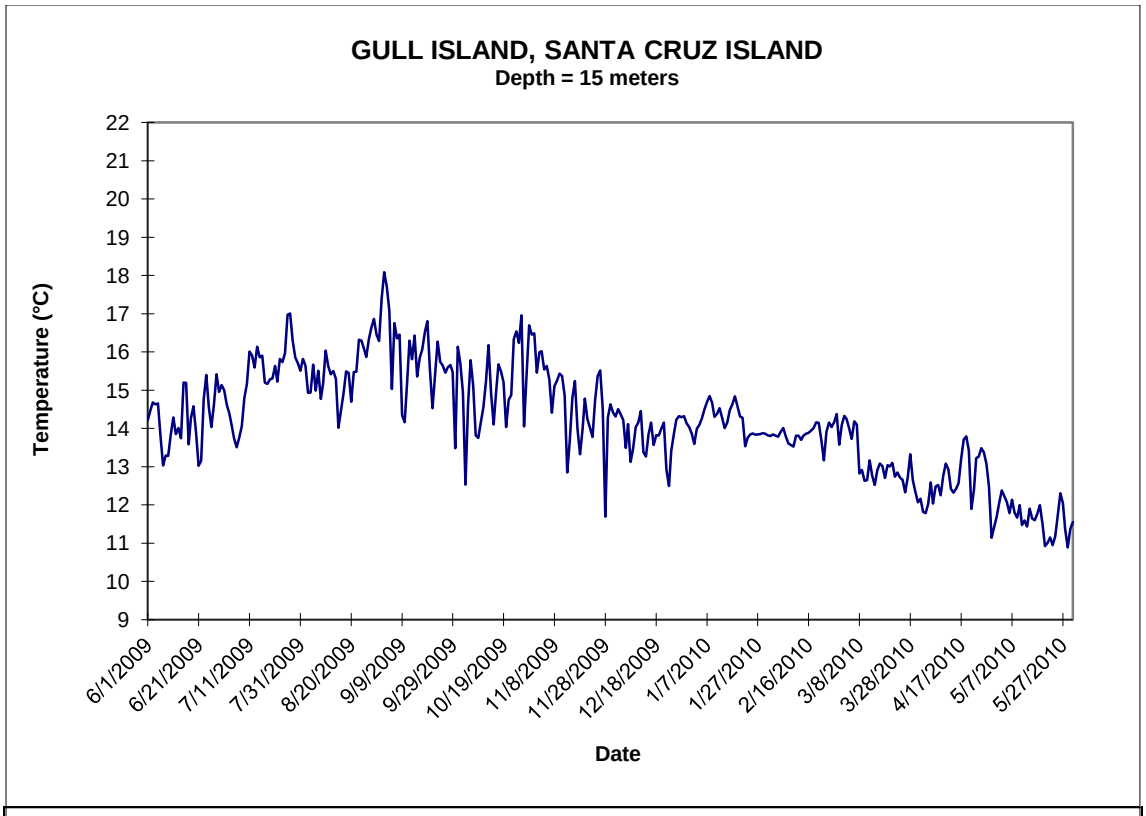
Introduction

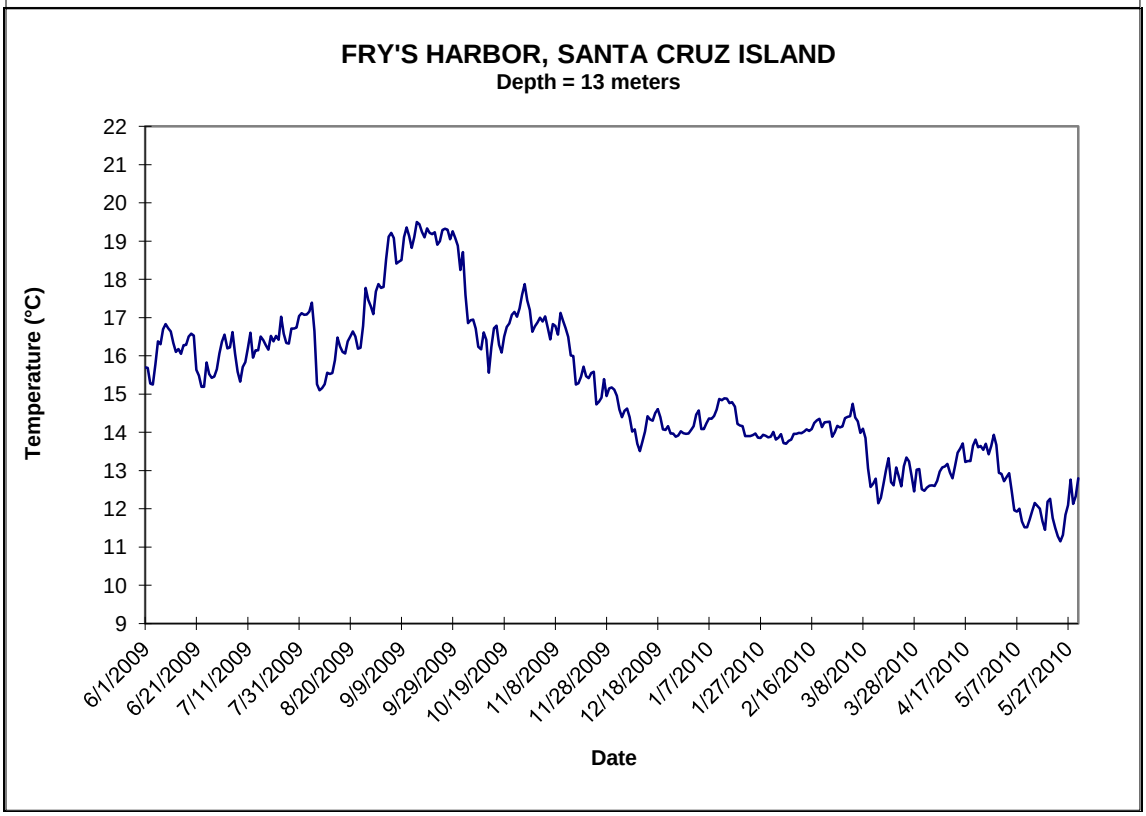
This appendix contains the temperature data (presented graphically) collected by temperature loggers that were deployed at 32 Kelp Forest Monitoring sites. We report the average daily temperatures between June 1, 2009 and May 31, 2010. Technical problems or loss of the temperature units may result in missing data for a site and this information is included in the results section for each site.

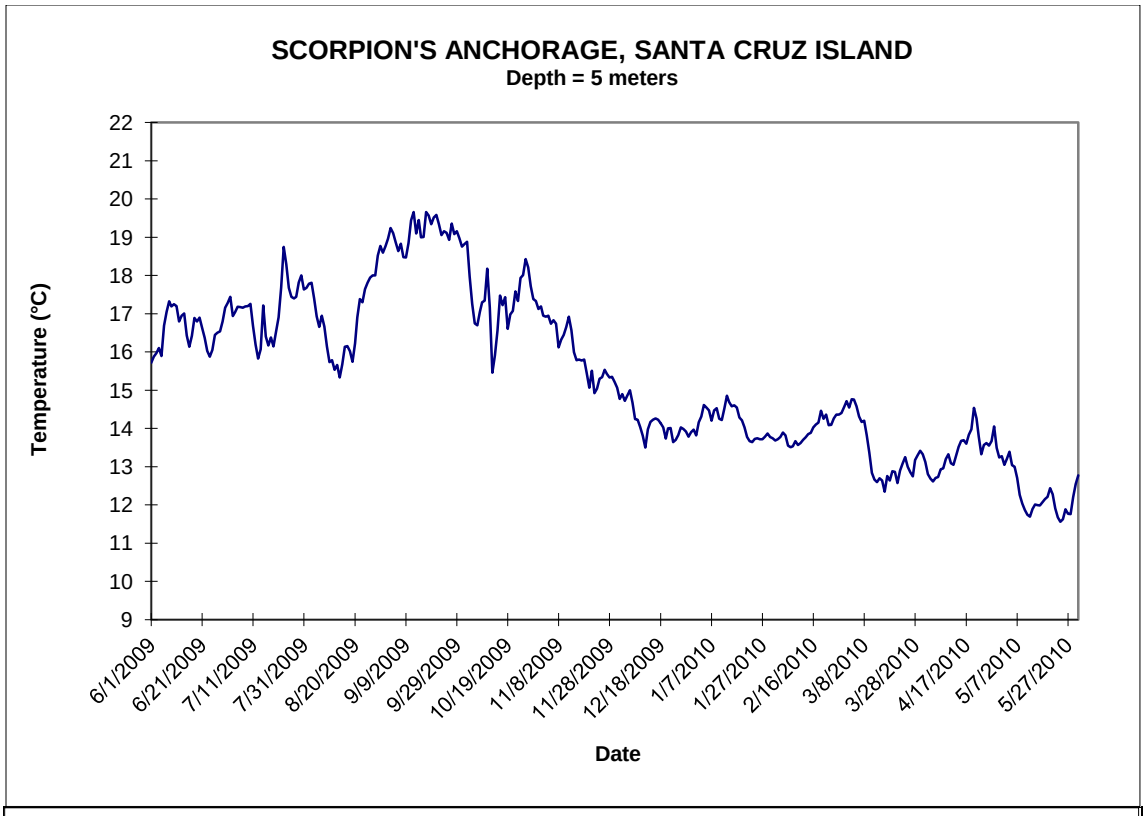


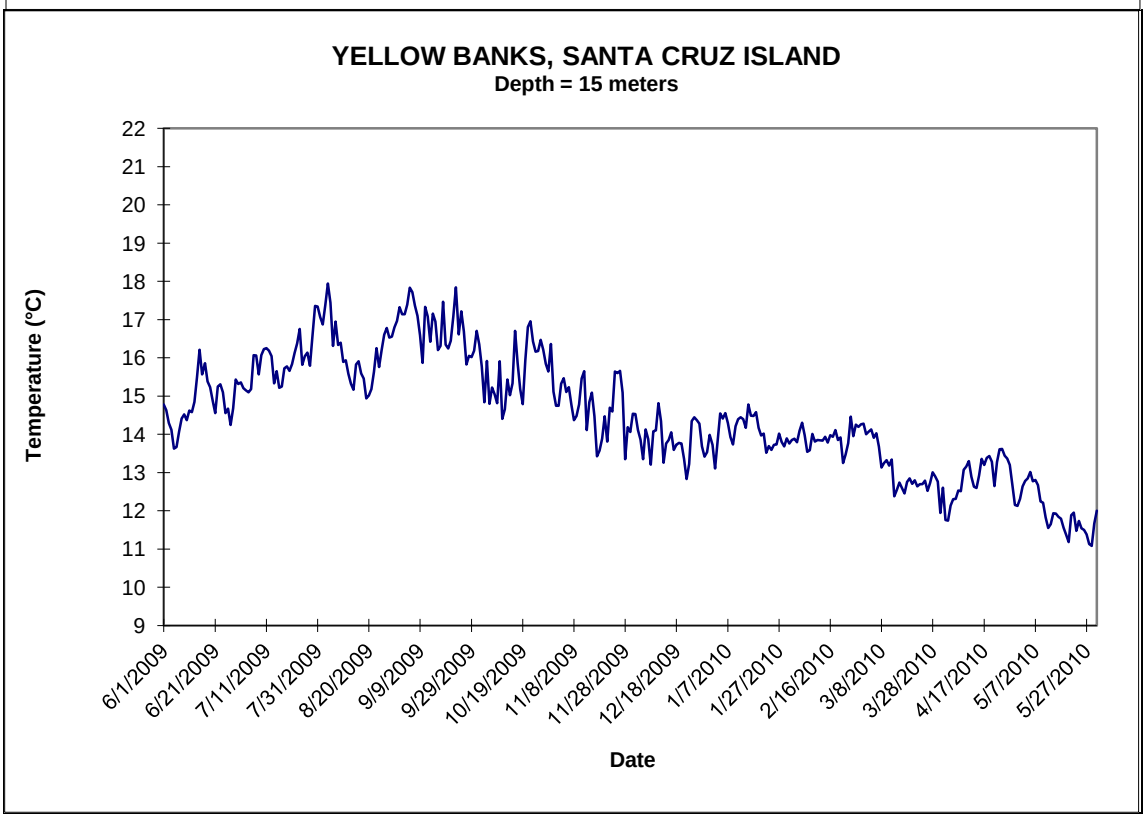

JOHNSON'S LEE NORTH, SANTA ROSA ISLAND
Depth = 11 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

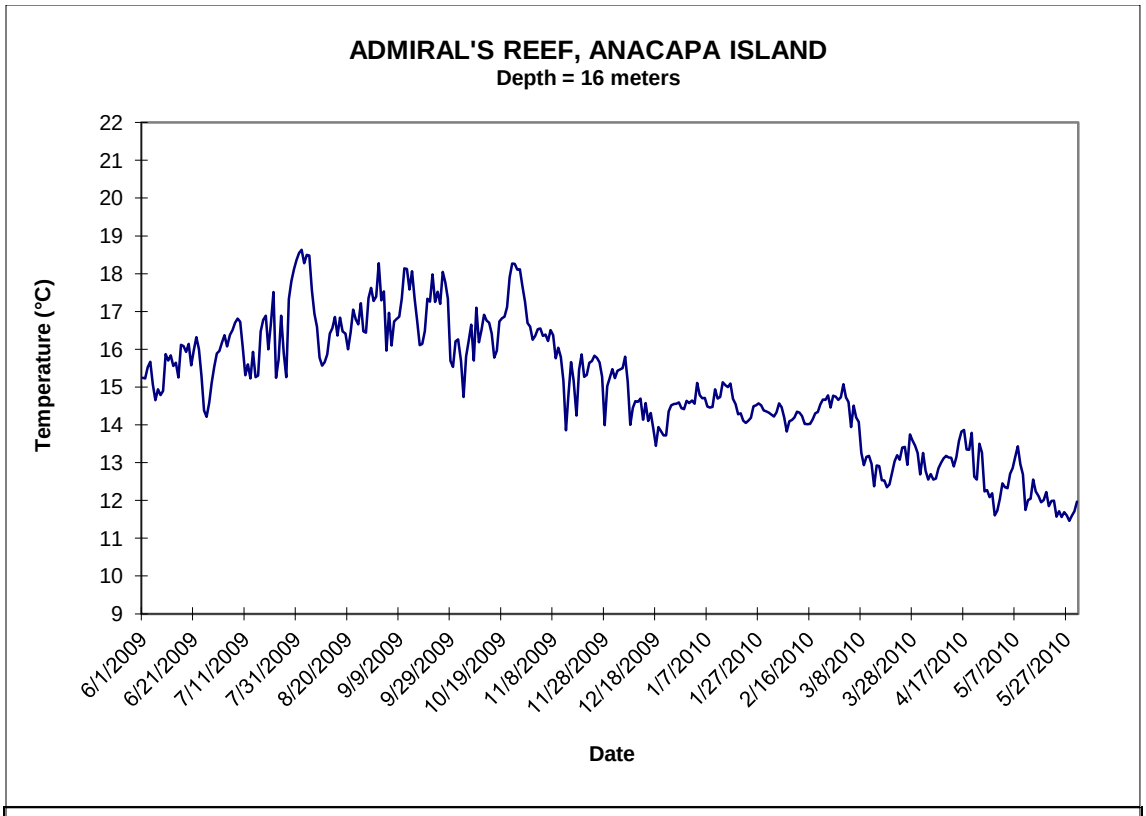

RODES REEF, SANTA ROSA ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

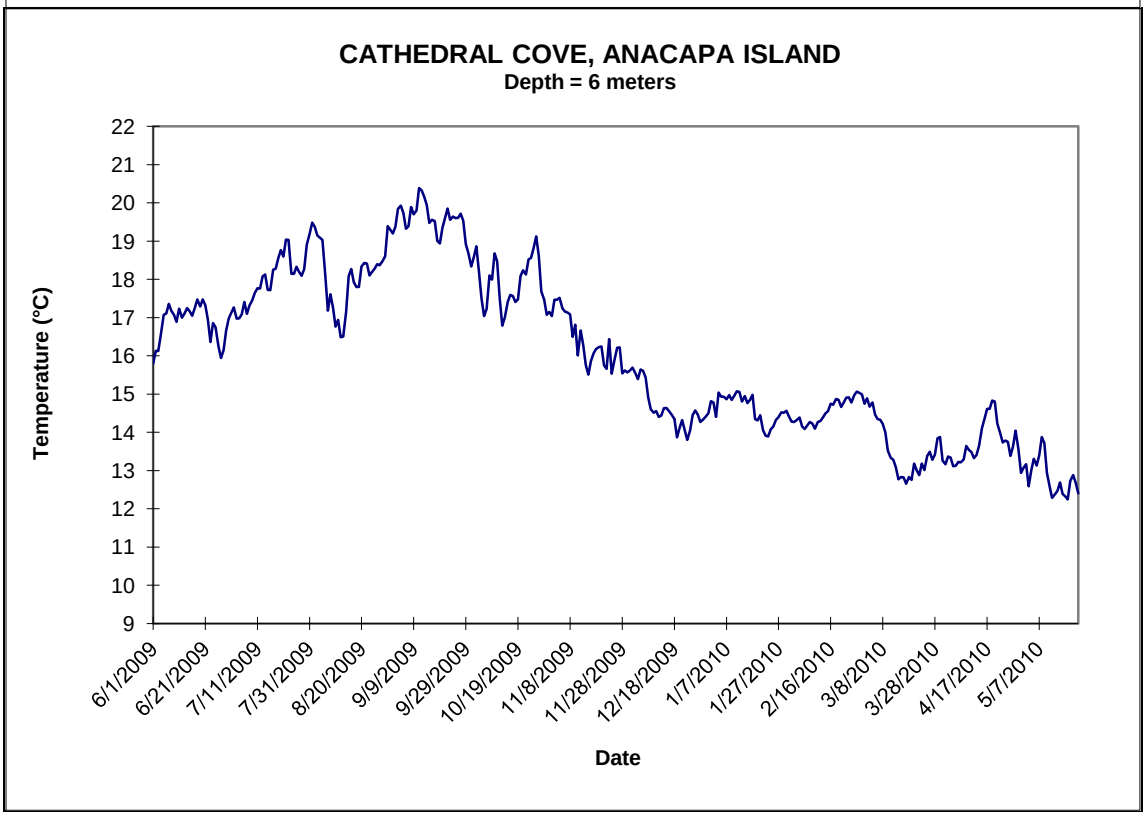

GULL ISLAND, SANTA CRUZ ISLAND
Depth = 15 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

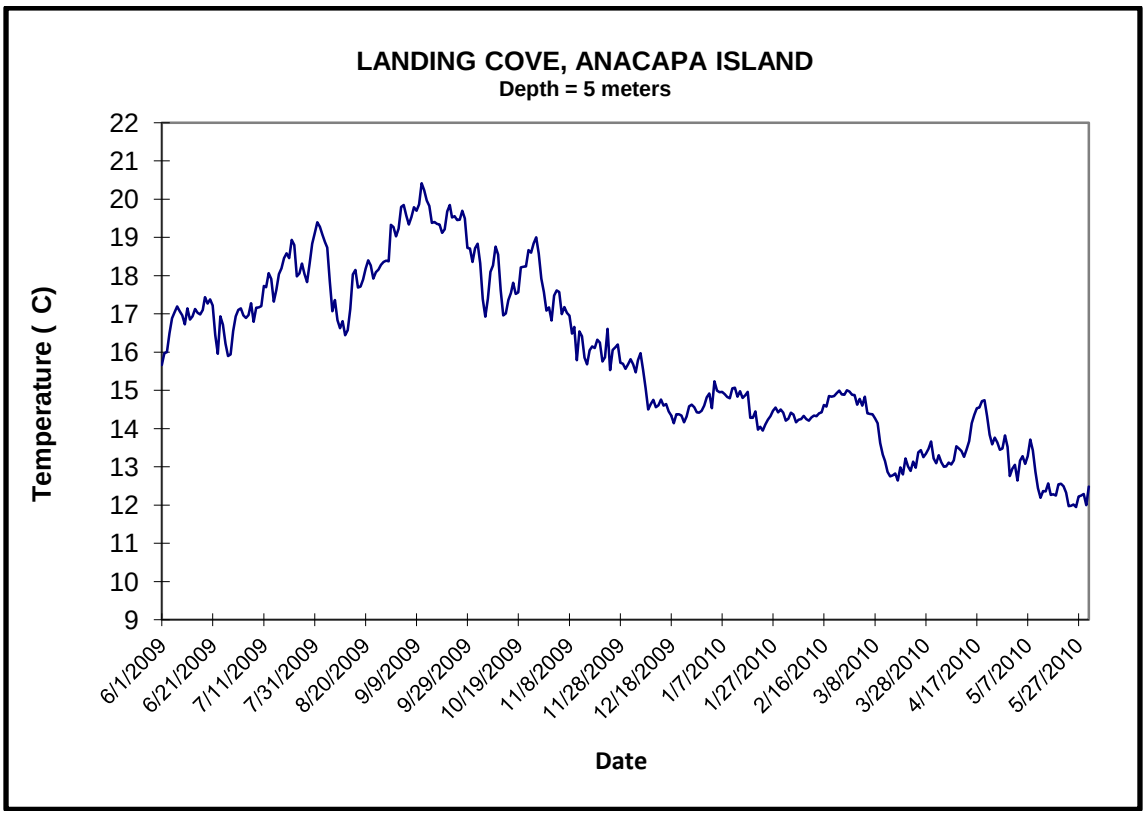

FRY'S HARBOR, SANTA CRUZ ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

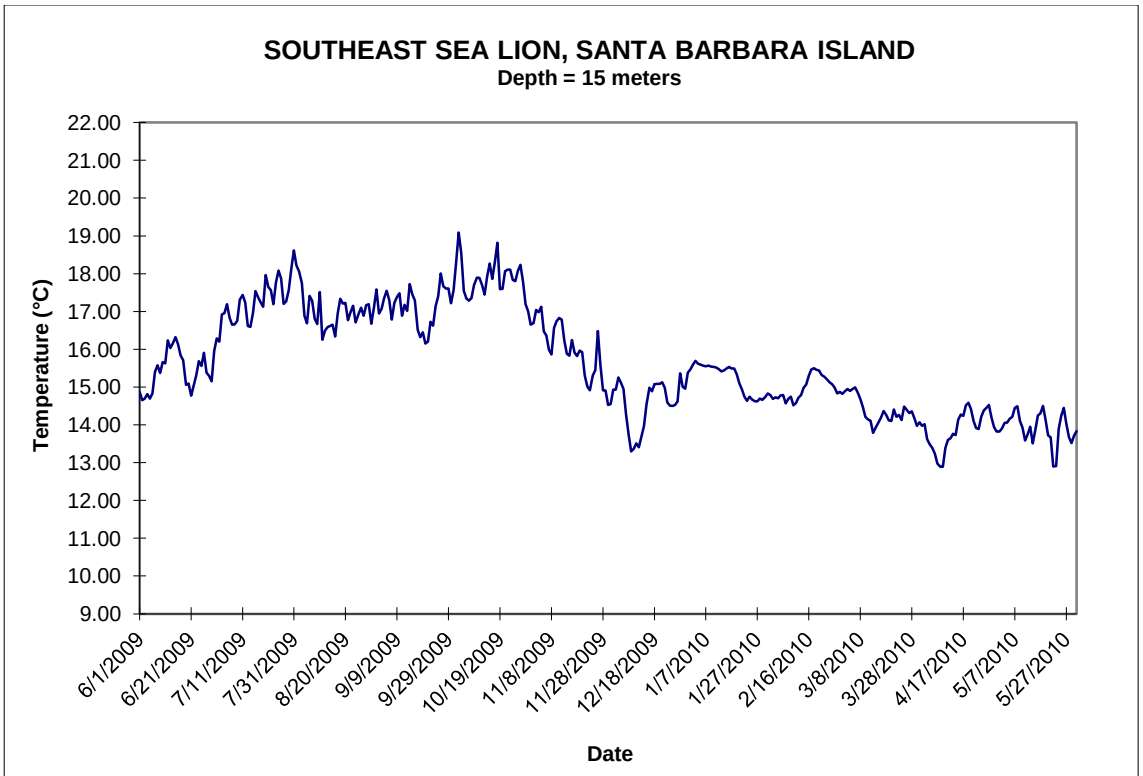

SCORPION'S ANCHORAGE, SANTA CRUZ ISLAND
Depth = 5 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

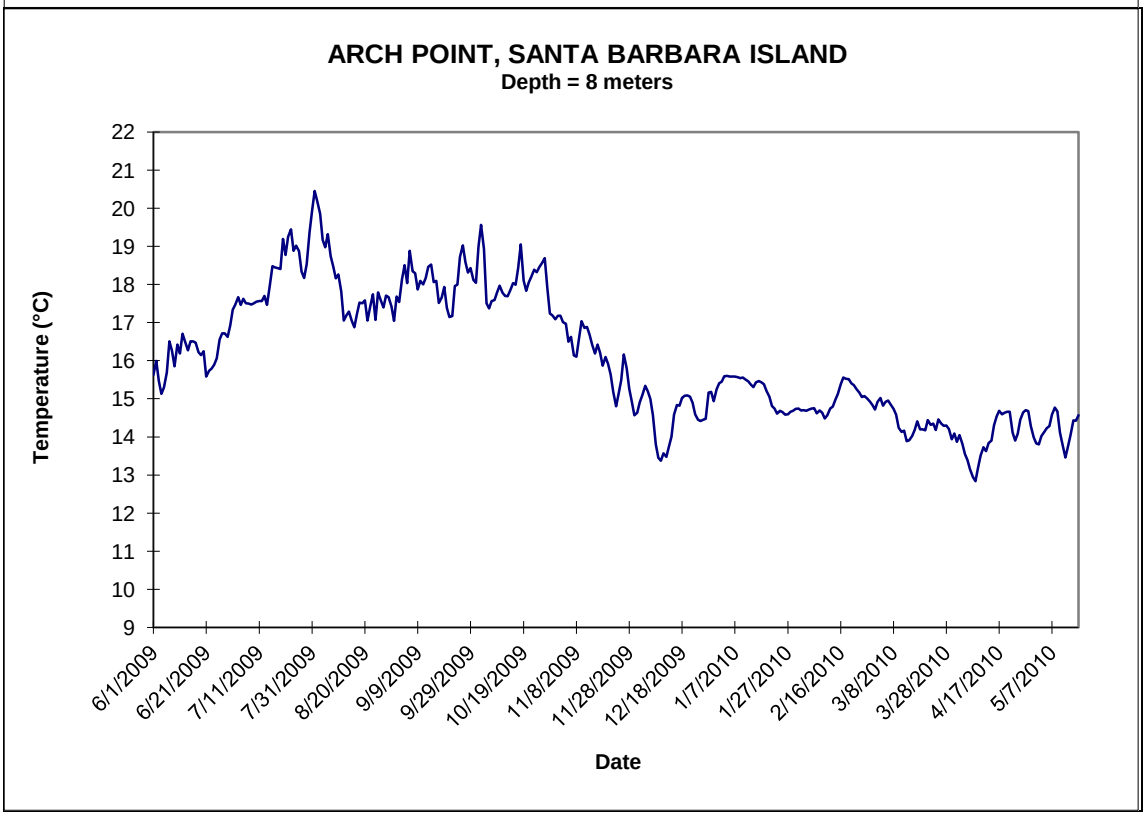

YELLOW BANKS, SANTA CRUZ ISLAND
Depth = 15 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

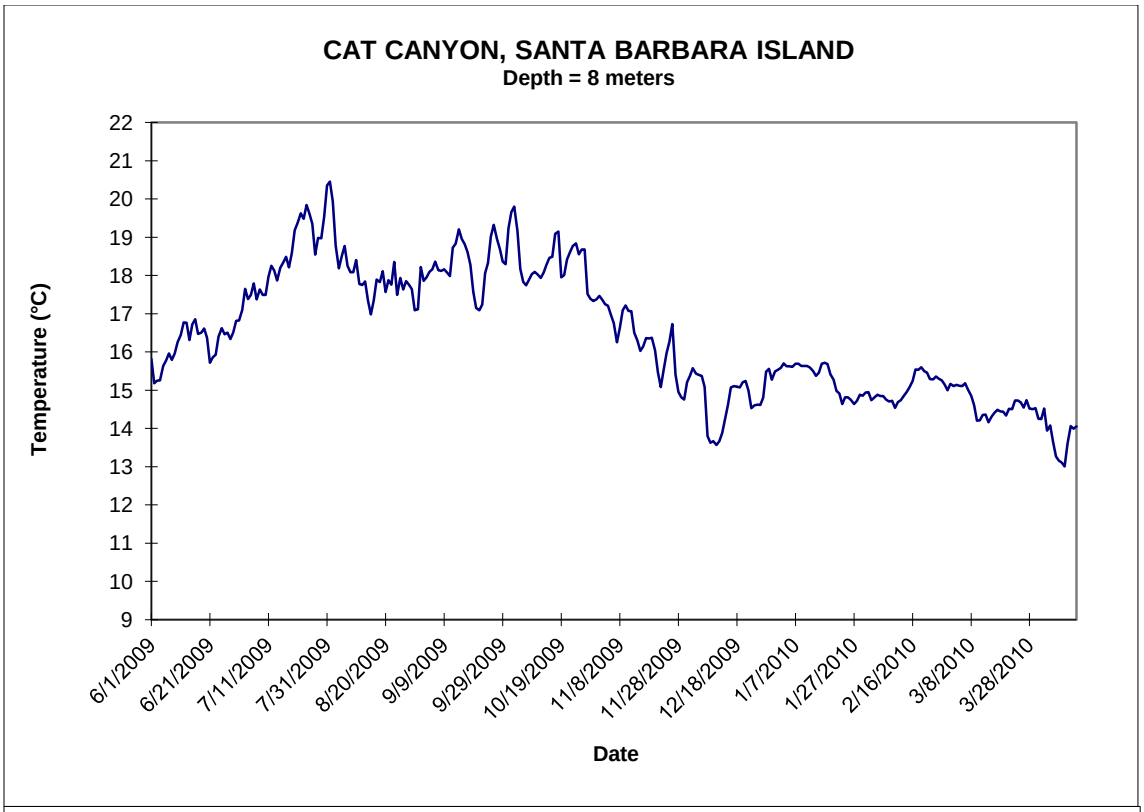

ADMIRAL'S REEF, ANACAPA ISLAND
Depth = 16 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

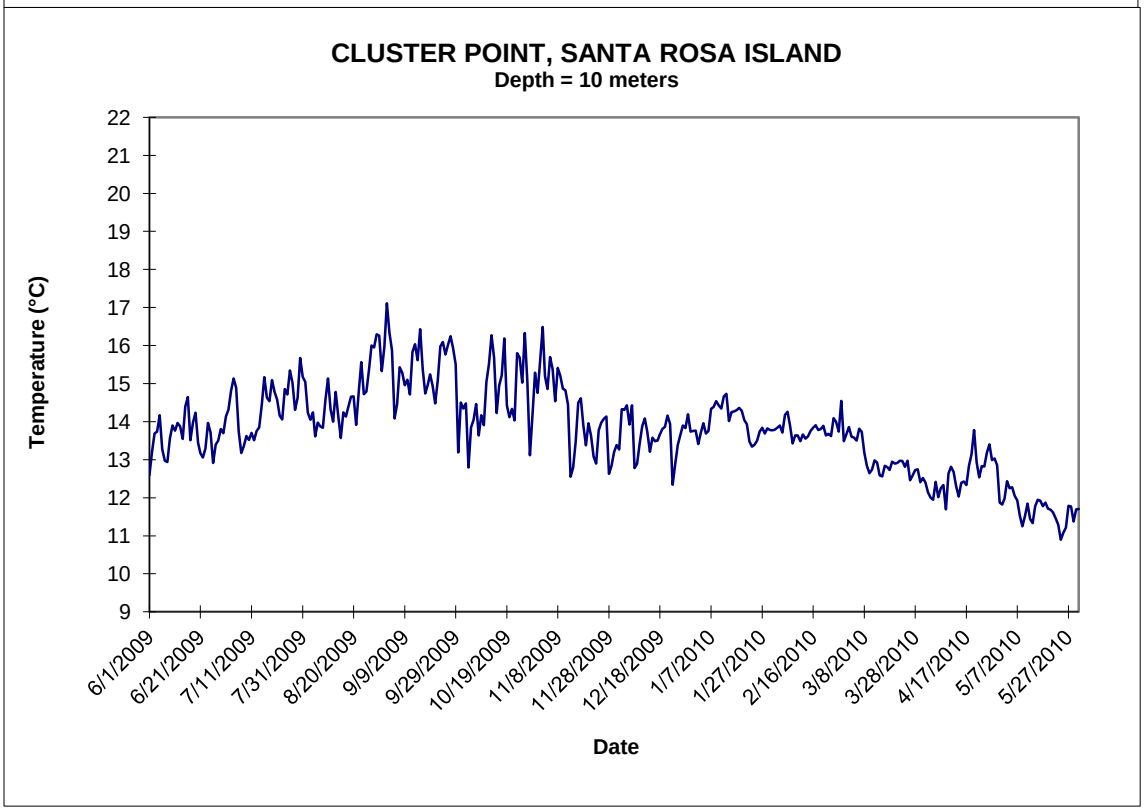

CATHEDRAL COVE, ANACAPA ISLAND
Depth = 6 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
Date

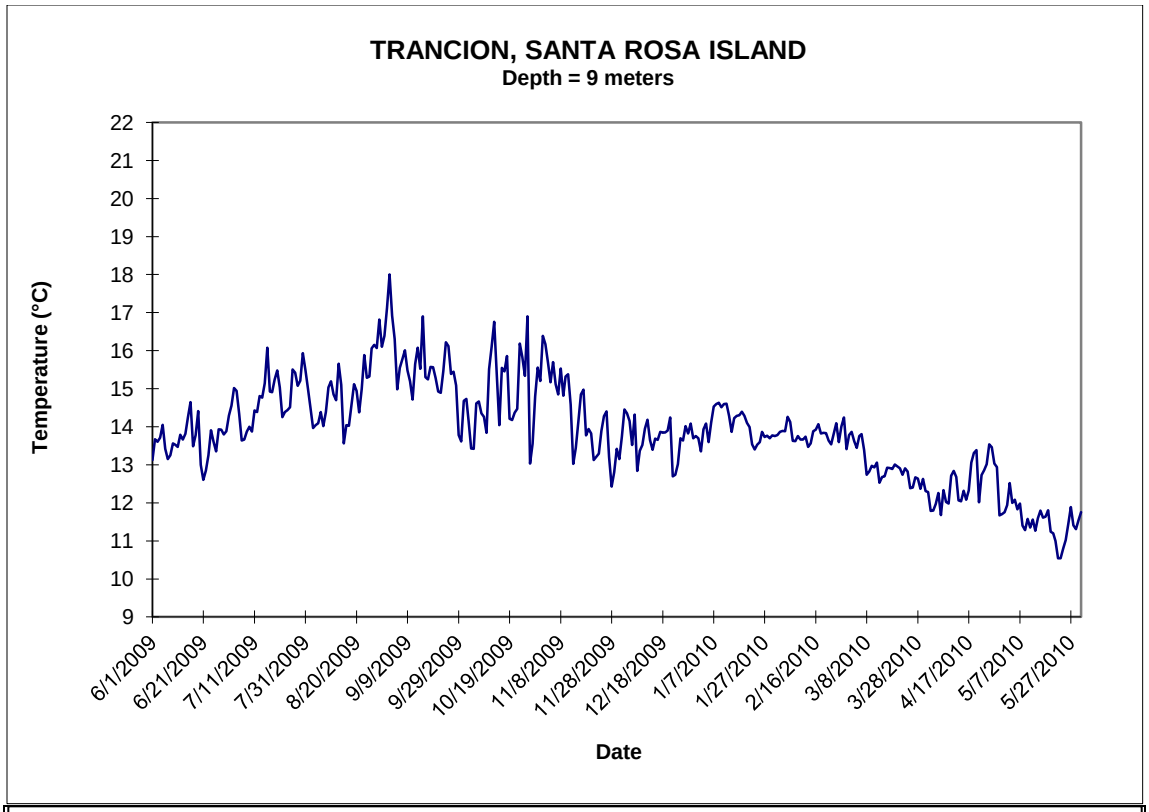

LANDING COVE, ANACAPA ISLAND
Depth = 5 meters
Temperature (C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

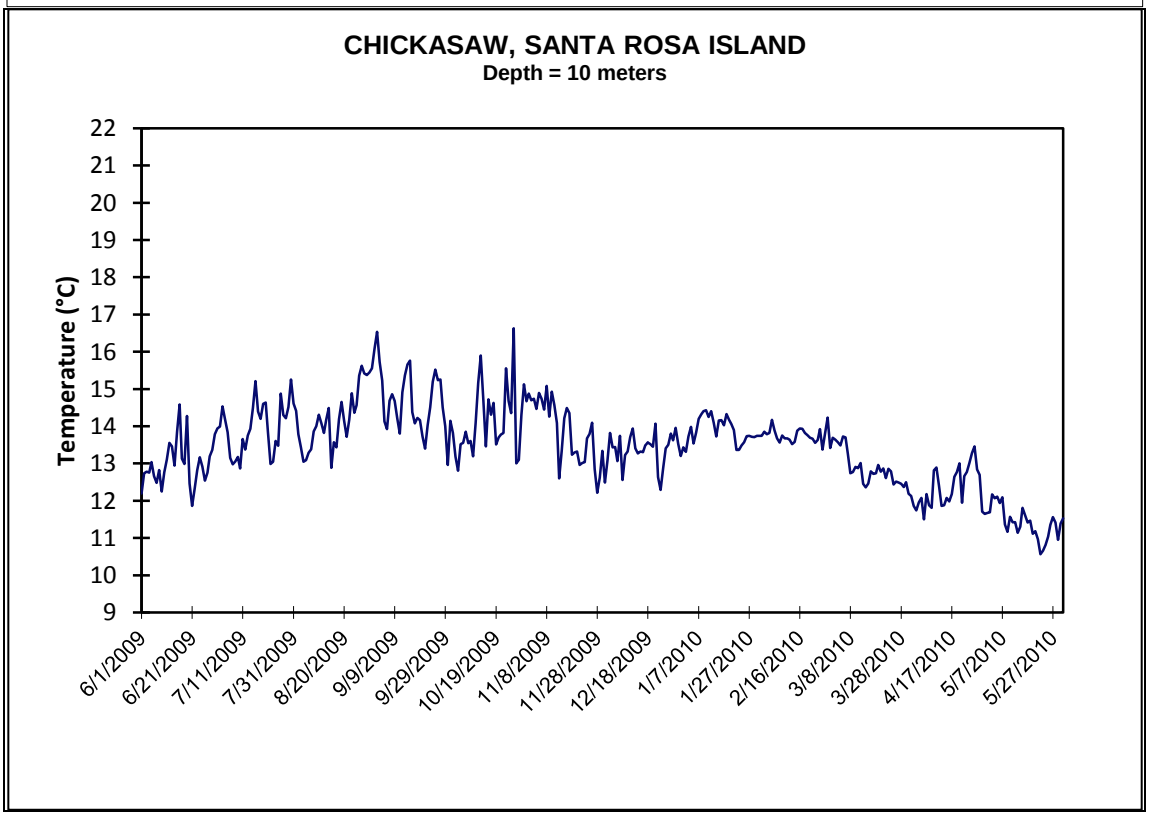

SOUTHEAST SEA LION, SANTA BARBARA ISLAND
Depth = 15 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

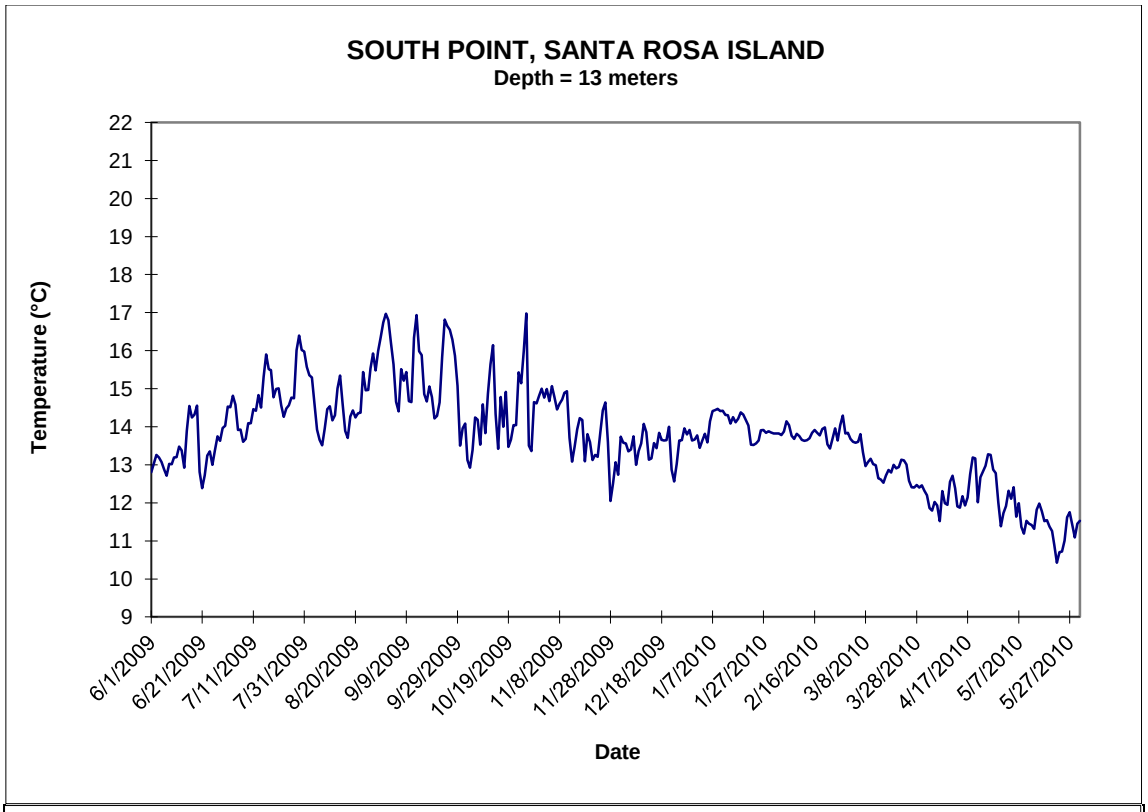

ARCH POINT, SANTA BARBARA ISLAND
Depth = 8 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
Date

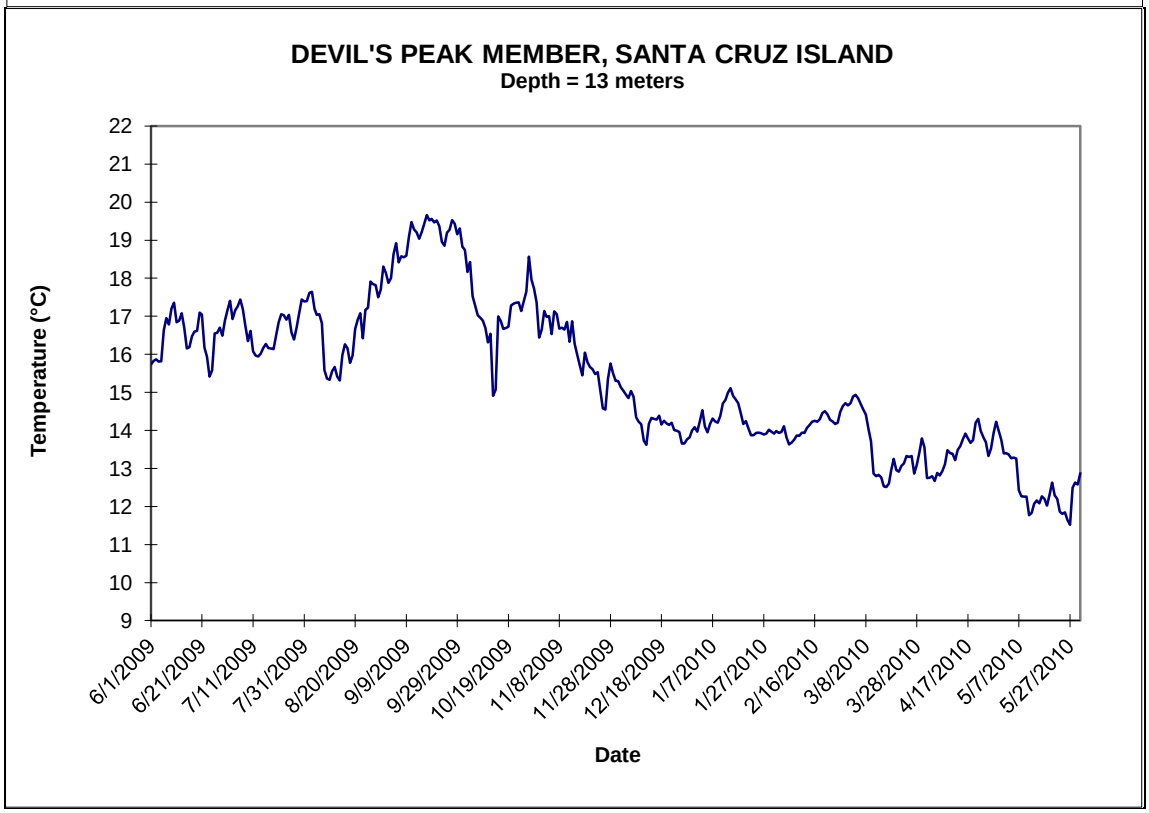

CAT CANYON, SANTA BARBARA ISLAND
Depth = 8 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
Date

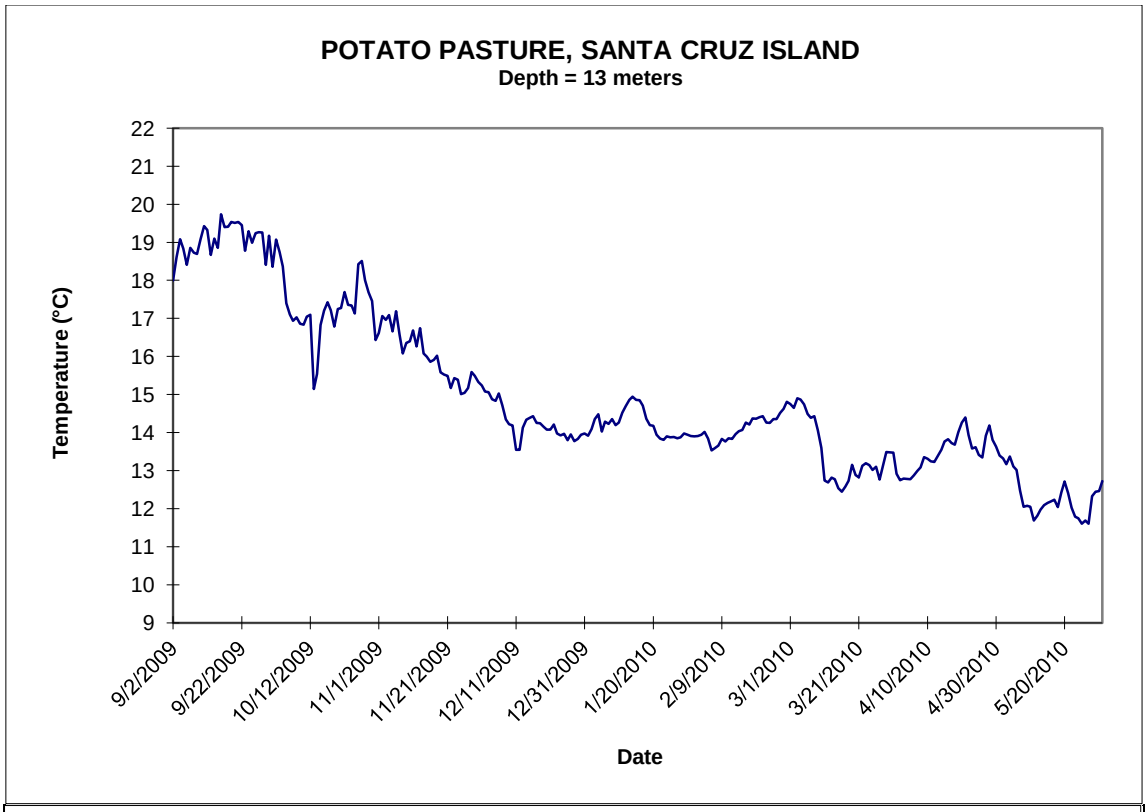

CLUSTER POINT, SANTA ROSA ISLAND
Depth = 10 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

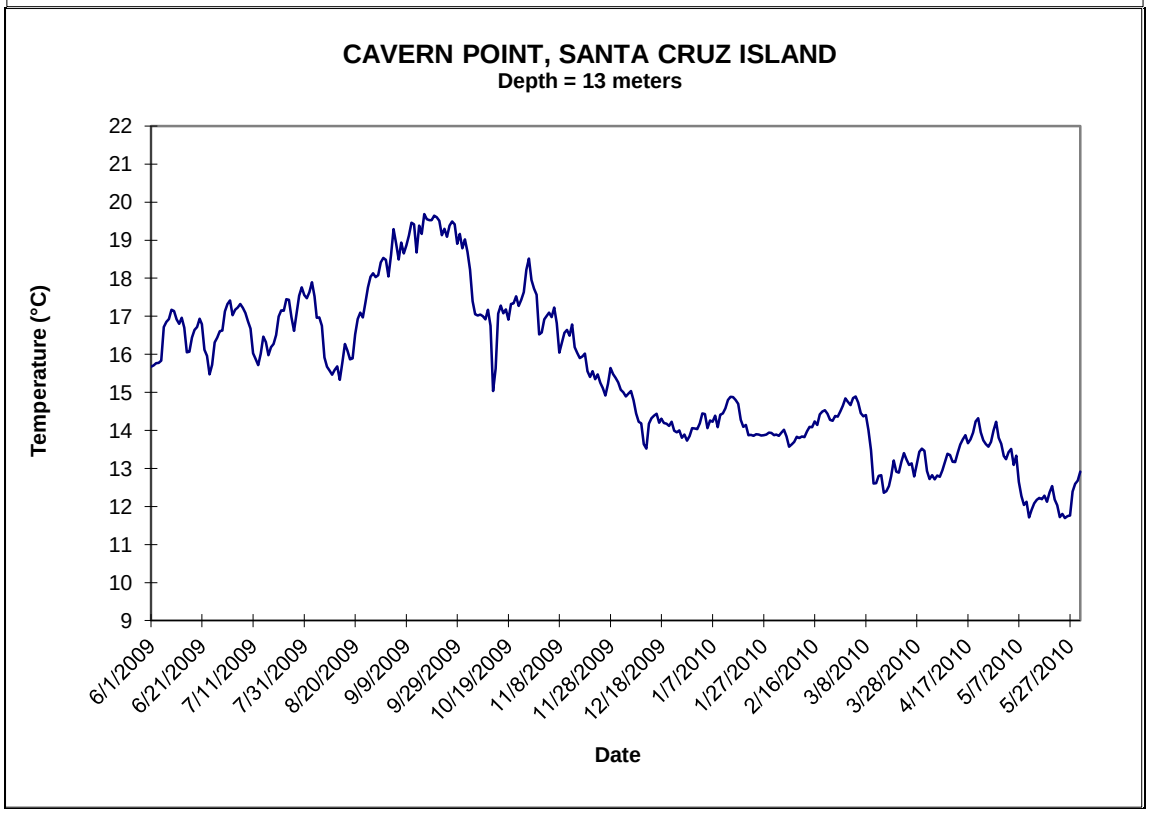

TRANCION, SANTA ROSA ISLAND
Depth = 9 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

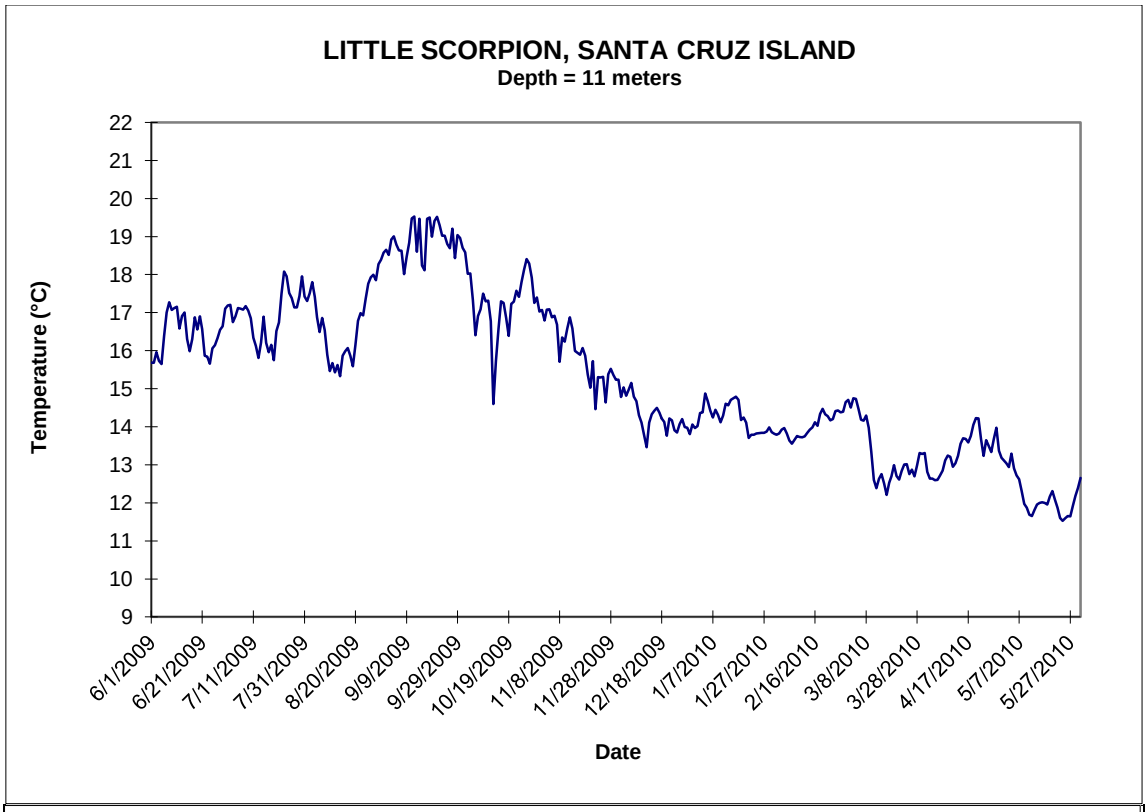

CHICKASAW, SANTA ROSA ISLAND
Depth = 10 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010

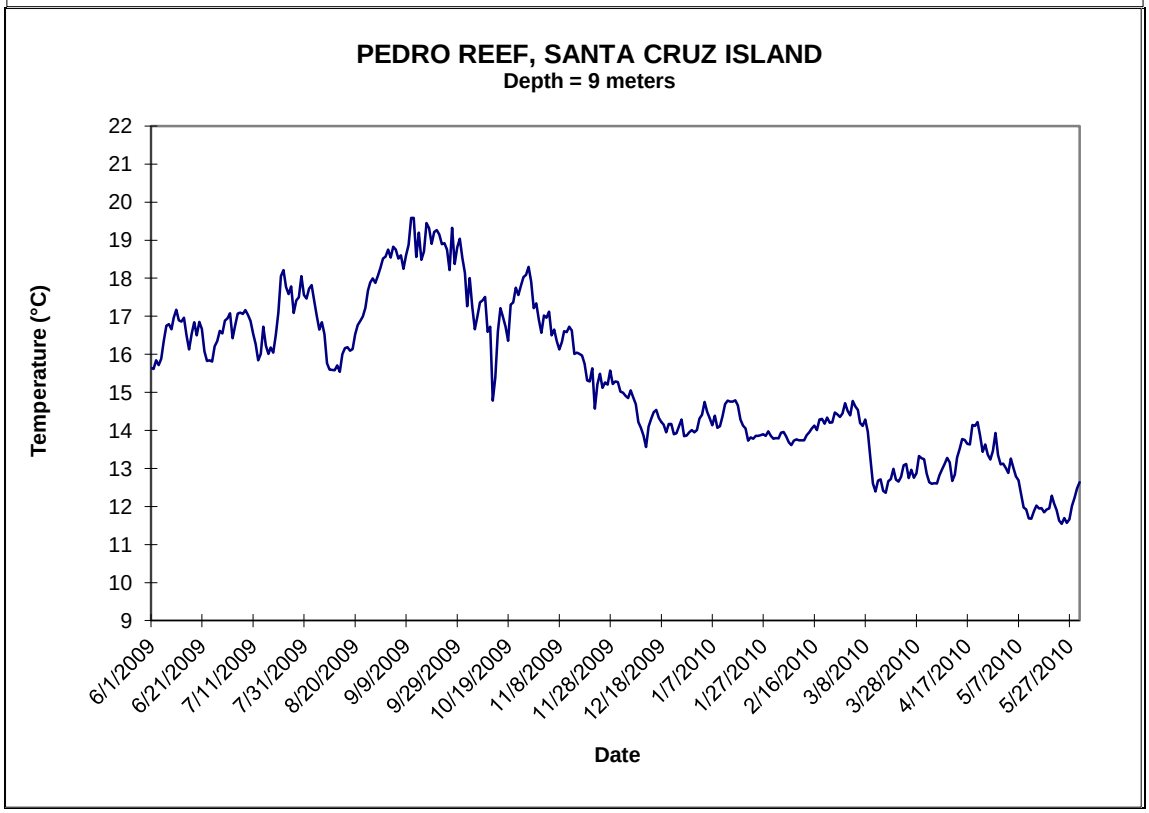

SOUTH POINT, SANTA ROSA ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

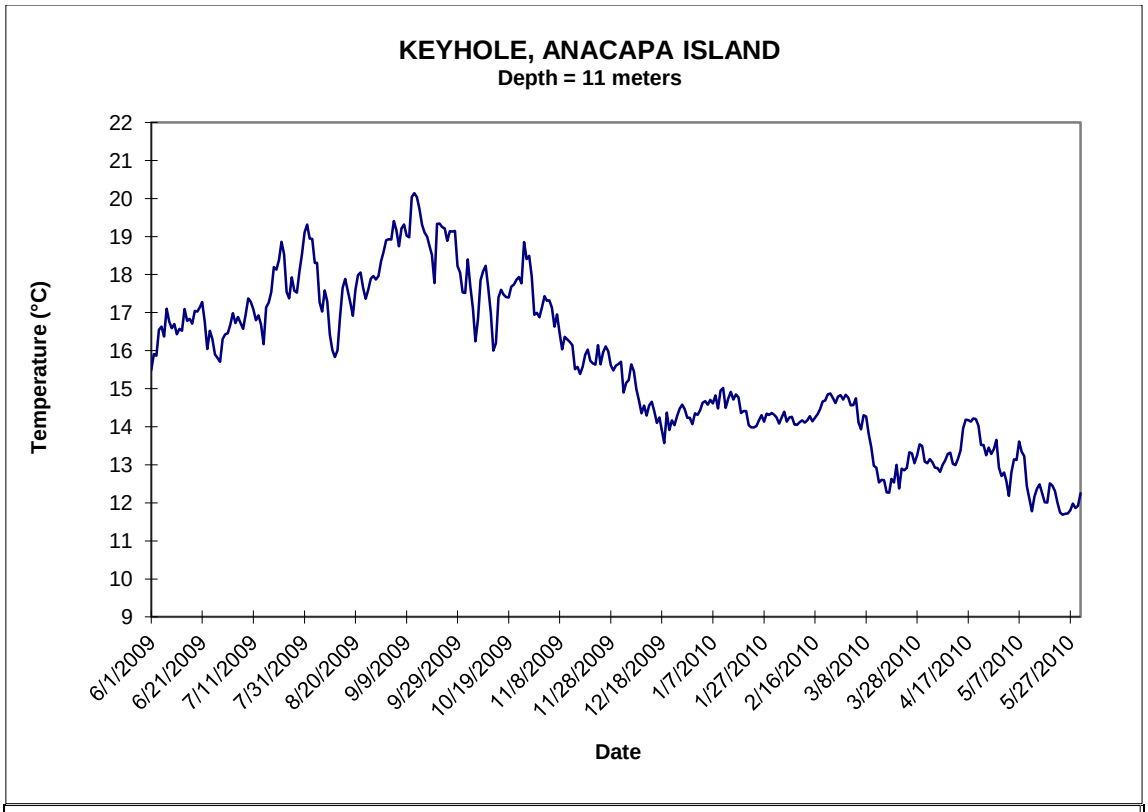

DEVIL'S PEAK MEMBER, SANTA CRUZ ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

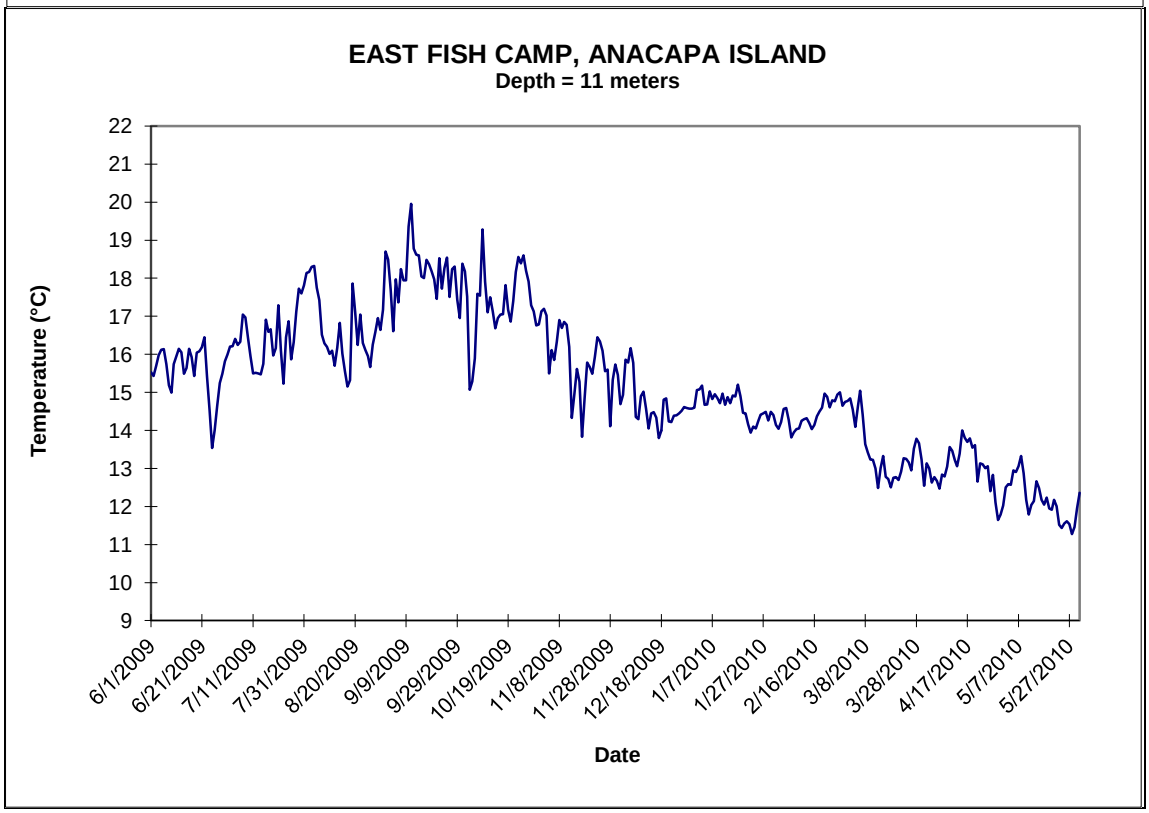

POTATO PASTURE, SANTA CRUZ ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
9/2/2009
9/22/2009
10/12/2009
11/1/2009
11/21/2009
12/11/2009
12/31/2009
1/20/2010
2/9/2010
3/1/2010
3/21/2010
4/10/2010
4/30/2010
5/20/2010
Date

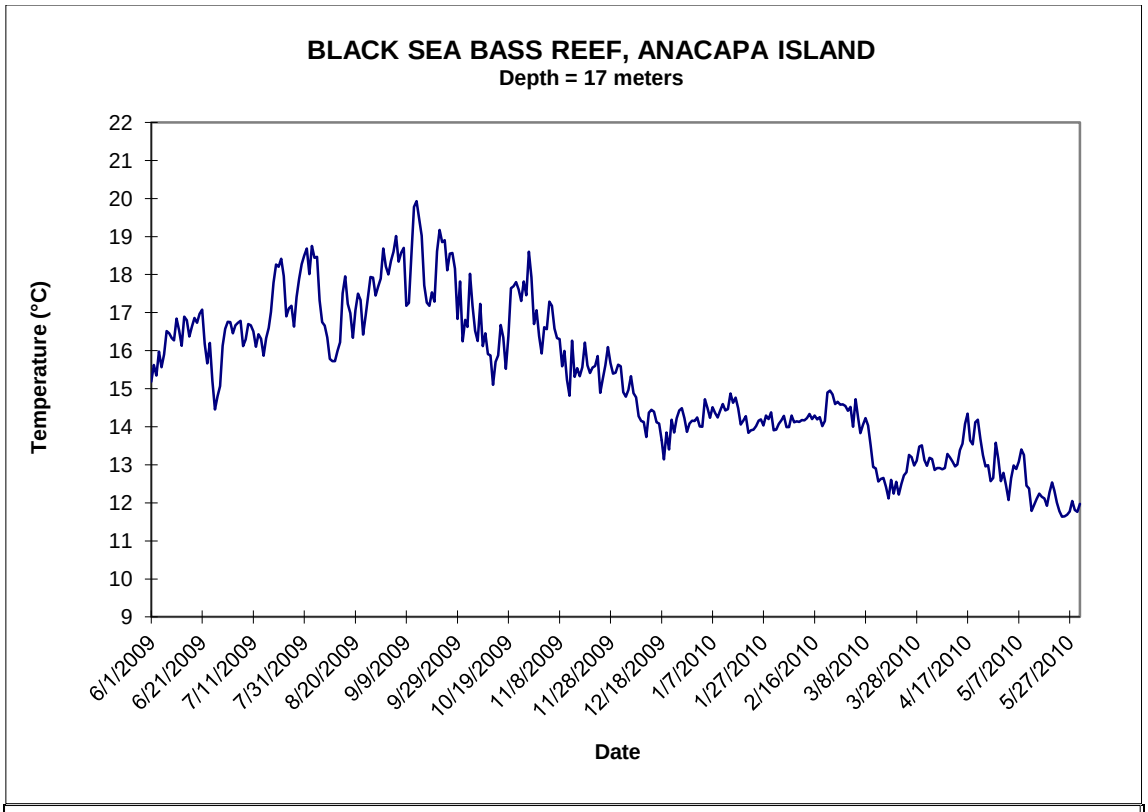

CAVERN POINT, SANTA CRUZ ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

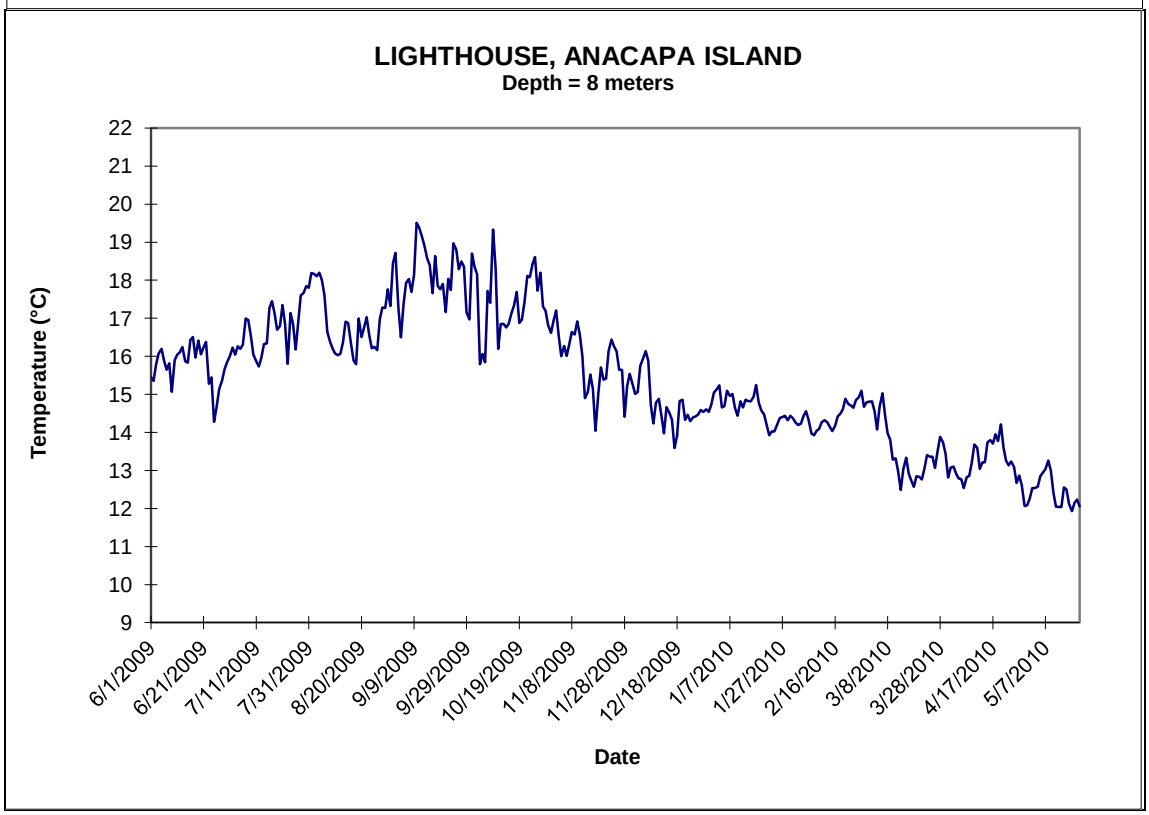

LITTLE SCORPION, SANTA CRUZ ISLAND
Depth = 11 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

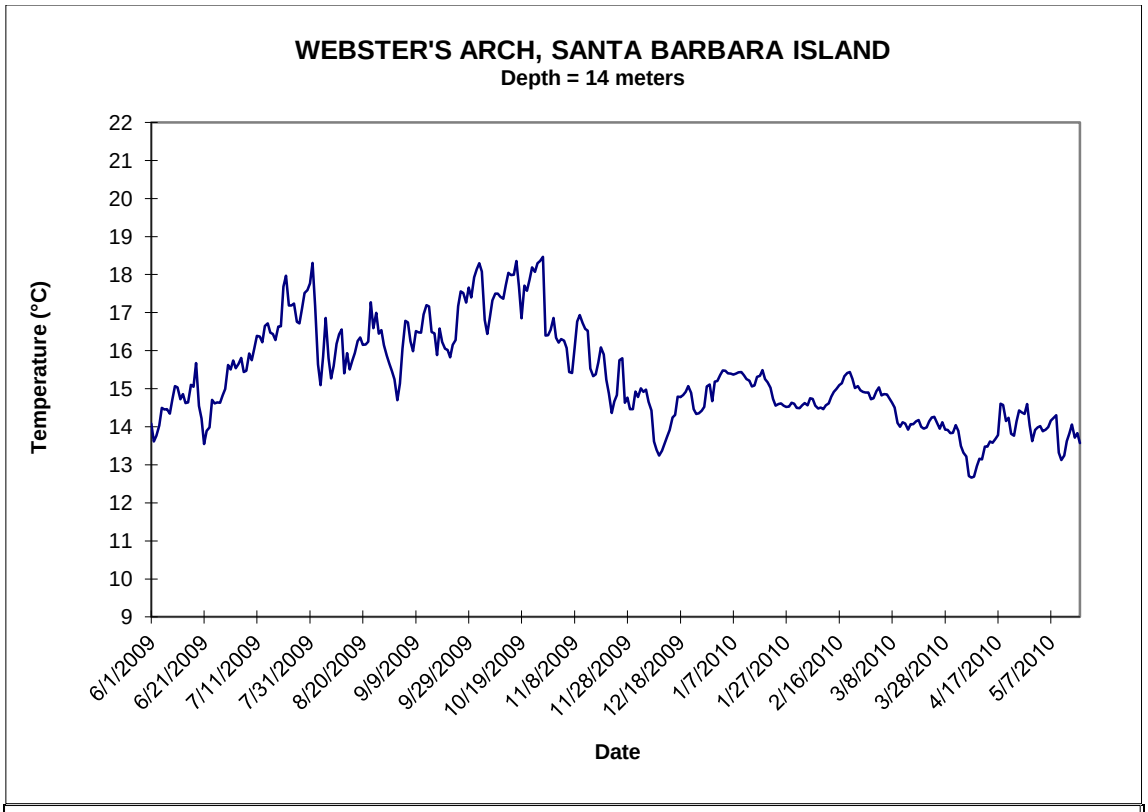

PEDRO REEF, SANTA CRUZ ISLAND
Depth = 9 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

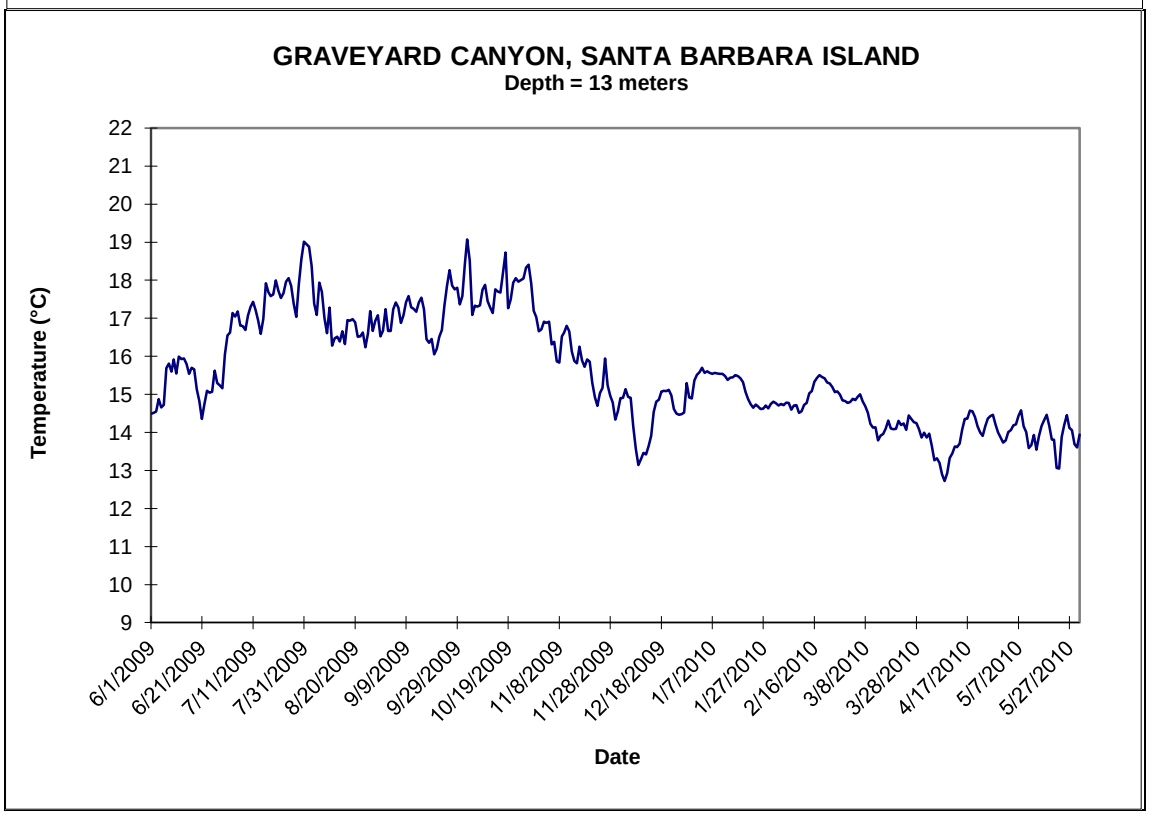

KEYHOLE, ANACAPA ISLAND
Depth = 11 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

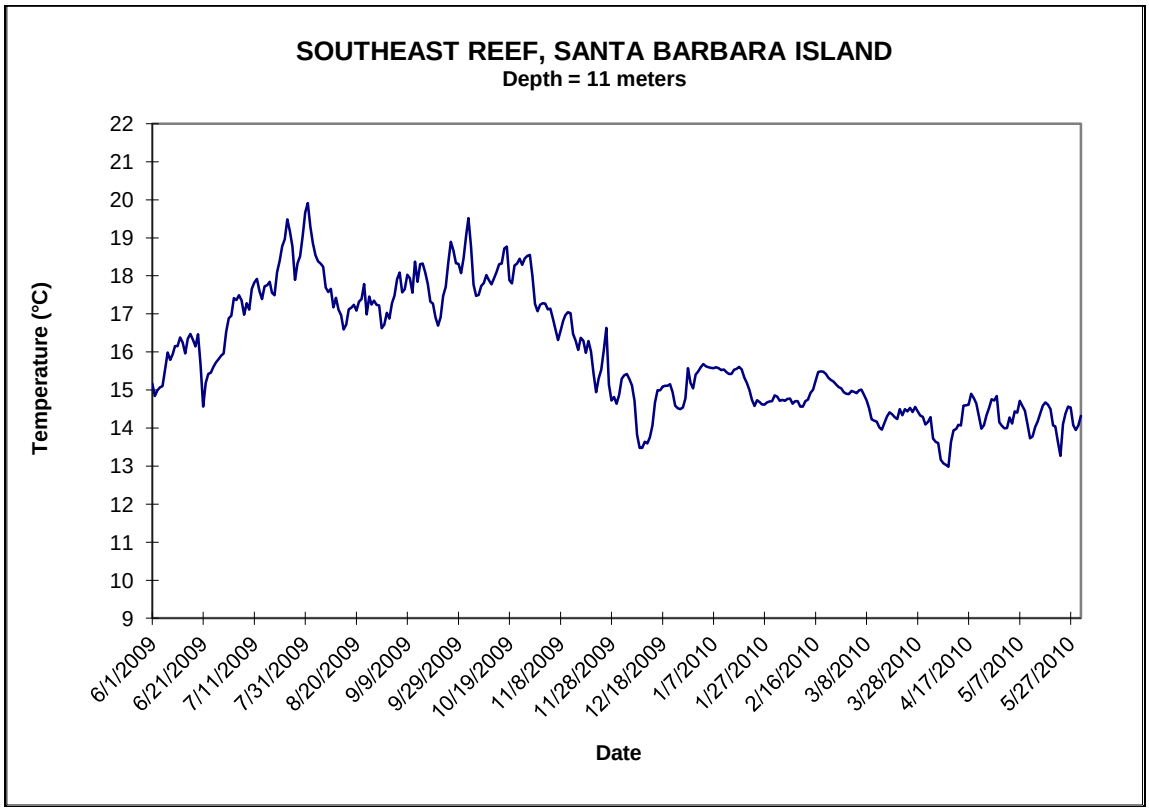

EAST FISH CAMP, ANACAPA ISLAND
Depth = 11 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date


BLACK SEA BASS REEF, ANACAPA ISLAND
Depth = 17 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date


LIGHTHOUSE, ANACAPA ISLAND
Depth = 8 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
Date


WEBSTER'S ARCH, SANTA BARBARA ISLAND
Depth = 14 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
Date


GRAVEYARD CANYON, SANTA BARBARA ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date


SOUTHEAST REEF, SANTA BARBARA ISLAND
Depth = 11 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2009
6/21/2009
7/11/2009
7/31/2009
8/20/2009
9/9/2009
9/29/2009
10/19/2009
11/8/2009
11/28/2009
12/18/2009
1/7/2010
1/27/2010
2/16/2010
3/8/2010
3/28/2010
4/17/2010
5/7/2010
5/27/2010
Date

Appendix N. *Sargassum horneri* Observations From Cruise 11 and February survey

Sargassum horneri and *Haliotis* spp. observations from Channel Islands National Park kelp forest monitoring cruise October 18-22, 2010.

Surveys were conducted by the following divers working or volunteering on the kelp forest monitoring program: Keith Duran, James Grunden, Sonia Ibarra, David Kushner, Joshua Sprague, Eric Mooney, Kelly Moore and Gabe Scheer.

Below are the locations and brief observation where we looked for *Sargassum horneri* and *Haliotis* spp. on the October 18-22 kelp forest monitoring (KFM) cruise. In brief, we made 14 dives where we surveyed for *S. horneri* and *Haliotis* spp. The surveys were performed on the north side of Anacapa Island and one the east side and south side of Santa Cruz Island. Below are the dates we surveyed the sites with brief notes and their locations.

October 18, 2010

ANI, The KFM permanent Landing Cove monitoring site.
Five small *S. horneri* were found in front of/west of the wall of the dock.

ANI, West of Cathedral Cove: 34 00.874 N, 119 22.482 W
There were notably fewer S. horneri than last year, and they appeared smaller. Several small (< 15 cm) were reproductive.We surveyed here for *S. horneri* at depths between 2 - 8 m. There was also less *S. muticum* than we observed last year. No live Haliotis spp. were observed, but one fresh H. corrugata shell measuring 50 mm was found.

West ANI, Rat Rock: 34 00.799 N, 119 26.668 W
A brief survey of 30 minutes was conducted here and we found no *S. horneri* or *Haliotis* spp.

October 19, 2010

SCI, The East side of the KFM Pedro Reef monitoring site
A brief survey of 30 minutes was conducted here and we found no *S. horneri* or *Haliotis* spp.

SCI, Near the KFM permanent Scorpion Anchorage site
A survey 30 minutes was conducted here and we found no *S. horneri* or *Haliotis* spp.

SCI, West of the KFM permanent Scorpion Anchorage site, near Marge Rock
Sargassum horneri was common. Many individuals had reproductive structures and were up to 0.5 m tall. Most of the *S. horneri* was found at a depth of 17 ft, and was patchy in distribution. One *Haliotis rufescens*, measuring 15 mm, was found under a rock. One fresh *H. rufescens* shell measuring 26 mm and one fresh *H. cracherodii* shell measuring 21 mm were found.

Near Chinese Harbor
We only briefly searched here, but did not find any *S. horneri*.

October 20, 2010

SCI, Three Arches: 34 03.42 N, 119 47.991 W
No *S. horneri* was found. One live *H. rufescens* measuring 20 mm was found as well as one fresh shell measuring 65 mm.

SCI, West of bird rock in front of Forney's Cove: 34 03.259 N, 119 55.440 W
The dive was on the offshore reef at a depth of 24-30 ft. Large *H. rufescens* (170+ mm) were moderately abundant in small groups, especially on the edge of the kelp forest. One diver counted 54 in 20 minutes of searching. One large 196 mm *H. corrugata* was observed.

SRI, Carrington Point: 34 02.319 N, 120 02.570 W
A brief survey of 30 minutes was conducted here and we found no *S. horneri* or *Haliotis* spp.

October 21, 2010

SCI, Kenton Point: 34 00.473 N, 119 53.374 W
No *S. horneri* was found. Three *H. rufescens* (110-200 mm) were found at a depth of 30 ft. Two *H. corrugata* (~150 mm) were found eight feet apart at a depth of 14 ft.

SCI, Posa Anchorage: 33 58.630 N, 119 53.285 W
No *S. horneri* or *Haliotis* spp. were found.

SCI, Morse Point: 33 57.809 N, 119 50.967 W
No *S. horneri* or *Haliotis* spp. were found.

SCI, Alamos Anchorage: 33 57.570 N, 119 46.491 W
Two *H. rufescens* and one small *H. corrugata* were observed. No *S. horneri* was found.

Sargassum horneri and *Haliotis* spp. observations from Channel Islands National Park kelp forest monitoring Survey cruise February 9-10, 2010.

Surveys were conducted by the following divers: Keith Duran, David Kushner, Kelly Moore and Stephen Whitaker.

Below are the locations and brief observation where we looked for *Sargassum horneri* and during low tides *Haliotis cracherodii* (black abalone) on the February 9-10, 2010 cruise. In brief, we made 5 dives dives where we surveyed for *S. horneri*. The survey dives were conducted on both the north and south sides of Santa Cruz Island and we observed S. horneri at only one location. For intertidal observations of black abalone, please refer to the 2010 Annual Report for the rocky intertidal monitoring program. Below are the dates we surveyed the sites with brief notes and their locations.

February 9, 2010

SCI, Willows Anchorage: 33 57.696 N, 119 45.288 W
This dive was mostly less than 30ft depth. No *Sargassum horneri* was observered, but large mature *S. muticum* was present.

SCI, Owens Point: 33 57.567 N, 119 43.203 W
No *Sargassum horneri* was observed.

February 10, 2010

SCI, West of San Pedro Point: Start of dive: 34 02.058 N, 119 31.244 W; End of dive 34 02.029 N, 119 31.238 W
This was a drift/live boat dive and large amound of area was covered on this dive, no *Sargassum horneri* was observed.

SCI, Little Scorpion: 34 02.656 N, 119 32.325W
This was a drift/live boat dive and large amound of area was covered on this dive, no *Sargassum horneri* was observed.

SCI, Cavern Point: Start of dive: 34 03.118 N, 119 34.241 W; End of dive 34 03.149 N, 119 34.375 W
This dive was up to 60ft deep and *Sargassum horneri* was observed throughout the entire dive and was determined to be the most dominant algae in some areas. This was the first detection of *S. horneri* on Santa Cruz Island.

Appendix O. Additional *Parastichopus parvimensis* survey

Surveys were conducted September 17th and October 19th, 2010 at three locations inside and three locations adjacent to the Scorpion Marine Reserve at Santa Cruz Island. The sampling consisted of using 20 continuous 1m x 5 m quadrats. The sampling method used was the same as the KFM 5 m quadrat sampling protocol, except that only one side of the 100m transect was sampled for these surveys. The transects were performed in pairs, with each 100 m transect separated by 10 m. The first 100 m transect would be laid out parallel to shore with effort made to maintain a consistent depth. When the diver finished sampling the first transect, they would reel up the tape, swim ahead 10 m, then lay the second transect at the same depth as the first transect. Three different depths were surveyed at each site.

Site	Lattitude	Longitude	Date	Depth (ft)	Transect	Density/1m2	SE
Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	18	A	0.010	0.010
Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	18	B	0.010	0.010
Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	25	A	0.020	0.014
Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	25	B	0.010	0.010
Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	36	A	0.030	0.022
Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	36	B	0.010	0.010
Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	18	A	0.050	0.020
Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	18	B	0.010	0.010
Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	26	A	0.210	0.059
Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	26	B	0.310	0.084
Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	35	A	0.140	0.073
Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	35	B	0.030	0.016
East of Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	21	A	0.000	0.000
East of Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	21	B	0.010	0.010
East of Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	25	A	0.020	0.014
East of Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	25	B	0.020	0.014
East of Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	37	A	0.030	0.022
East of Pedro Reef	34° 02.302 N	119° 31.518 W	10/19/2010	37	B	0.050	0.020
West of Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	15	A	0.060	0.050
West of Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	15	B	0.140	0.041
West of Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	19	A	0.220	0.056
West of Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	19	B	0.130	0.042
West of Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	21	A	0.390	0.092
West of Scorpion Anchorage	34º 02.879 N	119º 33.084 W	10/19/2010	21	B	0.440	0.114
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	24	A	0.790	0.142
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	24	B	0.460	0.058
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	35	A	0.510	0.133
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	35	B	0.470	0.079
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	36	A	0.410	0.073
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	36	B	0.450	0.071
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	30	A	0.520	0.109
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	30	B	0.550	0.094
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	35	A	0.790	0.105
Near Cavern Point	34° 03.191 N	119° 34.294 W	9/17/2010	35	B	0.880	0.121
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	26	A	0.140	0.039
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	26	B	0.180	0.061
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	35	A	0.110	0.053
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	35	B	0.080	0.030
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	26	A	0.090	0.031
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	26	B	0.190	0.045
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	40	A	0.160	0.034
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	40	B	0.140	0.033
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	44	A	0.120	0.037
South of Devil's Peak Member	34° 02.465 N	119° 36.353W	9/17/2010	44	B	0.130	0.026

Appendix P. Protocol Modifications and Data Management Information

Protocol Changes

Sargassum horneri adult (2016.0) and juvenile (2016.5) were added to the 1 m quadrat, 5 m quadrat, and band transect protocols. The definition of a juvenile is defined as being less than 0.5 m tall and the definition of an adult is defined as being greater than 0.5 m tall. *Sargassum horneri,* all (2017.0), was added to the RPC protocol. This species will remain on all of these protocols until it becomes impractical to sample them on multiple methods. We expect this to occur in the near future.

The Roving Diver Fish Count summary datasheet was altered to now include experience level of each observer and a brief description of how to correctly record each observer's data.

The KFM site summary sheets were altered to allow for an abundance rating of each indicator species. This is intended to help facilitate trip report and annual report writing.

Protocol Suggestions

We often assign the least experienced observers to conduct the *Macrocystis* size frequency technique and it is very easy for any observer to mix up the "holdfast diameter" and "stipe count" columns. To simplify this method, we suggest just recording stipe counts and eliminating the holdfast diameter column. This would not only reduce errors, but it would also speed up efficiency and simplify the protocol.

Corrections in the Database

There were no changes to the database this year.

Sampling Difficulties

All proposed data collection was completed this year.

Appendix Q. KFM Program Data Usage for 2010

Data Requests

In 2010, we provided data for five formal requests for the park's kelp forest monitoring program. These requests were as follows:

Haliotis rufescens density data were sent to Dr. Laura Rodgers-Bennett at CDFG which is used for department reports and other reports. Dr. Laura Rodgers-Bennett was also sent *Haliotis corrugata* data for a talk entitled "WHAT HAS SCUBA ALLOWED US TO LEARN ABOUT ABALONE AND SEA URCHINS IN NORTHERN CALIFORNIA?" presented at the "Research and Discoveries: The Revolution of Science Through Scuba Symposium". All temperature data were sent to Dr. Craig Gelpi at the Catalina Marine Society. He is conducting studies of internal waves and tides at the Channel Islands. Sea urchin data were sent to Southern California Coastal Water Research Project for the Bight 2008 report. Roving diver fish count data were sent to Dr. Milton Love at UCSB.

Presentations

The following two posters were presented at the 2010 Western Society of Naturalists Meeting:

Kushner, D. J. , Richards, D. V. , Moore, K. J. *, Sprague, J. L. , Mooney, E. A. , Ibarra, S. N. , Scheer, G. ALIEN SPECIES AND A CHANGING WORLD; WILL KELP FORESTS AT THE CHANNEL ISLANDS EVER BE THE SAME?

Abstract

Invasive species are increasingly affecting marine ecosystems on a global scale and the impacts of these invasions are now recognized as a significant aspect of global change. Several species have been introduced to kelp forests along the California coast and although little baseline information is available, most of these species have had relatively small ecological impacts. The present establishment of the invasive alga *Sargassum horneri* appears to be unlike previous invasions and is expected to soon dominate areas along California including the Channel Islands. Channel Island National Park's long-term kelp forest monitoring (KFM) program has nearly 30 years of baseline data prior to the first observation of *S. horneri* that will help to monitor the invasion and its ecological impacts. The alga was first discovered in Long Beach in 2003, Catalina Island in 2006, and Anacapa Island in April 2009. By October 2009, *S. horneri* was well established in the areas where it was first discovered with notably higher densities of both small and large plants, some at or near reproductive maturity. In addition, *S. horneri* was found at eight of fifteen survey locations including two KFM sites. In 2010, the alga was observed at six KFM sites at Santa Barbara, Anacapa and Santa Cruz Islands -- indicating rapid and widespread expansion in the park. Though it is likely that little can be done to control this alga in open coast ecosystems, the KFM program will continue to monitor its spread and ecological impacts at the Channel Islands National Park.

Eric Mooney[1], Sonia Ibarra[1], Gabriel Scheer[1], Linda Santschi[2], Ralph Imondi[2]. DNA Barcoding: a genetics-based species identification tool for marine ecosystem management.

Abstract:

As ecologically based management strategies become more prevalent, a greater level of

resolution in monitoring techniques is required to elucidate trophic cascade effects throughout food webs. This approach requires precise identification of taxa throughout all life stages, a task that cannot be achieved using morphological criteria alone. DNA barcoding is a genetics-based species identification tool that can be utilized to address such deficiencies thereby advancing our understanding of community ecology. A DNA barcode is a sequence of nucleotides from a reference mitochondrial gene that is capable of distinguishing species groups from all others. Scientists within a global network are participating in a landmark biodiversity genomics initiative (the International Barcode of Life Project) that seeks to build a genetic registry of DNA barcodes from all eukaryotes. Once this reference database is complete, a barcode generated from a specimen that cannot be identified based upon its physical attributes may be queried against all known reference barcodes. Once a match is identified, a species name will be assigned to the unknown specimen. Of the estimated 10M eukaryotic species, 79K are currently represented in the database. Collaborations among many different interest groups are therefore required to achieve the ambitious goals of the initiative. The Channel Islands National Park and Coastal Marine Biolabs are currently collaborating on the assembly of a reference barcode library for marine indicator species found within the Channel Islands kelp forests. Together with the development of new technologies, this DNA-based inventory is expected to provide new inroads to marine ecosystem management.

David Kushner presented Kelp Forest Monitoring data for the Sea to Shore Lecture.

Dr. Stephen Schroeter presented the following talk at California and the World Ocean Conference:

Abstract

Our past work has shown that settlement data collected on appropriate temporal and spatial scales can provide a useful fishery independent measure of stock health. In addition, it can provide valuable information useful in evaluating a variety of resource management strategies, including the spatially explicit approaches of no-take reserves (MPAs) and marine conservation areas. An important aspect of our work has been its large spatial and temporal extent. Our findings emphasize the importance of these design characteristics in capturing the signals of shifting oceanographic regimes (e.g. El Niño/La Niña conditions and Pacific Decadal Oscillations) and accounting for them in evaluating the effects of fishing and management activities. We argue that the long-term and geographically extensive nature of our approach could be useful in providing insights into the possible effects of ocean acidification on the settlement of ecologically important species in nearshore marine habitats. Finally, we point to the importance of extensive collaboration with fishery members and regulatory and public agencies in implement our study design.

Steve Katz presented the following talk at California and the World Ocean Conference: Developing Approaches to Monitor Ecosystem Functions and Processes.