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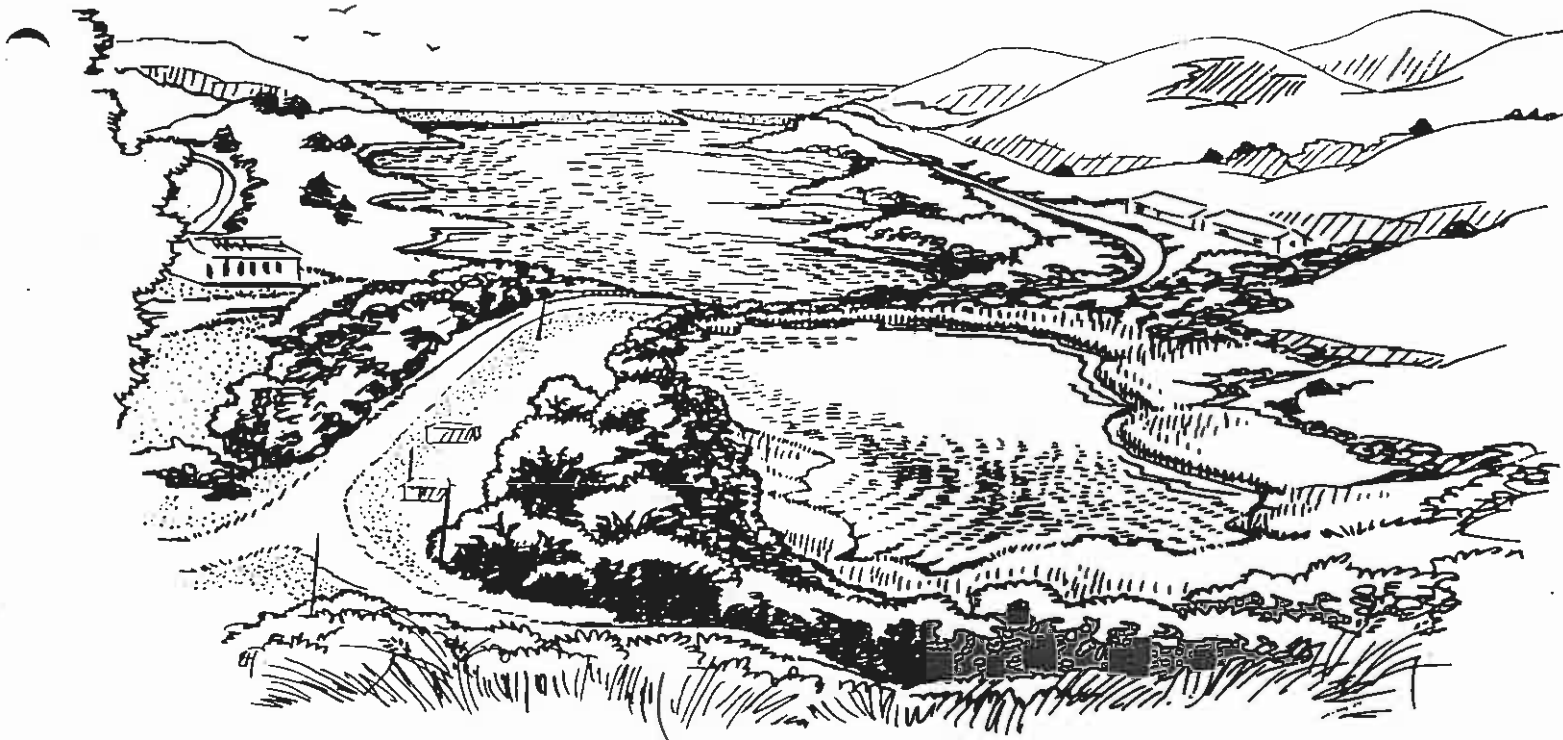
GOGA

**RODEO LAGOON**

**PROTECTION AND ENHANCEMENT PLAN**

**GOLDEN GATE NATIONAL RECREATION AREA**

JULY 7, 1992



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## INTRODUCTION AND RESOURCE HISTORY

Rodeo Lagoon is a significant estuarine resource that is deteriorating in water quality, water quantity, wildlife habitat and vegetative health. Years of unnatural sedimentation and increase in nutrients has caused accelerated eutrophication of the lagoon. Rodeo Lagoon is the only estuarine resource in the GGNRA that has its watershed completely within the park boundary. Two larger estuarine systems historically existed within the boundaries however they have both been filled and greatly altered. The alteration of these historic lagoons has strengthened the significance of Rodeo Lagoon as a surviving natural resource to the species diversity of the area. This enhancement plan will decrease the ongoing sedimentation into the lagoon, enhance vegetative health and protect the critical wildlife habitat of the lagoon environs.

Rodeo Lagoon provides habitat for at least 21 rare species. Some are resident and some migratory. This includes such federally protected species as the federally listed California brown pelicans (Pelecanus occidentalis); the tidewater goby (Eucyclogobius newberryi) which is "proposed" for federal listing as endangered, the saltmarsh common yellowthroat (Geothlypis trichas sinuosa) which is a category 2 candidate for federal listing, the mission blue butterfly (Icaricia icarioides missionensis), a federally listed endangered species, and the Townsend's big-eared bat (Plecotus townsendii) (Figure 1). Sixteen rare birds have been seen in the Rodeo Lagoon environs (Table 1). 304 bird species are associated with the area and 10 fish species are known to exist in the lagoon. Other rare species probably live in the Rodeo Lagoon but need verification, such as the red-legged frog (Rana aurora) (Figure 2).

Eight native plant communities are included in the Rodeo Lagoon area and five are considered rare by the State of California and the California Native Plant Society: central dune scrub, northern coastal salt marsh, coastal brackish marsh, coastal freshwater marsh and central coast riparian scrub.

The lagoon area has great aesthetic and educational importance and attracts many visitors. Daily environmental education classes from the Headlands Institute use the area to teach some 250 children a week. As a result, interest in preserving and managing Rodeo Lagoon is strong.

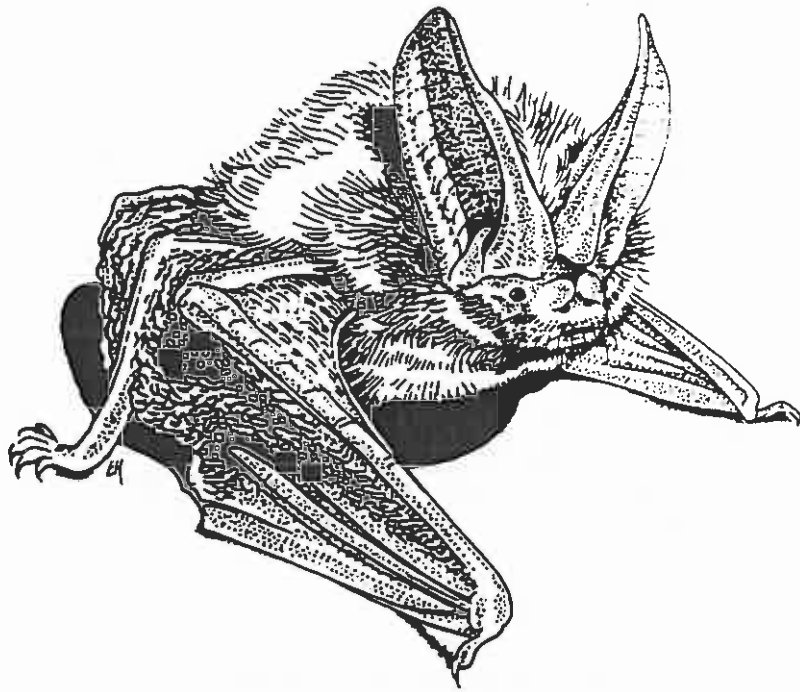
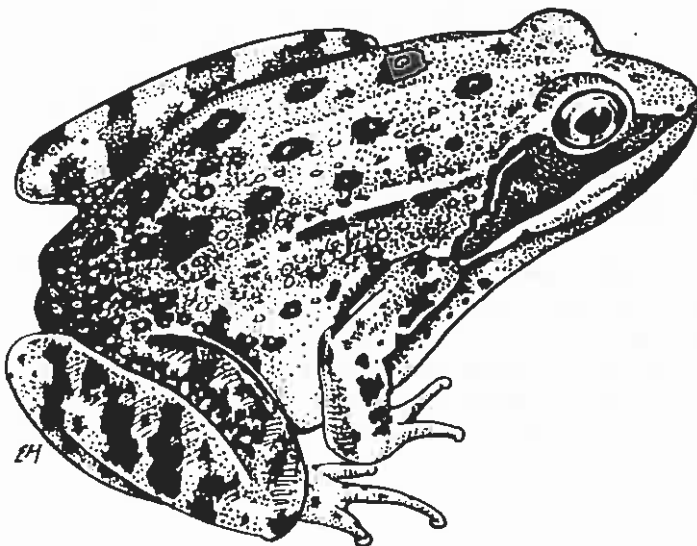


Figure 1.

The townsend's big-eared bat feeds on insects that are reared in Rodeo Lagoon.

Figure 2.

The red-legged frog is one of the species that needs to be surveyed in the tributaries of Rodeo Lagoon.



## DETAILED RESOURCE DESCRIPTION

### LAGOON RESOURCE DESCRIPTION

The Lagoon is approximately 1200 yards long, 73 acres and is only a few feet deep throughout most of the year (figure 3). Since the lagoon is quite shallow while the surface area is relatively large, evaporation per unit volume is enormous. The lagoon has become visibly shallower and more eutrophic with each passing year.

The Soil Conservation Service (SCS) sounded out the lagoon and probed the bottom with a 16 foot metal rod (on an unknown date). Below the initial muds, the consistency was more of clay or fine sand and did not resemble the hard rock of the valley or gravel of an ancient river bed. The material was not brought to the surface. The lagoon has over 10 feet of sediment accumulated over its original bottom and may even be as deep as 25 feet in some places. This paper suggests that eventually a marsh will form if present conditions persist.

Behind the lagoon is located a 2360 acre watershed area. The stream network feeding the pond and lagoon ranges all the way from a heavily overgrown stream to a silt filled gully with riparian vegetation removed in some of the upper watershed.

The most dynamic event for Rodeo Lagoon's annual cycle is the breaking of the sandbar which opens the lagoon to the ocean. During heavy storm periods the lagoon waters rise and push toward the ocean. As the tide rises and the waves break higher on the beach the lagoon and ocean inch toward each other. When the break occurs it becomes an active spillway of lagoon water into the ocean followed by ocean water entering the lagoon. Rodeo lagoon does not remain a tidal inlet for long. Data has shown Rodeo Lagoon to be open to the sea approximately 10 - 15 non-consecutive days of the year. (Hill, 1970).

Since the turn of the century military occupation of the Marin Headlands resulted in modifications to the lagoon. Approximately 5 ha (12 acres) of the original lagoon were dammed to form a freshwater lake now called Rodeo Lake, now approximately 8 acres). It is now very shallow and eutrophic. At present, the pond best serves as a silting basin for Rodeo Lagoon. Land fill, a road and a weir separates the pond from the lagoon.

The Army installed a leach field in the beach with connecting pipes and septic tanks adjacent to the lagoon. The top of one septic tank was below the high water mark of the lagoon. This required mechanical breaching of the barrier beach before the lagoon waters rose above the septic tank, flushing effluent into the lagoon. Often heavy storms filled the lagoon rapidly which accelerated

pollution.

In 1977 a comprehensive study was prepared that highlighted the severe infiltration and inflow problems in the wastewater collection system and cited the "extremely polluted" conditions in Rodeo Lake, Lagoon and Beach (Marin Headlands Sewerage System Study, GGNRA). This was confirmed in 1980 (Rodeo Valley Utility Study, GGNRA). These studies noted the sewage system, the horse stable operation and the Marine Mammal Center as contributing sewage to the lagoon.

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In 1991 a new sewer system in the Rodeo Lagoon watershed was built and all sewage material is now pumped out of the system. The leach field is now abandoned.

A 1992 study of the bottom by Biosystems was conducted to assure that the eutrophication of the lagoon was an un-natural phenomena. Results indicated accelerated eutrophication due to septic influences and accelerated erosion due to human-caused activity and also stated:

"Rodeo Lagoon is shallow and moderately turbid, with a high nutrient content and a particularly high concentration of ammonium... The lagoon residence time is extremely long, especially in summer, with the result that the nutrients transported into the lagoon are effectively trapped there."

Water depth in November, 1992, after initial season storms measured between .64 and 1.01 meters. Water transparency (Secchi disk) was between 27 and 38 cm. Water temperature measured at 10.5 degrees C. Dissolved oxygen was close to saturation levels. Sediments collected consisted of black clayey silts, rich in organic matter and high in ammonium and othophosphates. High concentrations of nutrients exist in the water column and the sediment (only top 10 cm were collected).

Oil spills are a threat to the lagoon. One occurred in 1984 which affected the lagoon to an unknown extent.

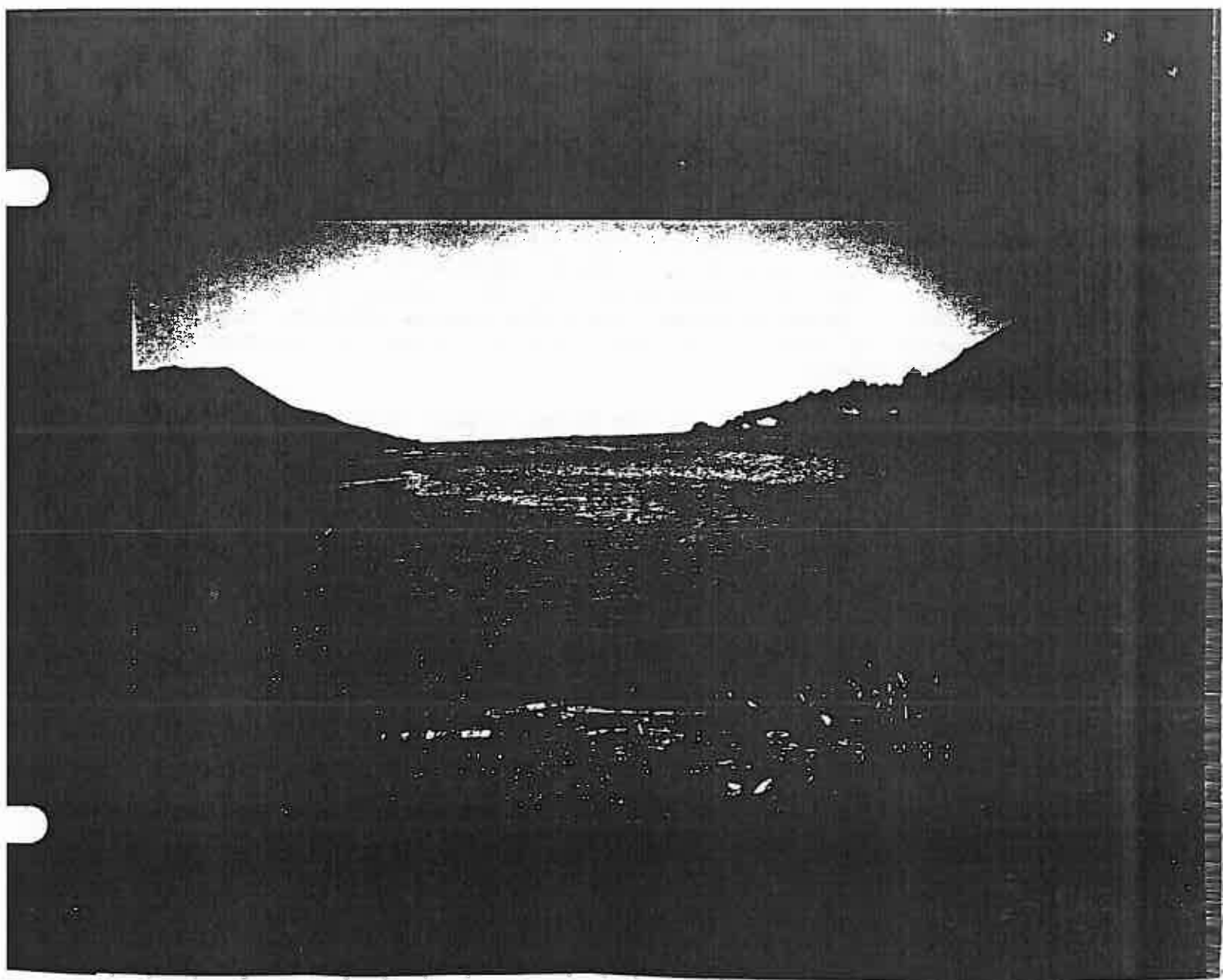
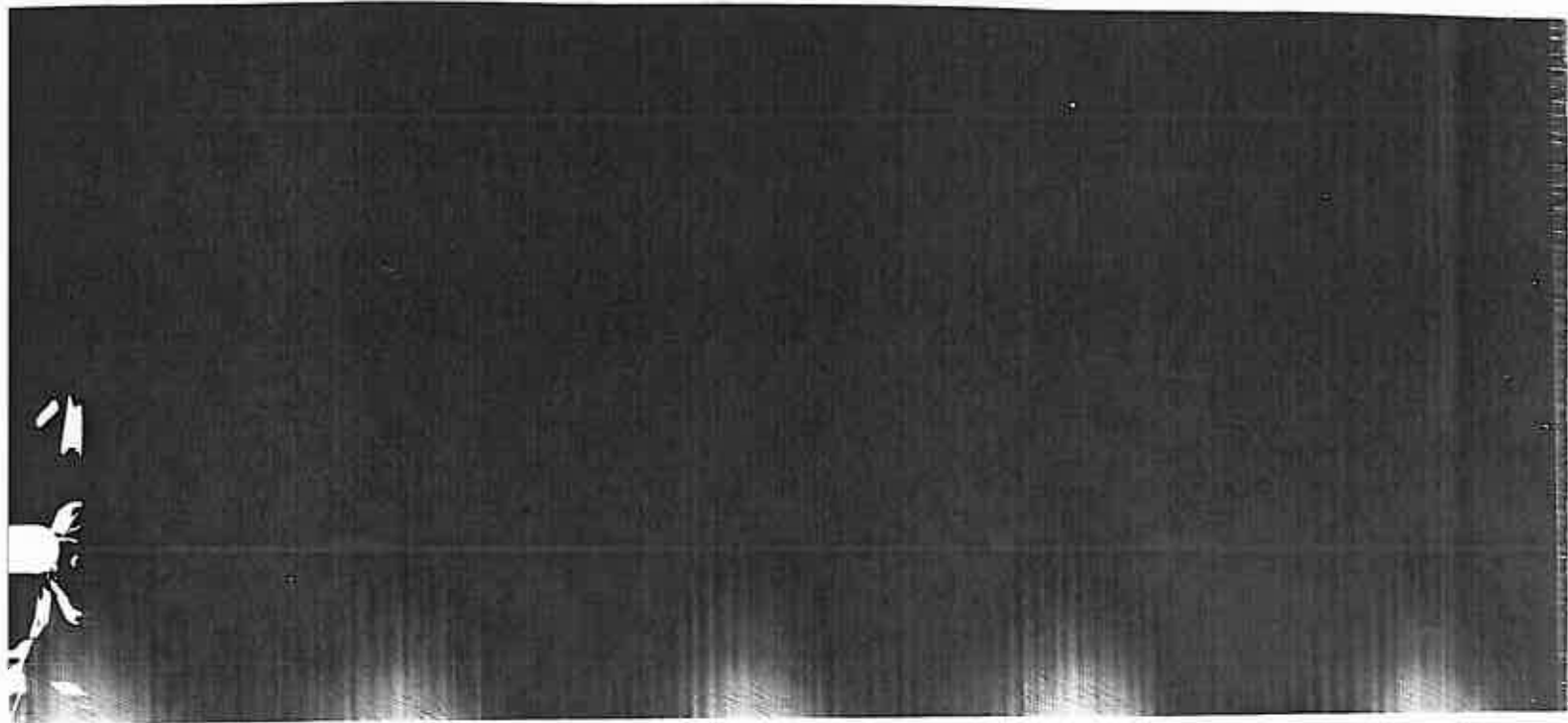


Figure 3. Rodeo Lagoon, Fort Cronkhite, Marin County, CA.



## PLANT COMMUNITY DESCRIPTIONS

The eight plant communities in the Rodeo Lagoon environs are a patchwork of habitats and biodiversity (figure 2). These communities have at least 227 species associated with them (appendix i).

1. The Northern Foredune plant community is found on the west bank of Rodeo Lagoon. It is dominated by perennial grasses (to 70 cm tall) and low, often succulent, perennial herbs and subshrubs (about 10 cm tall). Coverage varies from nearly complete to scattered. The species typically are zoned, with Abronia, Ambrosia and Cakile usually occurring in the sites most exposed to the wind and Calystegia and Camissonia in more sheltered sites. Growth and flowering are most active in late spring and early summer, but continue at a reduced rate all year.

This community is located on the beaches and has less wind and/or a smaller supply of sand and/or more available groundwater than the Active Coastal Dune community. The relatively favorable conditions allow the establishment of plants which reduce the amount of blowing sand and partially stabilize the dunes. Drainage is rapid, but the deeper zones may be relatively moist. Plants are subject to desiccating, salt-bearing winds.

Characteristic species include: Abronia latifolia, Ambrosia chamissonis, (Cakile maritima), Calystegia soldanella, Carpobrotus chilense, and Elymus mollis).

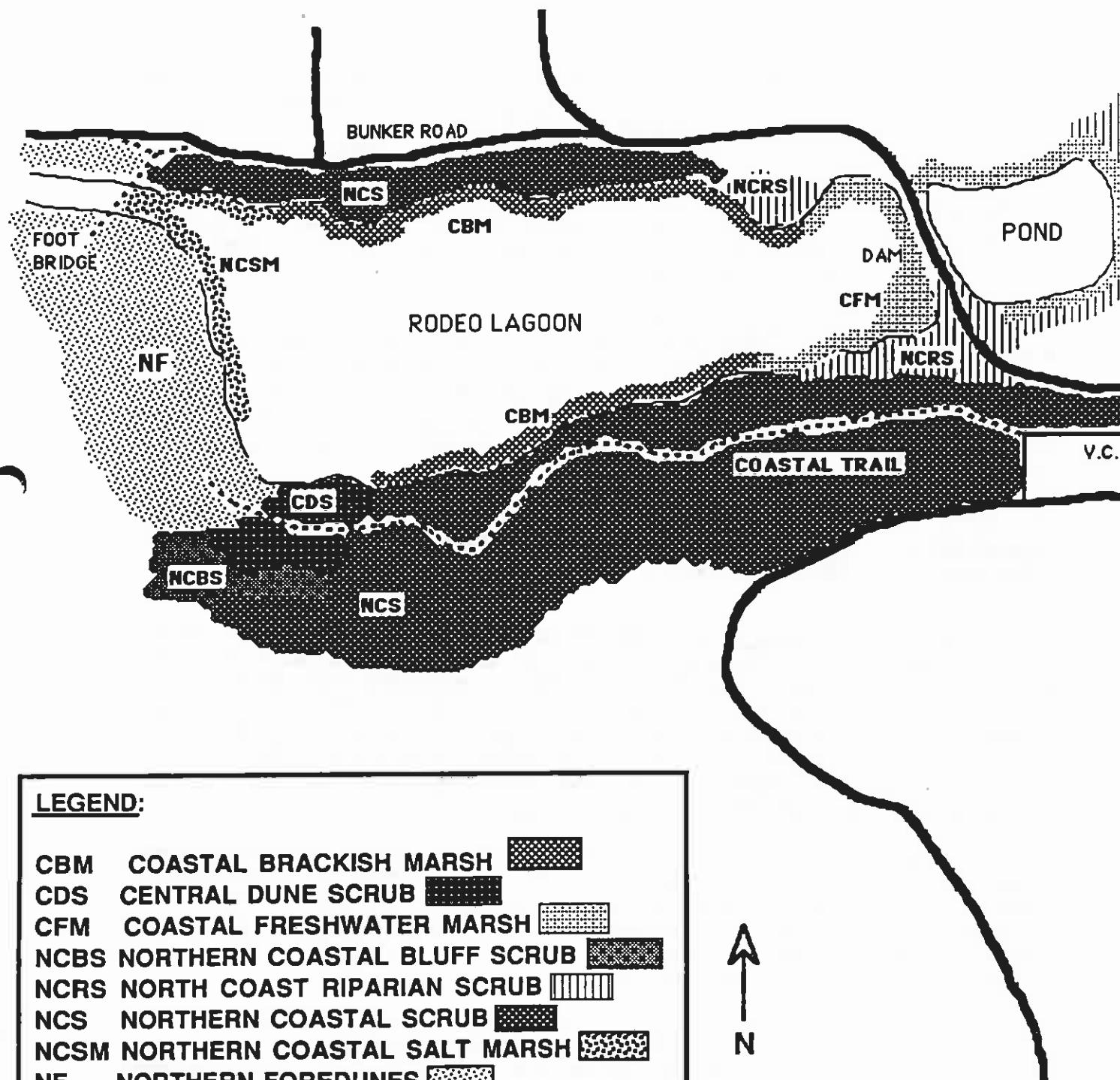
2. Central Dune Scrub is a dense coastal scrub community located at the base of the coastal bluffs on the southwestern corner of Rodeo Lagoon, where the Coastal Trail reaches the beach. The California Native Plant Society (CNPS) considers this a rare plant community. It consists of scattered shrubs, subshrubs, and herbs, generally less than 1 m tall and often developing considerable cover. Diagnostic species include Ericameria ericoides, Lupinus chamissonis, and Artemisia pycnocephala.

This community is restricted to the coastal strip roughly between Bodega Bay and Point Conception. It is located on the coast on more or less stabilized backdune slopes, ridges, and flats. Blowouts often are recolonized by foredune species or (where blowout reaches the groundwater table) by freshwater marsh taxa around a Dune Slack Pond or Lake.

3. Northern Coastal Bluff Scrub is located on the coastal bluffs at southwest corner of lagoon. It is a low, often prostrate, scrub with dwarf shrubs, herbaceous perennials, and annuals represented.

Figure 4. Eight vegetation communities are found around Rodeo Lagoon.

# PLANT COMMUNITIES OF RODEO LAGOON (PRELIMINARY DRAFT)



Varying degrees of succulence are shown. Most growth and flowering occur in late spring and early summer, but can occur almost year-round.

This community is exposed to nearly constant winds with high salt content. The soil is usually rocky and poorly developed. It integrates with Coastal Prairie and Northern Coastal Scrub in less exposed situations.

Characteristic species include: Allium dichamydeum, Castilleja wightii, Dudleya farinosa, Erigeron glaucus, Eriogonum latifolium, Eriogonum nudum, Eriophyllum staechnadifolium, Hypochoeris radicata, Lupinus propinquus, Plantago maritima, Polypodium souleri, Spergularia maritima.

4. Northern (Franciscan) Coastal Scrub is located on the upper north slope above Rodeo Lagoon, and the upper south slope to the Nike site. It consists of low shrubs, usually 0.5-2 m tall, usually dense but with scattered grassy openings. Most growth and flowering occur in late spring and early summer.

It is found on windy, exposed sites with shallow, rocky soils although less exposed than Northern Coastal Bluff Scrub. Characteristic species include: Artemisia californica, Baccharis pilularis, Erigeron glaucus, Eriophyllum staechnadifolium, Heracleum maximum, Iris douglassiana, Mimulus aurantiacus, Rosa californica, Rubus ursinus, Toxicodendron diversilobum. In California, this community is found patchily distributed

5. Northern Coastal Salt Marsh is a highly productive plant community that is considered rare by the California Native Plant Society (CNPS). It is located near the mouth of Rodeo Lagoon and is distributed along the coast from the Oregon border to Point Conception. This community has been extensively developed. It is usually found along sheltered inland margins of bays, lagoons, and estuaries. These hydric soils are subject to regular tidal inundation by salt water for at least part of each year.

The Coastal Salt Marsh consists of herbaceous and suffrutescent, salt-tolerant hydrophytes forming moderate to dense cover and up to 1 m tall. Most species are active in summer, dormant in winter. Usually segregated horizontally with Spartina nearer the open water, Salicornia at mid-littoral elevations, and a richer mixture closer to high ground. Characteristic species include: Distichlis spicata, Eleocharis macrostachys, Frankenia grandifolia, Jaumea carnosa, Juncus lesuerii, Plantago maritima, Potentilla egedii, and Salicornia virginica.

6. Coastal Brackish Marsh is a rare plant community (CNPS) that is usually at the interior edges of coastal bays and estuaries or in coastal lagoons, adjacent to several Salt Marshes. At Rodeo Lagoon, it is at the north and south edges in a continuous strip

along the water's edge.

Coastal Brackish Marsh is dominated by perennial, emergent, herbaceous monocots to 2 m tall. Cover is often complete and dense. It is similar to Coastal Salt Marshes, but brackish from freshwater input. Salinity may vary considerably, and may increase at high tide or during seasons of low freshwater runoff or both. It usually intergrades with Coastal Salt Marshes toward the ocean and occasionally with Freshwater Marshes at the mouth of rivers. Characteristic species include: Carex globosa, Carex obnupta, Distichlis spicata var. spicata, Juncus spp., Slaticornia virginica, Scirpus cernuus, S. microcarpus, S. pungens.

7. Coastal Freshwater Marsh is a rare plant community (CNPS) which is found occasionally along the coast and in coastal valleys near river mouths and around the margins of lakes and springs. At Rodeo Lagoon, it is found around the pond, and in the southeast corner of the lagoon. The marsh is dominated by perennial, emergent monocots to 4-5 m tall, often forming completely closed canopies. Characteristic species include: Carex globosa, C. obnupta, Cyperus eragrostic, Eleocharis macrostachya, Hydrocotyl ranunculoides, Scirpus cernuus, S. americanus, S. microcarpus, S. Pungens, Typha latifolia.

8. Central Coast Riparian Scrub is a rare plant community (CNPS) and is located in relatively fine-grained sand and gravel bars that are closed to river channels and therefore close to ground water. Coarser substrates or greater depths to the water table favors dominance by Baccharis. The community at Rodeo Lagoon is in front of the Headlands Institute, below the stop sign, in the north- and southeast corners, along the south shore.

The community is a scrubby streamside thicket, varying from open to impenetrable, dominated by any of several willows. This early seral community may succeed to any of several riparian woodland or forest types absent severe flooding disturbance. Characteristic species include: Artemisia douglasiana, A. californica, Baccaris pilularis consanguinea, Lonicera involucrata, Rosa californica, Rubus ursinus, Salix lasiandra, S. lasiolepis, Sambucus callicarpa, Symphoricarpos rivularis, Toxicodendron diversilobum.

## WILDLIFE RESOURCE DESCRIPTION

Each Wednesday for almost 10 years, Carter Foust has walked the Rodeo Lagoon environs and has kept an ongoing bird list of his discoveries. At first he wondered if he could list 200 species and when that happened rather easily, he hoped for 300 which would be an excellent list for almost anywhere. This goal has now been reached and exceeded with a total of 304 species (Appendix ii). Sixteen rare birds have been seen on these walks (Table 1).

TABLE 1. Rare bird species seen at the lagoon.

### Federally Listed Species:

Brown pelican (Figure 5)  
Bald eagle (Haliaeetus leucocephalus)  
Peregrin falcon (Falco peregrinus)

### California Protected Species:

Black-shouldered kite (Elanus caeruleus)  
Golden eagle (Aquila chrysaetos)

### California Species of Special Concern:

Double-Crested Cormorant (Phalacrocorax auritus)  
White-faced ibis (Plegadis chihi)  
Osprey (Pandion haliaetus)  
Northern harrier (Circus cyaneus)  
Merlin (Falco columbarius)  
Burrowing owl (Athene cunicularia)  
Long-eared owl (Asio ots)  
Short-eared owl (Asio flammeus)  
Purple martin (Progne subis)  
Yellow warbler (Dendroica petechia)  
Yellow breasted chat (Icteria virens).

All of these species were also listed on the Habitat Relationship Models, a program developed by the state of California to identify species associated with the habitats identified in the Plant Communities section. When the Rodeo Lagoon environs were applied to this model, species were listed (Appendix iii). Included in this list are the following rare mammals, amphibians and reptiles (Table 2).

The GGNRA Research Scientist has been researching the validity of the above model and has confirmed the following species at the Rodeo Lagoon environs: Deer mouse, dusty footed woodrat, gray fox, raccoon, meadow vole, opossum, western harvest mouse, vagrent

shrew, house mouse and feral dog (Appendix iv).

TABLE 2. Rare Mammals, Amphibians and Reptiles present in Rodeo Lagoon as Identified through the California Department of Fish and Game Wildlife Habitat Relationship System and insects known to exist.

Federally listed or Candidate species

Townsend's big-eared bat (Plecotus townsendii)

Salt-marsh harvest mouse (Reithrodontomys raviventris)

Mission blue

California Protected species

Ringtail (Bassariscus astutus)

California species of Special Concern

Monarch butterfly

Rare Species

Western pond turtle (Clemmys marmorata)

Red-legged frog (Rana aurora)

Two studies of the fishes were conducted in 1983 and 1985. These focused on the status of the rare Tidewater goby. A fish survey was conducted that noted 10 fish species:

Table 3. Fish of Rodeo Lagoon and Rodeo Lake (Wang, 1983).

|                                   |                                    |        |
|-----------------------------------|------------------------------------|--------|
| Goldfish                          | <u>Carassius auratus</u>           | lake   |
| Golden shiner                     | <u>Notemigonus crysoleucas</u>     | lagoon |
| Topsmelt (native)                 | <u>Atherinops affinis</u>          | lagoon |
| Jacksmelt (native)                | <u>Atherinopsis californiensis</u> | lagoon |
| Threespine stickleback (native)   | <u>Gasterosteus aculeatus</u>      | lagoon |
| Green sunfish                     | <u>Lepomis cyanellus</u>           | lake   |
| Yellowfin goby                    | <u>Acanthogobius flavimanus</u>    | lagoon |
| Tidewater goby (native)           | <u>Eucyclogobius newberryi</u>     | lagoon |
| Prickly sculpin (native)          | <u>Cottus asper</u>                | lake   |
| Pacific staghorn sculpin (native) | <u>Leptocottus armatus</u>         | lagoon |

The Tidewater goby (figure 3) is a proposed species for federal listing and will most probably be federally listed by June 1994. Monitoring in 1992 indicated that the population was drastically diminished in Rodeo Lagoon. This fish species is associated with shallow lagoons and lower stream reaches along the California Coast from Agua Hedionda lagoon to the mouth of the Smith River. They need fairly still but not stagnant water and high oxygen levels.

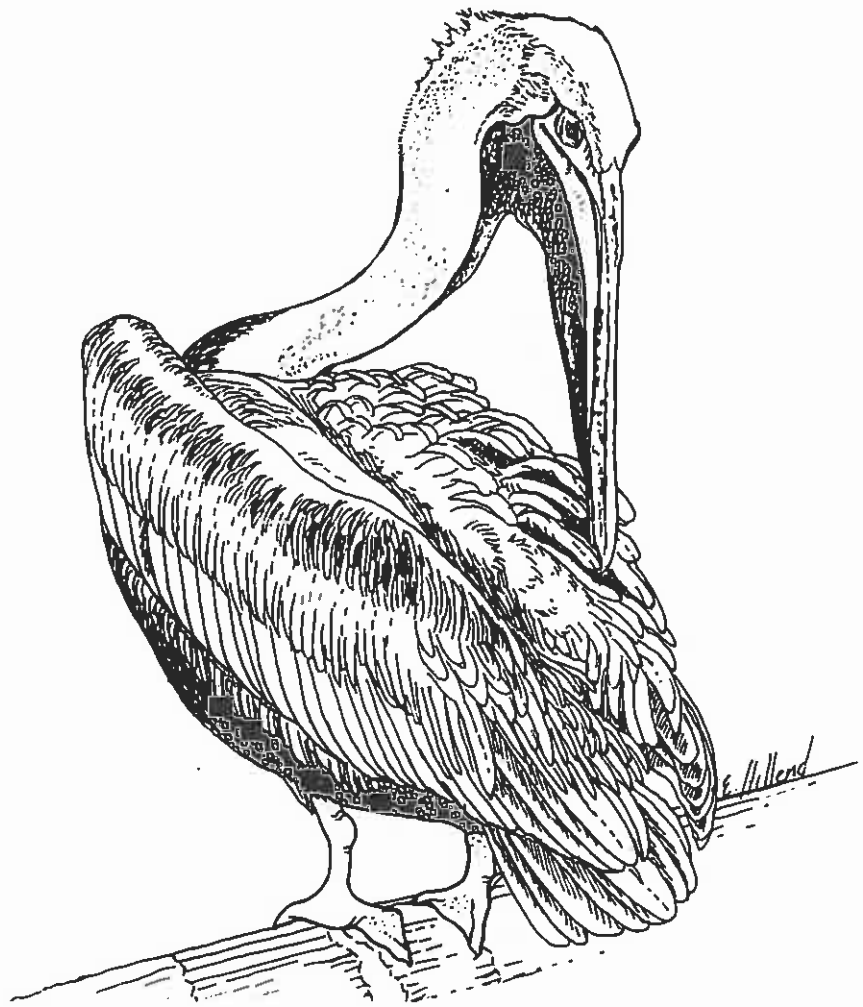
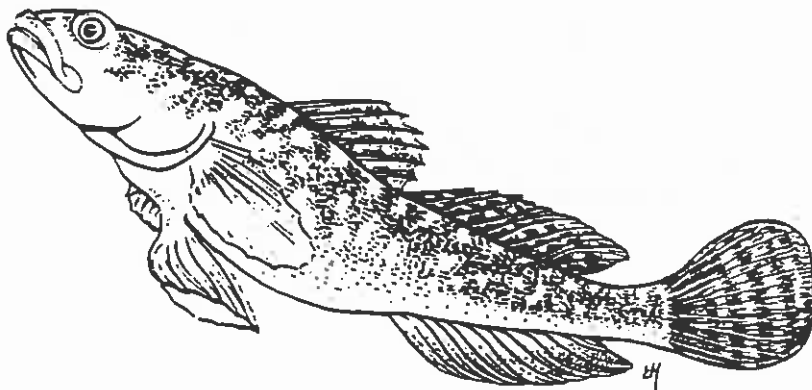


Figure 5. The federally listed, threatened, California brown pelican.

Figure 6. The federally listed (proposed) endangered, Tidewater goby.



## ENHANCEMENT ELEMENTS

### ELEMENT NUMBER 1: ENHANCE WATER QUALITY AND QUANTITY

#### Problem Statement:

The unnatural increase in nutrients from sewage and sedimentation has caused accelerated eutrophication of the lagoon. Large mats of aquatic vegetation grow during the summer covering approximately 80% of the lagoon surface. Waterfowl frequently walk on the surface of the vegetative mat. Although the septic system has been replaced with a sewer system, the effects still continue.

An artificial increase in siltation is caused by storm water concentration as a result of management practices. Water is concentrated by in-board ditches on roads (figure 7), artificially created drainages, failing or misdirected culverts and other road and trail related problems (figure 8).

The constant lowering of the lagoon due to unnatural breaching results in higher salinity levels. Fresh water flows are flushed out, but storm waves continue to wash into the lagoon. The tidewater goby requires lower salinity water for spawning. The higher salinity levels promote spawning by an introduced competitor, the Yellow-fin Goby. The breaching occurs due to perceived threats to a vehicle bridge (figure 9) and a pedestrian bridge (figure 10).

Freshwater inflow is decreased by a weir that separates the lake from the lagoon allows water levels in the range from 3 feet to a few inches below that in the pond (figure 11). The decrease in fresh water, especially in the summer, leads to a loss of habitat due to substrate exposure and an increase in salinity.

#### Enhancement and Protection Program

1. Reduce sedimentation into the lagoon by stabilizing unnatural sediment sources. This includes:

1) Outsloping roadbeds.

2) Realigning drainage systems to more natural configuration where this will reduce sediment inputs (Figure 8).

3) Restoring riparian drainages to original vegetated state. This includes: riparian waterways now directed into culverts; assessing stream restoration in sites altered by development, such as the Headlands Institute area; assessing currently



Figure 7. Erosion from an inboard ditch adds sediment to Rodeo lagoon.

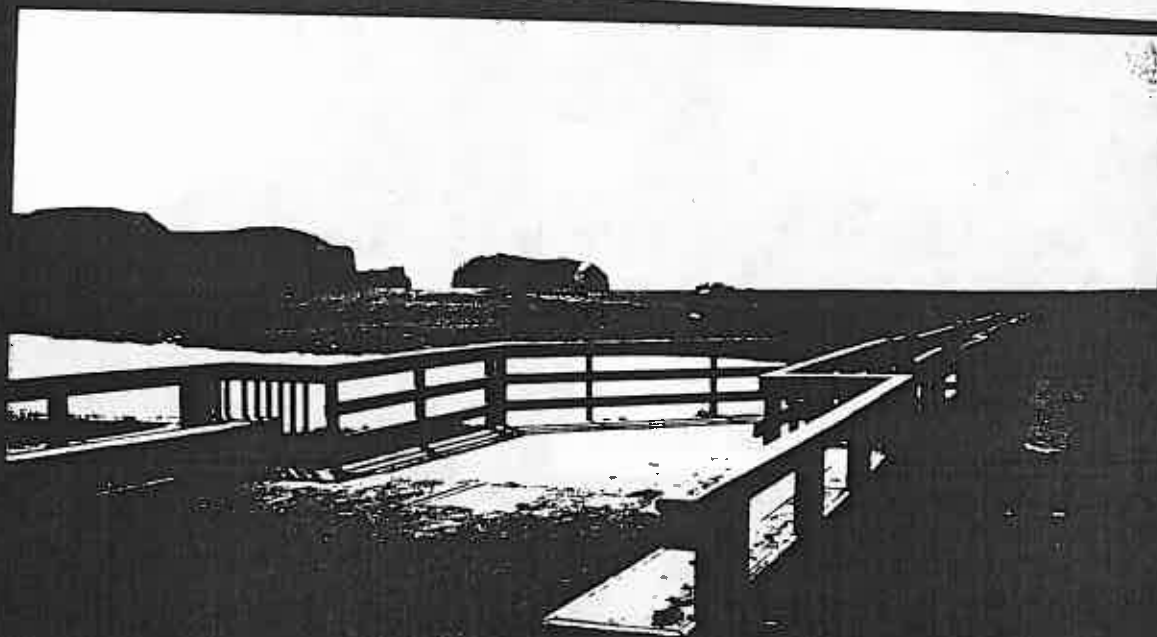


Figure 8. Other drainage problems are associated with roads and trails.



Figure 9. The vehicle bridge is perceived as threatened by the lagoon water when it rises.

Figure 10. A pedestrian bridge is flooded at high water.



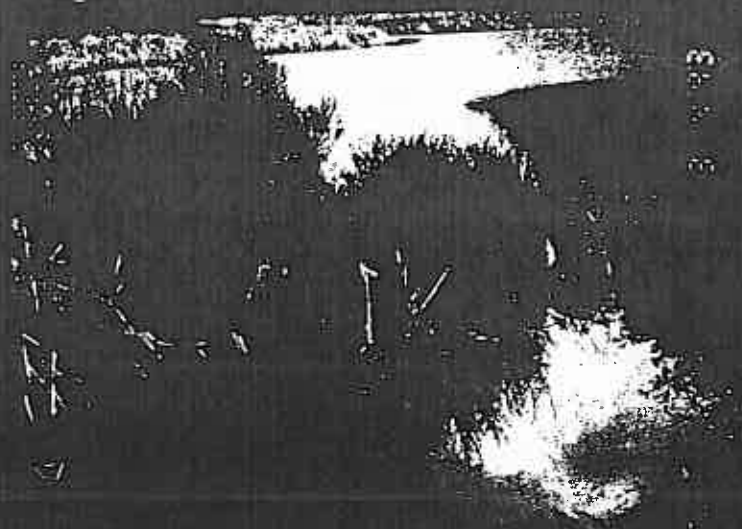


Figure 11. A weir between the lagoon and pond decreases water flow into the lagoon.

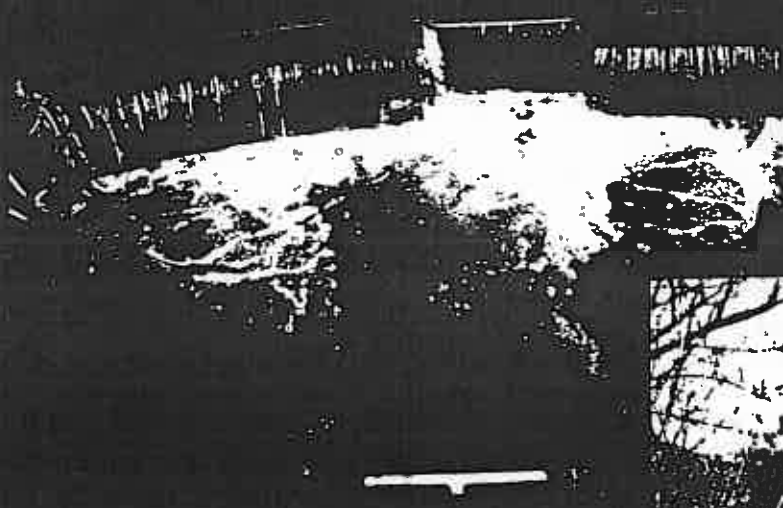


Figure 12. Riparian dreainages, plugged by culverts will be replaced with bridges and riparian restoration.

mowed grass sites along Rodeo Creek for cultural landscape significance and returning additional sites to native vegetation.

4) Replacing culverts and pipes with vegetated natural drainages and bridges (figure 12).

2. Study the lagoon system in order to:

1) Develop an historical profile and model of what the Lagoon would have looked like prior to settlement and Army occupation in the Valley. Model the impacts of increased sedimentation on limnological processes in the Lagoon, and project what might be expected to occur in the future.

2) Evaluate the impact of removal of the weir on upstream adjustment and increased sedimentation to the Lagoon. This study will determine if the system is healthy or "dying" and if more drastic measures are necessary to "save" the functioning ecosystem.

3. Monitor Physical Processes:

1) A long term monitoring program in which temperature, salinity, water level and dissolved oxygen are monitored weekly, preferable early in the morning, will be initiated. Top and bottom salinity will be taken.

2) Nutrient samples in the water and sediments will be taken about once a month (Nitrogen, phosphorous, E. Coli, Fecal, coliform, ammonia) for one year. A nutrient budget will be constructed for the lagoon, in which the various inputs and outputs are calculated in reference to the amount existing in the lagoon. Notes will be taken (possible with the assistance of volunteers) on the occurrence of algal blooms and other phenomena such as the arrival of large flocks of pelicans to rest in the lagoon. Weather conditions will be obtained from a nearby site.

3) Several short-term studies will be conducted on the effects of winter storms in altering conditions in the lagoon both by increasing freshwater inflow and by breaching the barrier dunes at the seaward end of the lagoon.

4. Concurrent with the nutrient monitoring, a hydrological evaluation will be conducted to characterize the hydrologic cycle of the lagoon. Special consideration will be given to understanding the seepage of water into and out of the lagoon through the barrier beach at the west end of the lagoon.

5. Develop a bathymetric profile of the entire Lagoon and Lake,

will aid in determining volume changes associated with rainfall, overwash, breaching, etc. It will also help to understand what drives changes in physical and chemical parameters. Freshwater inflow into Rodeo Lake and Lagoon will be measured. This will allow determination of salt water inflow if one compensates for subsurface freshwater flow through the bar.

6. Establish sedimentation rates and conduct sediment core sampling in the Lagoon and Lake to determine long term versus recent sedimentation rates.

7. Raise the foot bridge at Ft. Cronkhite so it is not threatened by very high water.

8. Raise the bridge where the road crosses between Rodeo Lake and Lagoon to enable removal of riprap and restoration of original shoreline.

9. Assess the possibility of the replacement of the land bridge across the lagoon to a piling bridge.

## ENHANCEMENT ELEMENT #2: PROTECT AND ENHANCE WILDLIFE

### Problem Statement

Wildlife in the Rodeo Lagoon environs has to adapt to accommodate frequent visitor interaction and habitat modifications. Threats to wildlife include a diversity of activities. One of which is the water quality and quantity already discussed.

Dogs threaten the wildlife on the beach side of the lagoon. This spot is one that the threatened brown pelican rests each morning (figure 13). Two hundred pelican have been seen on the lagoon shoreline prior to the influx of people and unleashed dogs. Dogs are continually seen chasing sensitive bird species in the lagoon area (Jaques, D. and D. Anderson, 1987).

The lagoon is, at this time surrounded by trails and roads (figure 14). This becomes a problem for the sensitive birds that have no where to take refuge. Trends have been documented that brown pelicans are particularly sensitive to human encroachment on trails that ascend or descend, above their activity area (Jaques, D. and D. Anderson, 1987). The trail from the Visitor Center to the beach has this characteristic (figure 15). Observations have indicated that pelican behavior in the lagoon below this trail follows the documented trend. This federally listed species is affected by the encroachment and moves away. Other bird species spook when these trail descends to the western end, adjacent to the lagoon. The site where the trail descends is a common resting site for birds (figure 14).

A picnic area exists in an important feeding location for a variety of bird species (figure 16). When a group comes to the site, birds move away. The spot is ecologically diverse and much wildlife is there. Picnicking individuals often catch snakes and other animals here, disturbing the ecology.

Non-native fish live in the lagoon and threaten other fish species. Of particular concern is the non-native yellowfin goby that competes with the rare tidewater goby.

The presence of garbage threatens various species of birds, fish, and benthic organisms either through ingestion or by altering the natural habitat (Figure 17).

### ENHANCEMENT AND PROTECTION PROGRAM

1. Limit access to the sensitive shore of the lagoon and protect the sensitive dune plants by installing a low impact post and cable fence stretching from the south end of the footbridge, south across

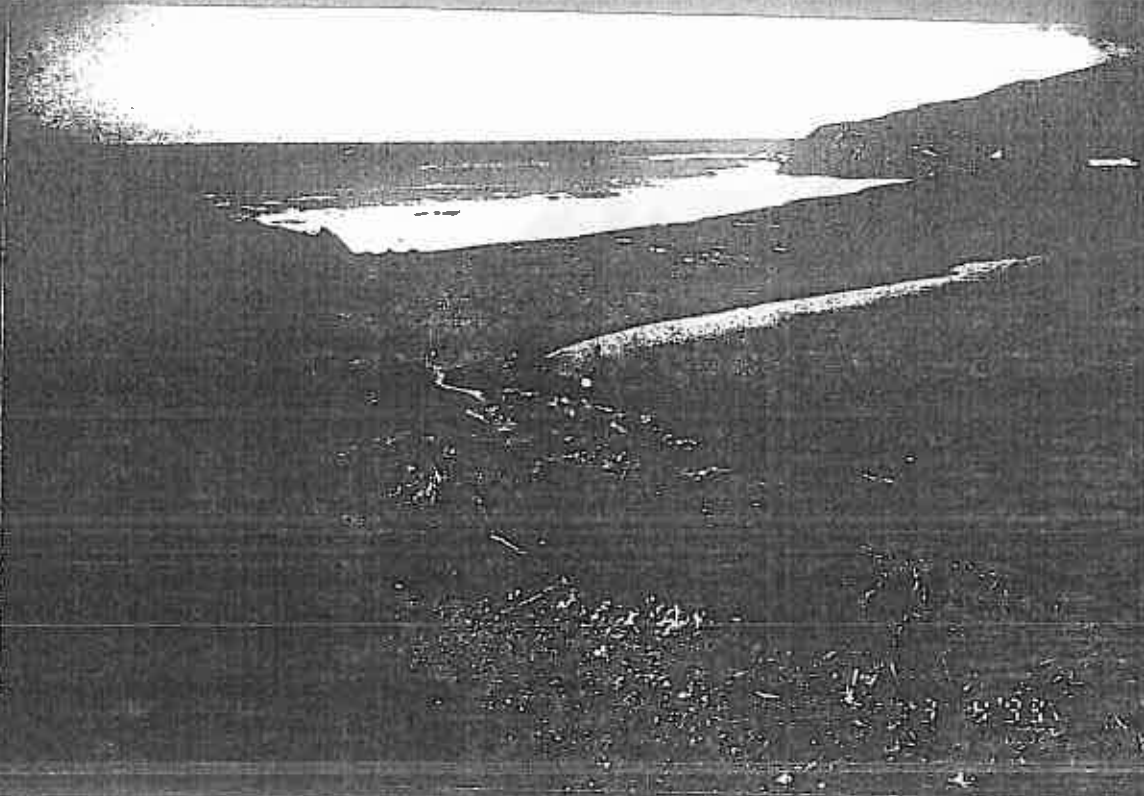


Figure 13. The treated brown pelican and other sensitive bird species rest on the south-west edge of the lagoon.

Figure 14. A road borders the north edge and a trail borders the south edge of the lagoon.

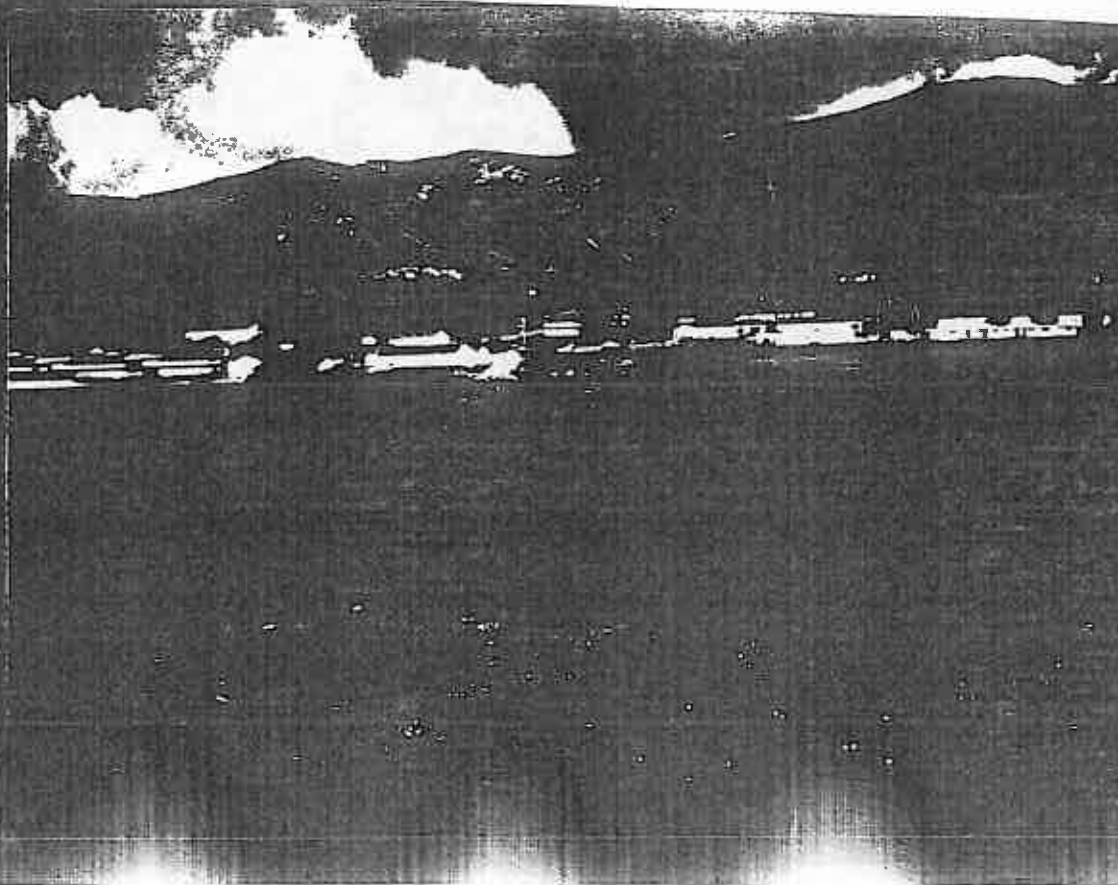
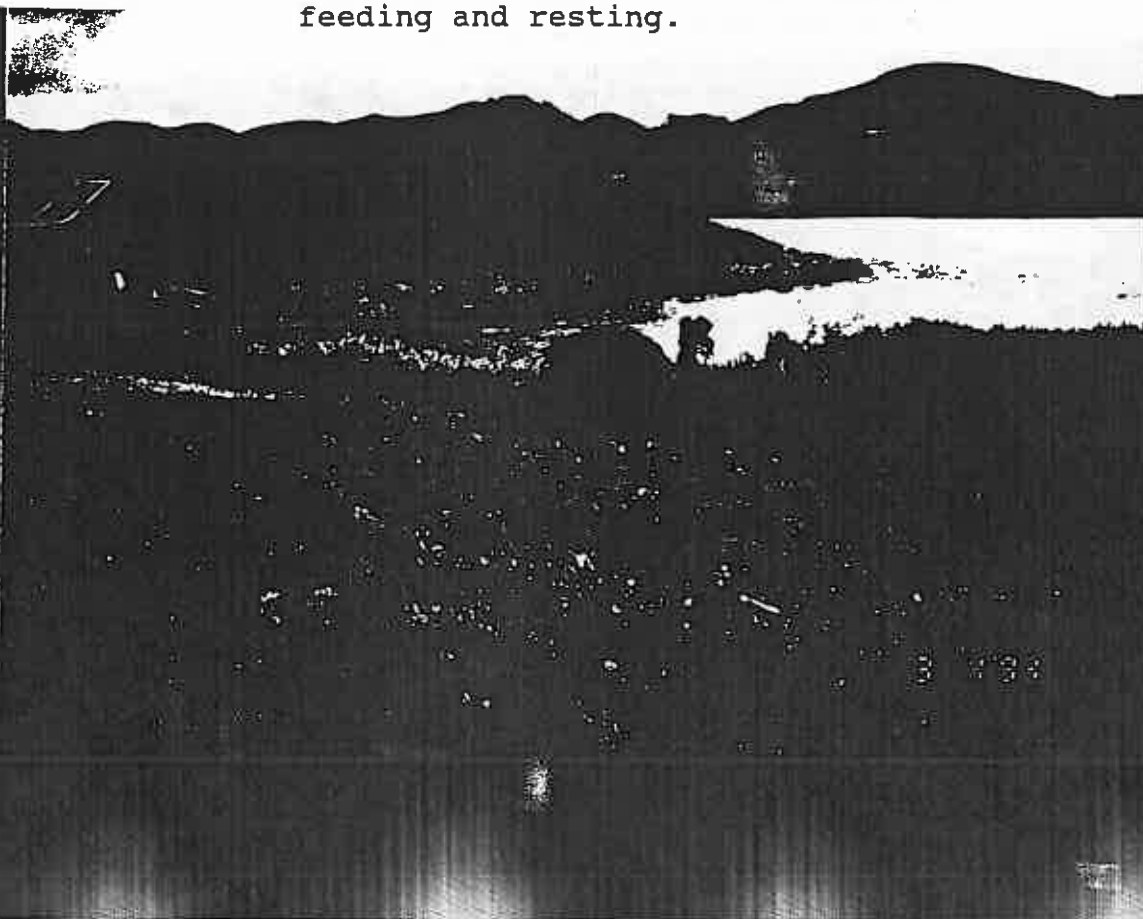




Figure 15. The trail on the south side of the lagoon ascends in a manner that characteristically disturbs brown pelican behavior.

Figure 16. Picnicing groups disturb sensitive birds that are feeding and resting.



the dunes, to the bluff on the south end of the beach. Interpretive signs will be developed and placed appropriately.

2. Designate a Lagoon Protection Zone closed area in the Compendium which includes:

- \*Designate no dogs on the beach or adjacent trails, no horses on beach and designate appropriate trails.

- \*Designate Lagoon Protection Zone.

- \*Designate areas in park for flying model airplanes and do not allow any between Rodeo Lagoon and Bird Island

- \*Designate no jet skis for 1/4 mi. offshore if possible

- \*Prohibit low level aircraft overflights- specifically of the Blue Angels (apparently they are already prohibited but practice flights through the valley were quite common last Fall. A special request should go to the Navy with penalties for failure to comply)

- \*Designate no boating or fishing in the lagoon and lake.

3. Recontour and revegetate the non-historic trail on the south side of the lagoon (figure 15) using documentation on distances which brown pelicans can be disturbed. The trail from the Visitor Center to the willows will be a Nature Trail as planned by the Division of Interpretation. At the willows, the culvert will be removed and the riparian area restored to form a vegetative barrier to the public. A historic road must be breached to accomplish this, however it is the only way to prohibit access to the rest of the trail. The historic road alignment will be retained the remaining distance.

Alternatives for the trail route include:

- 1) The trail could be rerouted above the lagoon, through the Nike Site. Protection of this cultural resource may prohibit this.
- 2) The trail could be rerouted above the lagoon, adjacent to the Nike site. This includes much new trail construction and therefore natural resource impacts.
- 3) The nature trail could end at the willows and loop back on the same road to the visitor center. Access to the beach and batteries are available on other routes.
- 4) The alternative of keeping the trail and re-routing the beach end away from the bird resting area was explored and determined unfeasible.

4. Establish a tidewater goby monitoring system that is statistically valid, utilizing randomly located permanent belt transects. Count all tidewater goby (and other species) along these transects, by snorkeling, to establish what normal and short/long term population dynamics look like in Rodeo Lagoon. Use of random permanent transects would allow for valid long term monitoring and determination of trends in the tidewater goby population.

5. Evaluate the impacts of the yellow fin goby on the tidewater goby through a research program. If impacts are seen to be a serious threat, develop Integrated Pest Management (IPM) procedures to alleviate the problem.

6. Inventory and monitor sensitive species:

- Conduct an aquatic inventory of Rodeo Creek, Lake and Lagoon including herpetofauna, invertebrates, aquatic vegetation. Review historical locational information for sensitive species that potentially may occur here. Establish monitoring systems for sensitive species identified as resident in the Watershed.

- Establish monitoring system for breeding Saltmarsh Yellowthroat in Rodeo Valley.

- Establish monitoring system for California brown pelicans on Lagoon, beach, and Bird Island, including identification of chronic disturbances and their impacts.

- Establish a monitoring system to determine levels of water bird use of the Lagoon and Lake and species present.

### ENHANCEMENT ELEMENT 3. PROTECT AND ENHANCE

#### Problem Statement:

Alien plants are damaged much of the native communities at Rodeo Lagoon. Twenty-two species have been identified in the lagoon environs that are damaging ecosystems (Table 4).

Table 4. Invasive Non-native Plants of the Rodeo Lagoon Area

|                         |                   |
|-------------------------|-------------------|
| Arctotheca calendula    | cape weed         |
| Brassica geniculata     | summer mustard    |
| Cakile maritima         | sea rocket        |
| Carduus pycnocephalus   | Italian thistle   |
| Carpobrotus edule       | hottentot fig     |
| Cirsium vulgare         | bull thistle      |
| Conium maculatum        | poison hemlock    |
| Cupressus macrocarpa    | Monterey cypress  |
| Cotoneaster sp.         | no common name    |
| Dipsacus sp.            | teasel            |
| Eucalyptus globulus     | blue gum          |
| Foeniculum vulgare      | sweet fennel      |
| Genista monspessulana   | French broom      |
| Lathyrus latifolius     | everlasting pea   |
| Oxalis pes-caprae       | Bermuda buttercup |
| Raphanus sativus        | radish            |
| Rubus procerus          | Himalaya-berry    |
| Senecio mikanioides     | German ivy        |
| Silybum marianum        | milk thistle      |
| Ulex europaeus          | gorse             |
| Vicia sp.               | vetch             |
| Zantedeschia aethiopica | common callathe   |

Several designated visitor areas have activities that continually destroy critical plant communities. Mowing, parking and the picnicking along the north side of the lagoon are in very sensitive bird feeding areas (figure 18). Birds are flushed from these areas as soon as people approach. Native plant communities need to be re-established in these areas. Little native vegetation remaining in foredunes. Trampling by visitors, dogs and probably army use has taken its toll (figure 19).

The north shore has been heavily impacted by visitor use and regular mowing, resulting in the invasion by non-native plants such as ice plant, fennel, oxalis, and kikuyu grass, and the suppression of native plants such as rush, blue wildrye, and coastal scrub species. The exotic trees in the area shade out native species that prefer full sun, and may cause changes in soil chemistry. Once the picnic tables are removed and the non-native species are controlled, the area can be revegetated with native plants.



Figure 17. Garbage threatens birds, fish and benthic organisms either through ingestion or altering natural habitat.

Figure 18. Manured sights attract activities that disturb wildlife and will be returned to native plants.

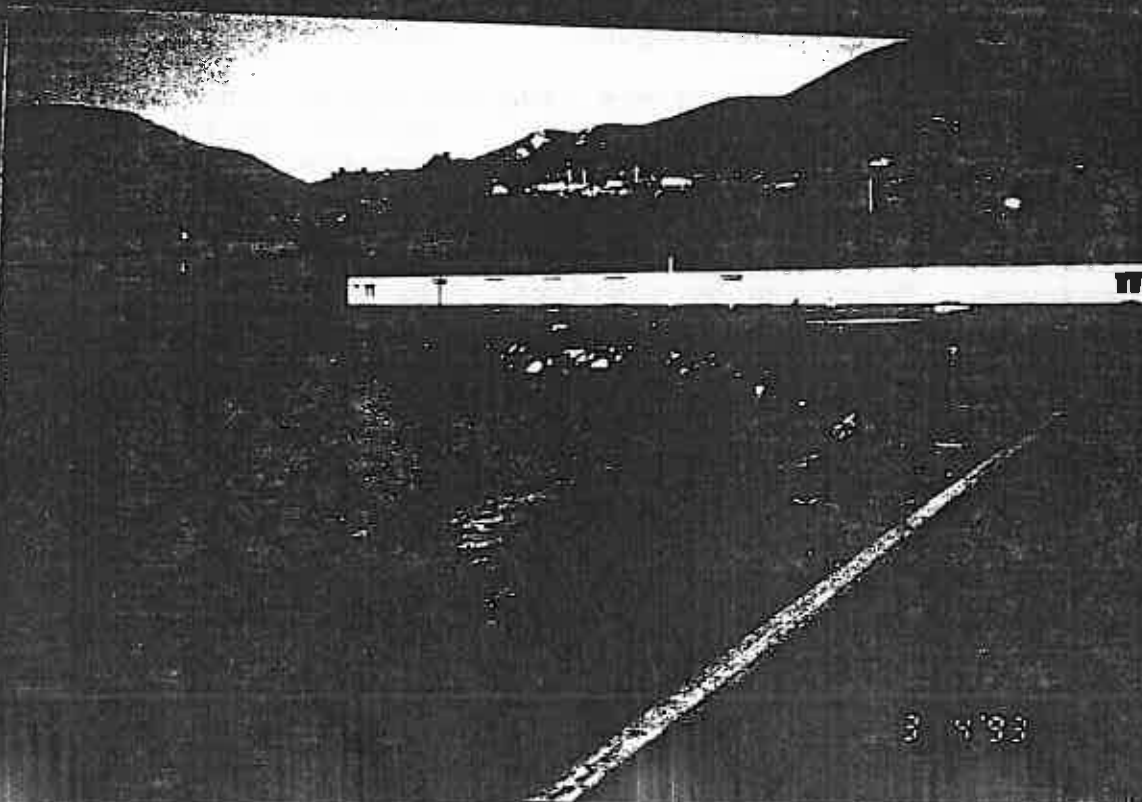


Figure 19.

Native California bunchgrasses at Rodeo Lagoon. ↑

Figure 20.

↓ Dunes have been denuded and ice plant  
now is the main plant species



## ENHANCEMENT AND PROTECTION PROGRAM

1. A low impact post and cable fence will be installed, stretching from the south end of the footbridge, south across the dunes, to the bluff on the south end of the beach. This would limit access to the west shore of the lagoon and protect the sensitive dune plants.
2. Invasive ice plant will be removed by manual pulling, and placed in a dumpster for removal from the site. The native dune grass (*Elymus mollis*) is evident in two small patches, and to a limited extent, interspersed within the ice plant. Ocean Dune grass and other dune species will be propagated in the nursery from seed or cuttings.
3. Remove ice plant, kikuyu grass, oxalis, fennel, pea along the north shore. Cut down exotic trees (*Myoporum*, cypress, pine, *Pittosporum*, *Casuarina*). Plant scrub and grassland species.
4. Remove picnic tables and park bench.
5. Cease mowing, allow rushes and perennial grasses to establish.
6. The broken concrete riprap in the northeast shore will be removed by heavy equipment. Revegetation will follow, consisting mainly of willow staking, with some outplanting of other natives.
7. The road, along the south shore from the willows to the beach will be removed, recontoured and revegetated. The trail will be rerouted above the lagoon, near the Nike Site. Plants in the way of this alignment should be salvaged and used to revegetate the obliterated road. Seed collected from the area can be used in addition to salvaged plants.
8. Ice plant on the bluffs on southwest corner of lagoon will be removed and the area revegetated with native species.
9. Discontinue mowing on the north side of the lagoon install barriers to parking and relocate picnic tables (figure 13). Restore these areas to native wetland species.

#### ENHANCEMENT ELEMENT #4: INTERPRETATION

Interpretation is vital to the success of the Rodeo Lagoon restoration project. The need for interpretation is many faceted. The following have been identified needs from a natural resource managment standpoint:

1. Interpret visitor recreation and dog restrictions at the beach with signs and site bulletins.
2. A natural trail to interpret the history and the significance of the lagoon system and natural resources.
3. Headlands Institute possibilities of interpreting streams and stream restoration of the drainage that flows through their campus.
4. Interpretation of the sensitive bird and fish species and the response of these species to disturbance and garbage.
5. Interpretation to identify trail changes and the reason behind them.
6. Vegetation restoration interpretation.

## PLANNING NEEDS

1. Evaluate the ability to re-direct traffic away from the lagoon, behind Ft. Cronkhite and allow the road adjacent to the lagoon for pedestrians only.
2. Evaluate trail alternatives for the south side of the lagoon.
3. Evaluate the north lagoon trail to adjust for horse use.
4. Evaluate Weir removal and bridge alterations.

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APPENDIX i.

PLANT LISTS OF RODEO LAGOON

**BANKS AROUND UPPER POND** Areas of abundant freshwater (pond/marsh).

**NATIVE GRASSES**

|                         |                     |
|-------------------------|---------------------|
| Danthonia californica   | California oatgrass |
| Deschampsia elongata    | hairgrass           |
| Deschampsia holciformis | hairgrass           |
| Elymus glaucus          | blue wild rye       |
| Festuca idahoensis      | Idaho fescue        |
| Hordeum brachyantherum  | Meadow barley       |
| Stipa pulchra           | purple needlegrass  |

**NATIVE FORBS**

|                          |                    |
|--------------------------|--------------------|
| Achillea millefolium     | yarrow             |
| Agoseris heterophylla    | dandelion          |
| Anaphalis margaritacea   | pearly everlasting |
| Athyrium filix-femina    |                    |
| var. cyclosorum          | common lady fern   |
| Calystegia purpurata     | morning glory      |
| Cardamine oligosperma    | bitter-cress       |
| Carex globosa            | sedge              |
| Carex obnupta            | sedge              |
| Carpobrotus chilense     | sea fig            |
| Cyperus eragrostis       | no common name     |
| Epilobium halleianum     | willow herb        |
| Epilobium watsonii       |                    |
| var. franciscanum        | willow herb        |
| Erigeron glaucus         | seaside daisy      |
| Equisetum arvense        | common horsetail   |
| Eschscholzia californica | California poppy   |
| Galium tinctorium        | bedstraw           |
| Gnaphalium chilense      | cudweed            |
| Gnaphalium purpureum     | cudweed            |
| Helenium puberulum       | sneezeweed         |
| Heracleum maximum        | cow parsnip        |
| Hydrocotyl ranunculoides | marsh pennywort    |
| Juncus effusus           | rush               |
| Juncus leseurii          | rush               |
| Juncus patens            | rush               |
| Nasturtium officinale    | water cress        |
| Oenanthe sarmentosa      | water parsley      |
| Polystichum munitum      | western sword fern |
| Potentilla egedii        |                    |
| var. grandis             | cinquefoil         |
| Pteridium aquilinum      |                    |

var. pubescens  
Rubus ursinus  
Rumex fueginus  
Scirpus cernuus  
Scirpus microcarpus

western bracken fern  
California blackberry  
dock  
bulrush  
bulrush

**BANKS AROUND UPPER POND, NATIVE FORBS, CONTINTUED:**

Scirpus pungens  
Solanum douglasii  
Solidago occidentalis  
Toxicodendron diversilobum  
Triteleia (Brodiaea) laxa  
Typha latifolia  
Veronica americana  
Vicia gigantea  
Woodwardia fimbriata  
Wyethia angustifolia

three square  
Douglas nightshade  
goldenrod  
poison oak  
Ithuriel's spear  
cattail  
American brookline  
vetch  
western chain fern  
narrow leaf mule's ears

**NATIVE SHRUBS**

Baccharis pilularis  
var. consanguinea  
Eriophyllum staechadifolium  
var. artemisiaefolium  
Heteromeles arbutifolia  
Lonicera involucrata  
Lupinus nanus  
Lupinus propinquus  
Mimulus aurantiacus  
Mimulus guttatus  
Rhamnus californica  
Rhododendron occidentale  
Ribes sanguineum  
var. glutinosum  
Rosa californica  
Scrophularia californica

coyote brush  
lizard tail  
toyon  
twinberry  
sky lupine  
lupine  
bush monkeyflower  
monkeyflower  
coffeeberry  
western azalea  
pink flowering currant  
California rose  
bee plant

**NATIVE TREES**

Myrica californica  
Salix lasiandra  
Sambucus callicarpa

wax myrtle  
yellow willow  
red elderberry

**NATIVE AQUATIC PLANTS**

Lemna sp.

duckweed

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**NON-NATIVE GRASSES**

|                       |                   |
|-----------------------|-------------------|
| Aira caryophyllea     | silver hair grass |
| Avena barbata         | slim oat          |
| Briza maxima          | rattlesnake grass |
| Bromus diandrus       | ripgut brome      |
| Bromus mollis         | soft chess        |
| Festuca arundinacea   | tall fescue       |
| Festuca arundinacea x |                   |
| Lolium perenne        | festulolium       |

#### BANKS AROUND UPPER POND, NON-NATIVE GRASSES, CONTINUED

|                    |                  |
|--------------------|------------------|
| Festuca myuros     | fescue           |
| Holcus lanatus     | velvet grass     |
| Hordeum depressum  | no common name   |
| Hordeum leporinum  | farmer's foxtail |
| Lolium multiflorum | Italian ryegrass |
| Phalaris aquatica  | harding grass    |
| Poa annua          | annual bluegrass |

#### NON-NATIVE FORBS

|                           |                    |
|---------------------------|--------------------|
| Anagallis arvensis        | scarlet pimpernel  |
| Arctotheca calendula      | capeweed           |
| Brassica geniculata       | summer mustard     |
| Carduus pycnocephalus     | Italian thistle    |
| Chasmanthe aethiopica     | no common name     |
| Conium maculatum          | poison hemlock     |
| Cotula australis          | brass buttons      |
| Dipsacus fullonum         | teasel             |
| Dipsacus sativus          | Fuller's teasel    |
| Erechtites minima         | fireweed           |
| Erodium botrys            | broad-leaf filaree |
| Erodium cicutarium        | red stem filaree   |
| Erodium moschatum         | white stem filaree |
| Filago gallica            | no common name     |
| Foeniculum vulgare        | sweet fennel       |
| Galium aparine            | bedstraw           |
| Galium spurium            |                    |
| var. echinospermum        | cleavers           |
| Geranium dissectum        | cranesbill         |
| Hypochoeris glabra        | smooth cat's ear   |
| Hypochoeris radicata      | hairy cat's ear    |
| Ludwigia uruguayensis     | no common name     |
| Matricaria matricarioides | pineapple weed     |
| Medicago arabica          | spotted medic      |
| Medicago polymorpha       |                    |
| var. brevispina           | bur clover         |
| Melilotus indicus         | sweet clover       |
| Lathyrus latifolius       | eversasting pea    |
| Paronychia franciscana    | no common name     |
| Picris echiodes           | bristly ox-tongue  |
| Plantago coronopus        | plantain           |

|                                                            |                |
|------------------------------------------------------------|----------------|
| Plantago lanceolata                                        | ribwort        |
| Polycarpon tetraphyllum                                    | no common name |
| Raphanum sativus                                           | radish         |
| Rubus procerus                                             | himalaya berry |
| Rumex acetosella                                           | sheep sorrel   |
| Rumex crispus                                              | curly dock     |
| Silybum marianum                                           | milk thistle   |
| Sonchus asper                                              | sow thistle    |
| Spergularia rubra                                          | sand spurrey   |
| Trifolium dubium                                           | shamrock       |
| Trifolium repens                                           | white clover   |
| <b>BANKS AOUND UPPER POND, NON-NATIVE FORBS, CONTINUED</b> |                |

|              |       |
|--------------|-------|
| Vicia sativa | vetch |
|--------------|-------|

#### **NON-NATIVE SHRUBS**

|                 |                |
|-----------------|----------------|
| Cotoneaster sp. | no common name |
| Myoporum sp.    | no common name |
| Ulex europaeus  | gorse          |

#### **NON-NATIVE TREE**

|                      |                  |
|----------------------|------------------|
| Cupressus macrocarpa | Monterey cypress |
|----------------------|------------------|

## RODEO LAGOON PLANT LIST

NORTH AND EAST BANKS OF LAGOON Salt marsh type vegetation.

### NATIVE GRASSES

|                           |               |
|---------------------------|---------------|
| <i>Distichlis spicata</i> | saltgrass     |
| <i>Elymus glaucus</i>     | blue wild rye |
| <i>Melica californica</i> | melicgrass    |
| <i>Stipa lepida</i>       | needle grass  |

### NATIVE FORBS

|                                 |                       |
|---------------------------------|-----------------------|
| <i>Oenanthe sarmentosa</i>      | water parsley         |
| <i>Achillea millefolium</i>     | yarrow                |
| <i>Ambrosia chamissonis</i>     | silver beachweed      |
| <i>Anaphalis margaritacea</i>   | pearly everlasting    |
| <i>Calystegia purpurata</i>     | morning glory         |
| <i>Carex obnupta</i>            | sedge                 |
| <i>Cyperus eragrostis</i>       | no common name        |
| <i>Eleocharis macrostachya</i>  | spike rush            |
| <i>Equisetum arvense</i>        | common horsetail      |
| <i>Equisetum telmateia</i>      |                       |
| var. <i>braunii</i>             | giant horsetail       |
| <i>Erigeron glaucus</i>         | seaside daisy         |
| <i>Eschscholzia californica</i> | California poppy      |
| <i>Frankenia granifolia</i>     | no common name        |
| <i>Gnaphalium purpureum</i>     | cudweed               |
| <i>Jaumea carnosa</i>           | no common name        |
| <i>Juncus leseurii</i>          | rush                  |
| <i>Juncus patens</i>            | rush                  |
| <i>Madia sativa</i>             | tarweed               |
| <i>Marah fabaceus</i>           | manroot               |
| <i>Helenium puberulum</i>       | sneezeweed            |
| <i>Polygonum punctatum</i>      | water smartweed       |
| <i>Polygonum sp.</i>            | no common name        |
| <i>Potentilla egedii</i>        |                       |
| var. <i>grandis</i>             | no common name        |
| <i>Pteridium aquilinum</i>      |                       |
| var. <i>pubescens</i>           | western bracken       |
| <i>Rubus ursinus</i>            | California blackberry |
| <i>Rumex californicus</i>       | dock                  |
| <i>Rumex occidentalis</i>       |                       |
| var. <i>procerus</i>            | dock                  |
| <i>Ruppia maritima</i>          | widgeon grass         |
| <i>Scirpus pungens</i>          | three-square          |
| <i>Scrophularia californica</i> | bee-plant             |
| <i>Sisyrinchium bellum</i>      | blue-eyed grass       |
| <i>Solanum douglasii</i>        | Douglas nightshade    |
| <i>Stachys rigida</i>           |                       |
| var. <i>quercetorum</i>         | hedge nettle          |

*Typha latifolia*                      cattail

**NORTH AND EAST BANKS OF LAGOON, NATIVE FORBS, CONTINUED**

|                           |                    |
|---------------------------|--------------------|
| <i>Urtica californica</i> | nettle             |
| <i>Veronica americana</i> | American brooklime |
| <i>Vicia gigantea</i>     | vetch              |

**NATIVE SHRUBS**

|                                    |                      |
|------------------------------------|----------------------|
| <i>Artemisia californica</i>       | California sagebrush |
| <i>Baccharis pilularis</i>         |                      |
| var. <i>consanguinea</i>           | coyote brush         |
| <i>Eriophyllum staechadifolium</i> |                      |
| var. <i>artemisiaefolium</i>       | lizard tail          |
| <i>Heteromeles arbutifolia</i>     | toyon                |
| <i>Lonicera involucrata</i>        | twinberry            |
| <i>Lupinus propinquus</i>          | lupine               |
| <i>Mimulus aurantiacus</i>         | bush monkeyflower    |
| <i>Mimulus guttatus</i>            | monkeyflower         |
| <i>Rhododendron occidentale</i>    | western azalea       |
| <i>Rosa californica</i>            | California rose      |
| <i>Toxicodendron diversilobum</i>  | poison oak           |
| <i>Symphoricarpos rivularis</i>    | snowberry            |

**NATIVE TREES**

|                           |               |
|---------------------------|---------------|
| <i>Myrica californica</i> | wax myrtle    |
| <i>Salix lasiandra</i>    | yellow willow |
| <i>Salix lasiolepis</i>   | arroyo willow |

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**NON-NATIVE GRASSES**

|                                |                    |
|--------------------------------|--------------------|
| <i>Avena barbata</i>           | slim oats          |
| <i>Briza maxima</i>            | rattlesnake grass  |
| <i>Bromus diandrus</i>         | ripgut brome       |
| <i>Bromus mollis</i>           | soft chess         |
| <i>Festuca arundinacea</i>     | tall fescue        |
| <i>Lolium multiflorum</i>      | Italian ryegrass   |
| <i>Lolium perenne</i>          | perennial ryegrass |
| <i>Phalaris minor</i>          | Canarygrass        |
| <i>Polypogon monspeliensis</i> | rabbitfoot grass   |

**NON-NATIVE FORBS**

|                              |                   |
|------------------------------|-------------------|
| <i>Anagalis arvensis</i>     | scarlet pimpernel |
| <i>Brassica geniculata</i>   | summer mustard    |
| <i>Carduus pycnocephalus</i> | Italian thistle   |
| <i>Carpobrotus edule</i>     | hottentot fig     |
| <i>Chasmanthe aethiopica</i> | no common name    |

|                    |                  |
|--------------------|------------------|
| Conium maculatum   | poison hemlock   |
| Erodium cicutarium | red stem filaree |
| Foeniculum vulgare | sweet fennel     |
| Galium aparine     | bedstraw         |

#### NORTH AND EAST BANKS OF LAGOON, NON-NATIVE FORBS, CONTINUED

|                           |                     |
|---------------------------|---------------------|
| Geranium dissectum        | cranesbill          |
| Gnaphalium luteo-album    | cudweed             |
| Hypochoeris radicata      | hairy cat's ear     |
| Iris sp.                  | no common name      |
| Lepidium strictum         | pepper grass        |
| Lotus corniculatus        | bird's foot trefoil |
| Malva nicaeensis          | mallow              |
| Matricaria matricarioides | pineapple weed      |
| Medicago polymorpha       |                     |
| var. brevispina           | bur clover          |
| Medicago polymorpha       |                     |
| var. polymorpha           | bur clover          |
| Melilotus indicus         | sweet clover        |
| Nasturtium officinale     | water-cress         |
| Oxalis pes-caprae         | Bermuda buttercup   |
| Picris echioides          | bristly ox-tongue   |
| Plantago coronopus        | plantain            |
| Plantago lanceolata       | ribwort             |
| Raphanus sativus          | radish              |
| Rumex acetosella          | sheep sorrel        |
| Rumex crispus             | curly dock          |
| Rumex pulcher             | fiddle dock         |
| Senecio mikanioides       | German ivy          |
| Silybum marianum          | milk thistle        |
| Sonchus oleraceus         | sow thistle         |
| Spergularia rubra         | sand spurrey        |
| Vicia angustifolia        | vetch               |
| Zantedeschia aethiopica   | common calla        |

#### NON-NATIVE SHRUBS

|                        |                |
|------------------------|----------------|
| Cotoneaster sp.        | no common name |
| Genista monspessulanus | French broom   |

#### NON-NATIVE TREES

|                      |                  |
|----------------------|------------------|
| Casurina stricta     | she-oak          |
| Cupressus macrocarpa | Monterey cypress |

## RODEO LAGOON PLANT LIST

BEACH AREA ON WEST SIDE AND SOUTHWEST CORNER OF LAGOON Beach veg.

### NATIVE GRASS

|                    |           |
|--------------------|-----------|
| Distichlis spicata | saltgrass |
|--------------------|-----------|

### NATIVE FORBS

|                           |                     |
|---------------------------|---------------------|
| Abronia latifolia         | yellow sand verbena |
| Ambrosia chamissonis      |                     |
| var. bipinnatisecta       | silver beachweed    |
| Angelica tomentosa        |                     |
| var. hendersonii          | no common name      |
| Calystegia soldanella     | beach morning glory |
| Carpobrotus chilense      | sea fig             |
| Eleocharis macrostachya   | spike rush          |
| Erigeron glaucus          | seaside daisy       |
| Eryngium armatum          | no common name      |
| Frankenia grandifolia     | no common name      |
| Helenium puberulum        | sneezeweed          |
| Heliotropium curassavicum |                     |
| var. oculatum             | heliotrope          |
| Heracleum maximum         | cow parsnip         |
| Jaumea carnosa            | no common name      |
| Potentilla egedii         |                     |
| var. grandis              | no common name      |
| Salicornia virginica      | pickleweed          |
| Scirpus cernuus           | bulrush             |

### NATIVE SHRUB

|                             |             |
|-----------------------------|-------------|
| Eriophyllum staechadifolium |             |
| var. artemisiaefolium       | lizard tail |

### NON-NATIVE FORBS

|                           |                     |
|---------------------------|---------------------|
| Cakile maritima           | sea rocket          |
| Carpobrotus edule         | hottentot fig       |
| Cotula coronopifolia      | brass buttons       |
| Plantago coronopus        | plantain            |
| Tetragonia tetragonioides | New Zealand spinach |

## RODEO LAGOON PLANT LIST

SOUTH SLOPE ABOVE LAGOON Wet and dry coastal scrub.

### NATIVE GRASSES

*Elymus pacificus* no common name

### NATIVE FORBS

|                                 |                       |
|---------------------------------|-----------------------|
| <i>Achillea millefolium</i>     | yarrow                |
| <i>Allium dichlamydeum</i>      | coast onion           |
| <i>Allocarya bracteata</i>      | no common name        |
| <i>Agoseris grandiflora</i>     | mountain dandelion    |
| <i>Anaphalis margaritacea</i>   | pearly everlasting    |
| <i>Angelica tomentosa</i>       |                       |
| var. <i>hendersonii</i>         | no common name        |
| <i>Artemisia douglasiana</i>    | California mugwort    |
| <i>Aster radulinus</i>          | broad-leaf aster      |
| <i>Calystegia purpurata</i>     | morning glory         |
| <i>Castilleja wightii</i>       | Indian paintbrush     |
| <i>Cerastrium arvense</i>       | no common name        |
| <i>Chlorogalum pmeridianum</i>  | soap plant            |
| <i>Cryptantha leiocarpa</i>     | white forget-me-not   |
| <i>Dichelostemma capitatum</i>  | blue dicks            |
| <i>Dryopteris arguta</i>        | coast wood fern       |
| <i>Dudleya farinosa</i>         | sea lettuce           |
| <i>Erigeron glaucus</i>         | seaside daisy         |
| <i>Eriogonum nudum</i>          | nude buckwheat        |
| <i>Eschscholzia californica</i> | California poppy      |
| <i>Heracleum maximum</i>        | cow parsnip           |
| <i>Lotus formosissimus</i>      | coast lotus           |
| <i>Madia exigua</i>             | tarweed               |
| <i>Madia sativa</i>             | tarweed               |
| <i>Marah fabaceus</i>           | manroot               |
| <i>Navarretia squarrosa</i>     | skunkweed             |
| <i>Oxalis pilosa</i>            | wood sorrel           |
| <i>Polystichum munitum</i>      | western sword fern    |
| <i>Potentilla glandulosa</i>    | sticky cinquefoil     |
| <i>Prunella vulgaris</i>        |                       |
| var. <i>atropurpurea</i>        | self-heal             |
| <i>Pteridium aquilinum</i>      |                       |
| var. <i>pubescens</i>           | western bracken fern  |
| <i>Ranunculus californicus</i>  | California buttercup  |
| <i>Rubus ursinus</i>            | California blackberry |
| <i>Sanicula crassicaulis</i>    | pacific sanicle       |
| <i>Satureja douglasii</i>       | yerba buena           |
| <i>Scrophularia californica</i> | bee plant             |
| <i>Sisyrinchium bellum</i>      | blue-eyed grass       |
| <i>Solanum douglasii</i>        | Douglas nightshade    |
| <i>Soliva sessilis</i>          | no common name        |

Stachys chamissonis                      hedge nettle

**SOUTH SLOPE ABOVE LAGOON, NATIVE FORBS, CONTINUED**

Stachys rigida  
var. quercetorum                      hedge nettle  
Toxicodendron diversilobum              poison oak  
Trifolium tridentatum                  tomcat clover

**NATIVE SHRUBS**

Artemisia californica                  California sagebrush  
Baccharis pilularis  
var. consanguinea                      coyote brush  
Eriophyllum staechadifolium  
var. artemisiaefolium                  lizard tail  
Lonicera involucrata                  twinberry  
Lupinus propinquus                      lupine  
Mimulus aurantiacus                  bush monkeyflower  
Ribes sanguineum  
var. glutinosum                      pink flowering currant  
Rosa californica                      California rose

**NATIVE TREES**

Aesculus californica                  California buckeye  
Cornus californica                      creek dogwood  
Myrica californica                      wax myrtle  
Salix lasiolepis                      arroyo willow  
Sambucus callicarpa                      red elderberry

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**NON-NATIVE GRASSES**

Briza maxima                              rattlesnake grass  
Bromus mollis                              soft chess  
Cortaderia jubata                          pampas grass  
Festuca arundinacea                      tall fescue  
Holcus lanatus                              velvet grass  
Lolium multiflorum                          Italian ryegrass

**NON-NATIVE FORBS**

Anagallis arvensis                      scarlet pimpernel  
Brassica geniculata                      summer mustard  
Carduus pycnocephalus                      Italian thistle  
Carpobrotus edule                          hottentot fig  
Cerastium viscosum                          mouse-ear chickweed  
Conium maculatum                          poison hemlock  
Cotula coronopifolia                      brass buttons

Erechtites arguta  
Erechtites minima  
Erodium cicutarium  
Euphorbia peplus  
Foeniculum vulgare

fireweed  
fireweed  
red stem filaree  
petty spurge  
sweet fennel

**SOUTH SLOPE ABOVE LAGOON, NON-NATIVE FORBS, CONTINUED**

Galium aparine  
Geranium dissectum  
Gnaphalium purpureum  
Hypochoeris radicata  
Lotus corniculatus  
Matricaria matricarioides  
Medicago polymorpha  
var. brevispina  
Melilotus indicus  
Oxalis pes-caprae  
Picris echioides  
Plantago coronopus  
Plantago lanceolata  
Rumex acetosella  
Rumex crispus  
Senecio mikanioides  
Silene gallica  
Spergularia arvensis  
Spergularia rubra  
Trifolium dubium  
Vicia sativa

bedstraw  
cranesbill  
cudweed  
hairy cat's ear  
bird's foot trefoil  
pineapple weed

bur clover  
sweet clover  
Bermuda buttercup  
bristly ox-tongue  
plantain  
ribwort  
sheep sorrel  
curly dock  
German ivy  
windmill pink  
spurrey  
sand spurrey  
shamrock  
vetch

**NON-NATIVE TREES**

Cupressus macrocarpa  
Eucalyptus globulus

Monterey cypress  
blue gum

## **APPENDIX ii**

### **Carter Foust Bird List of Rodeo Lagoon**

BIRD RECORDS FOR THE MARIN HEADLANDS OF THE GOLDEN GATE NATIONAL RECREATION  
AREA, MARIN COUNTY, CALIFORNIA. (415)-331-1540  
CARTER L FAUST

| NO: | FAMILY       | SPECIES                   | DATE        | LOCATION       |
|-----|--------------|---------------------------|-------------|----------------|
| 1.  | LOON         | RED-THROATED              | Dec 3 83    | LAKE           |
| 2.  | LOON         | PACIFIC                   | CBC 1983    | LAGOON         |
| 3.  | LOON         | COMMON                    | CBC 1982    | LAGOON         |
| 4.  | LOON         | YELLOW-BILLED             | Feb 24 93   | OCEAN          |
| 5.  | GREBE        | PIED-BILLED               | Aug 1983    | LAKE           |
| 6.  | GREBE        | HORNED                    | CBC 1983    | LAGOON         |
| 7.  | GREBE        | RED-NECKED                | Jan 18 88   | LAGOON         |
| 8.  | GREBE        | EARED                     | Dec 3 83    | LAGOON         |
| 9.  | GREBE        | WESTERN                   | Sep 15 83   | LAGOON         |
| 10. | GREBE        | CLARK'S                   | Feb-July 86 | LAGOON         |
| 11. | ALBATROSS    | BLACK-FOOTED (dead)       | Jul 1 89    | BEACH          |
| 12. | FULMARS      | NORTHERN                  | Dec 1985    | G.G. BRIDGE    |
| 13. | SHEARWATER   | SOOTY                     | Aug 1985    | OCEAN          |
| 14. | BOOBY        | RED-FOOTED                | Oct 15 87   | FISHING BOAT   |
| 15. | PELICAN      | AMERICAN WHITE            | Oct 14 83   | IN FLIGHT      |
| 16. | PELICAN      | BROWN                     | Aug 1983    | LAGOON         |
| 17. | CORMORANT    | DOUBLE-CRESTED            | Aug 1983    | LAGOON         |
| 18. | CORMORANT    | BRANDT'S                  | Aug 1983    | COASTAL ROCKS  |
| 19. | CORMORANT    | PELAGIC                   | Aug 1983    | COASTAL ROCKS  |
| 20. | FRIGATEBIRDS | MAGNIFICENT               | Jul 21 91   | OFF E.FT.BAKER |
| 21. | HERONS       | AMERICAN BITTERN          | Dec 23 84   | POND           |
| 22. | HERONS       | GREAT BLUE                | Aug 1983    | LAGOON         |
| 23. | HERONS       | GREAT EGRET               | Aug 1983    | LAGOON         |
| 24. | HERONS       | SNOWY EGRET               | Aug 1983    | LAGOON         |
| 25. | HERONS       | LITTLE BLUE               | Aug 9 89    | LAGOON         |
| 26. | HERONS       | CATTLE EGRET              | Dec 4 84    | VISITOR CENTER |
| 27. | HERONS       | GREEN-BACKED              | Sep 10 83   | LAGOON         |
| 28. | HERONS       | BLACK-CROWNED NIGHT HERON | Sep 10 83   | LAKE           |
| 29. | IBIS         | WHITE-FACED IBIS          | Sep 28 85   | HAWK SITE      |
| 30. | SWANS        | TUNDRA                    | Dec 13 84   | LAKE           |
| 31. | SWANS        | BLACK                     | Aug 19 90   | LAGOON         |
| 32. | GEESE        | GREATER WHITE-FRONTED     | Dec 24 85   | LAGOON         |
| 33. | GEESE        | SNOW                      | Jan 8 86    | LAGOON         |
| 34. | GEESE        | ROSS'                     | Dec 24 85   | LAGOON         |
| 35. | GEESE        | BRANT                     | Jul 14 84   | LAGOON         |
| 36. | GEESE        | CANADA                    | Dec 23 84   | OVERHEAD       |
| 37. | DUCK         | WOOD                      | Sep 23 83   | LAGOON         |
| 38. | DUCK         | GREEN-WING TEAL           | CBC 1980    | LAGOON         |
| 39. | DUCK         | MALLARD                   | Aug 1983    | LAKE           |
| 40. | DUCK         | NORTHERN PINTAIL          | CBC 1980    | LAGOON         |
| 41. | DUCK         | CINNAMON TEAL             | Feb 6 85    | LAKE           |
| 42. | DUCK         | NORTHERN SHOVELER         | CBC 1980    | LAGOON         |
| 43. | DUCK         | GADWALL                   | CBC 1978    | LAGOON         |
| 44. | DUCK         | AMERICAN WIGEON           | Sep 3 85    | LAKE           |
| 45. | DUCK         | CANVASBACK                | CBC 1983    | LAGOON         |
| 46. | DUCK         | REDHEAD                   | Dec 3 83    | LAKE           |
| 47. | DUCK         | RING-NECKED               | Sep 23 83   | LAKE           |
| 48. | DUCK         | TUFTED DUCK               | Jan 10 90   | LAGOON         |
| 49. | DUCK         | GREATER SCAUP             | Feb 25 87   | LAGOON         |
| 50. | DUCK         | LESSER SCAUP              | Nov 22 83   | LAGOON         |
| 51. | DUCK         | HARLEQUIN                 | Mar 20 85   | LAGOON         |
| 52. | DUCK         | OLDSQUAW                  | Dec 17 87   | LAGOON         |
| 53. | DUCK         | BLACK SCOTER              | CBC 1982    | COASTAL WATER  |
| 54. | DUCK         | SURF SCOTER               | Aug 8 83    | LAGOON         |
| 55. | DUCK         | WHITE-WINGED SCOTER       | Dec 1984    | LAGOON         |
| 56. | DUCK         | COMMON GOLDENEYE          | CBC 1978    | LAKE           |
| 57. | DUCK         | BARROW'S GOLDENEYE        | Nov 5 84    | LAGOON         |
| 58. | DUCK         | BUFFLEHEAD                | Dec 3 83    | LAGOON         |
| 59. | DUCK         | HOODED MERGANSER          | CBC 1978    | LAGOON         |
| 60. | DUCK         | COMMON MERGANSER          | Oct 16 83   | HAWK SITE      |
| 61. | DUCK         | RED-BREASTED MERGANSER    | CBC 1983    | LAGOON         |
| 62. | DUCK         | RUDDY                     | Aug 1983    | LAGOON         |
| 63. | VULTURES     | TURKEY VULTURE            | Fall 1984   | HAWK SITE      |
| 64. | HAWK         | OSPREY                    | Fall 1984   | HAWK SITE      |
| 65. | HAWK         | BLACK-SHOULDERED KITE     | Fall 1984   | HAWK SITE      |
| 66. | HAWK         | MISSISSIPPI KITE          | Sep 13 76   | HAWK SITE      |
| 67. | HAWK         | BALD EAGLE                | Nov 18 82   | HAWK SITE      |
| 68. | HAWK         | NORTHERN HARRIER          | Fall 1984   | HAWK SITE      |
| 69. | HAWK         | SHARP-SHINNED             | Fall 1984   | HAWK SITE      |
| 70. | HAWK         | COOPER'S                  | Fall 1984   | HAWK SITE      |
| 71. | HAWK         | NORTHERN GOSHAWK          | Oct 1 83    | HAWK SITE      |
| 72. | HAWK         | RED-SHOULDERED            | Fall 1984   | HAWK SITE      |

|      |                |                        |             |           |                |         |
|------|----------------|------------------------|-------------|-----------|----------------|---------|
| 73.  | HAWK           | BROAD-WINGED           | Fall        | 1983      | HAWK           | SITE    |
| 74.  | HAWK           | SWAINSON'S             | Sep         | 21 84     | HAWK           | SITE    |
| 75.  | HAWK           | RED-TAILED             | Fall        | 1984      | HAWK           | SITE    |
| 76.  | HAWK           | FERRUGINOUS            | Fall        | 1984      | HAWK           | SITE    |
| 77.  | HAWK           | ROUGH-LEGGED           | Fall        | 1984      | HAWK           | SITE    |
| 78.  | HAWK           | GOLDEN EAGLE           | Fall        | 1984      | HAWK           | SITE    |
| 79.  | HAWK           | AMERICAN KESTREL       | Fall        | 1984      | HAWK           | SITE    |
| 80.  | HAWK           | MERLIN                 | Fall        | 1984      | HAWK           | SITE    |
| 81.  | HAWK           | PEREGRINE              | Fall        | 1984      | HAWK           | SITE    |
| 82.  | HAWK           | PRAIRIE                | Fall        | 1984      | HAWK           | SITE    |
| 83.  | PHEASANT       | RING-NECKED            | MAR         | 21 88     | NEAR           | STABLES |
| 84.  | QUAIL          | CALIFORNIA             | Aug         | 1983      | HAWK           | SITE    |
| 85.  | RAILS          | VIRGINIA RAIL          | May         | 18 84     | BOBCAT-MIWOK-Y |         |
| 86.  | RAILS          | SORA                   | Sep         | 24 83     | HAWK           | SITE    |
| 87.  | GALLINULES     | COMMON MOORHEN         | Jun         | 17 84     | LAKE           |         |
| 88.  | COOTS          | AMERICAN COOT          | Aug         | 1983      | LAKE           |         |
| 89.  | PLOVERS        | BLACK-BELLIED          | CBC         | 1981      | BEACH AREA     |         |
| 90.  | PLOVERS        | SEMPALMATED            | Sep         | 3 87      | LAGOON         |         |
| 91.  | PLOVERS        | KILLDEER               | Aug         | 1983      | OPEN AREAS     |         |
| 92.  | OYSTERCATCHERS | BLACK                  | Sep         | 22 83     | COASTAL ROCKS  |         |
| 93.  | STILT          | BLACK-NECKED           | Sep         | 3 87      | LAGOON         |         |
| 94.  | AVOCETS        | AMERICAN               | Jul         | 17 85     | IN FLIGHT      |         |
| 95.  | SANDPIPERS     | GREATER YELLOWLEGS     | CBC         | 1981      | LAGOON         |         |
| 96.  | SANDPIPERS     | LESSER YELLOWLEGS      | Aug         | 16 85     | LAGOON         |         |
| 97.  | SANDPIPERS     | WILLET                 | CBC         | 1983      | LAGOON         |         |
| 98.  | SANDPIPERS     | WANDERING TATTLER      | Sep         | 15 83     | BAY EDGE       |         |
| 99.  | SANDPIPERS     | SPOTTED SANDPIPER      | Sep         | 15 83     | BAY EDGE       |         |
| 100. | SANDPIPERS     | WHIMBREL               | CBC         | 1978      | SOUTH BEACH    |         |
| 101. | SANDPIPERS     | LONG-BILLED CURLEW     | Sep         | 22 83     | SOUTH BEACH    |         |
| 102. | SANDPIPERS     | MARbled GODWIT         | May         | 1 85      | LAGOON         |         |
| 103. | SANDPIPERS     | RUDDY TURNSTONE        | CBC         | 1983      | ROCKY SHORE    |         |
| 104. | SANDPIPERS     | BLACK TURNSTONE        | CBC         | 1983      | ROCKY SHORE    |         |
| 105. | SANDPIPERS     | SURFBIRD               | Mar         | 12 33     | POINT BONITA   |         |
| 106. | SANDPIPERS     | RED KNOT               | Sep         | 12 86     | LAGOON         |         |
| 107. | SANDPIPERS     | SANDERLING             | CBC         | 1983      | LAGOON         |         |
| 108. | SANDPIPERS     | SEMPALMATED SANDPIPER  | Sep         | 9 86      | LAGOON         |         |
| 109. | SANDPIPERS     | WESTERN SANDPIPER      | Jul         | 17 85     | LAGOON         |         |
| 110. | SANDPIPERS     | LEAST SANDPIPER        | CBC         | 1978      | LAGOON         |         |
| 111. | SANDPIPERS     | BAIRD'S SANDPIPER      | Aug         | 1985      | LAGOON         |         |
| 112. | SANDPIPERS     | PECTORAL SANDPIPER     | Sep         | 20 85     | LAGOON         |         |
| 113. | SANDPIPERS     | DUNLIN                 | Dec         | 3 83      | LAGOON         |         |
| 114. | SANDPIPERS     | CURLEW SANDPIPER       | Sep         | 7 66      | LAGOON         |         |
| 115. | SANDPIPERS     | SHORT-BILLED DOWITCHER | Feb         | 24 88     | LAGOON         |         |
| 116. | SANDPIPERS     | LONG-BILLED DOWITCHER  | Jul         | 13 84     | LAGOON         |         |
| 117. | SANDPIPERS     | COMMON SNIFE           | Oct         | 14 87     | LAGOON         |         |
| 118. | SANDPIPERS     | RED-NECKED PHALAROPE   | Aug         | 25 85     | POND           |         |
| 119. | SANDPIPERS     | RED PHALAROPE          | Dec         | 3 83      | LAGOON         |         |
| 120. | JAEGER         | POMARINE               | Aug         | 20 85     | OCEAN          |         |
| 121. | JAEGER         | PARASITIC              | Aug         | 1985      | LAGOON         |         |
| 122. | GULLS          | BONAPARTE'S            | CBC         | 1978      | LAGOON         |         |
| 123. | GULLS          | HEERMAN'S              | Sep         | 15 83     | LAGOON         |         |
| 124. | GULLS          | MEW                    | CBC         | 1982      | LAGOON         |         |
| 125. | GULLS          | RING-BILLED            | CBC         | 1983      | LAGOON         |         |
| 126. | GULLS          | CALIFORNIA             | Sep         | 1983      | LAGOON         |         |
| 127. | GULLS          | HERRING                | CBC         | 1983      | LAGOON         |         |
| 128. | GULLS          | THAYER'S               | Jan         | 18 86     | BEACH          |         |
| 129. | GULLS          | WESTERN                | Aug         | 1983      | LAGOON         |         |
| 130. | GULLS          | GLAUCOUS-WINGED        | CBC         | 1983      | LAGOON         |         |
| 131. | GULLS          | GLAUCOUS               | Jan         | 15 88     | BAKER JETTY    |         |
| 132. | GULLS          | BLACK-LEGGED KITTIWAKE | Fall        | 1984      | LAGOON         |         |
| 133. | GULLS          | SABINE'S               | Fall        | 1984      | LAGOON         |         |
| 134. | TERNS          | CASPIAN                | Jul         | 14 84     | OVER BEACH     |         |
| 135. | TERNS          | ELEGANT                | Sep         | 1 84      | IN FLIGHT      |         |
| 136. | TERNS          | COMMON                 | SEP         | 23 88     | LAGOON         |         |
| 137. | TERNS          | FORSTER'S              | CBC         | 1981      | LAGOON         |         |
| 138. | TERNS          | LEAST                  | Sep         | 13 87     | LAGOON         |         |
| 139. | ALCIDS         | COMMON MURRE           | Jul         | 19 85     | LAGOON         |         |
| 140. | ALCIDS         | THICK-BILLED MURRE     | Aug         | 23 89     | BEACH          |         |
| 141. | ALCIDS         | PIGEON GUILLEMOT       | CBC         | 1978      | OCEAN ROCKS    |         |
| 142. | ALCIDS         | MARbled MURRELET       | Jan         | 1986      | OFF PT. DIABLO |         |
| 143. | ALCIDS         | ANCIENT MURRELET       | Aug         | 31 91     | OFF PT. DIABLO |         |
| 144. | ALCIDS         | RHINOCEROS AUKLET      | Mar         | 14 26     | POINT BONITA   |         |
| 145. | PIGEONS        | ROCK DOVE              | Aug         | 1983      | IN FLIGHT      |         |
| 146. | PIGEONS        | BAND-TAILED            | 37.415 FALL | 1987-1991 | HAWK SITE      |         |
| 147. | PIGEONS        | WHITE-WINGED DOVE      | 2           | Aug 30 87 | BY STABLES     |         |
| 148. | PIGEONS        | MOORNING DOVE          | Aug         | 1983      | IN FLIGHT      |         |
| 149. | PARROTS        | BUDGERIGAR             | Sep         | 12 84     | HAWK SITE      |         |

|      |                |                            |                       |                      |
|------|----------------|----------------------------|-----------------------|----------------------|
| 150. | PARROTS        | AFRICAN GRAY               | Jun 1988              | EAST FT. BAKER       |
| 151. | CUCULIFORMES   | YELLOW-BILLED CUCKOO       | Jun 22 88             | OPPOSITE STABLES     |
| 152. | OWLS           | BARN OWL                   | Oct 24 84             | STABLES              |
| 153. | OWLS           | WESTERN SCREECH            | Sep 26 84             | HAWK SITE            |
| 154. | OWLS           | GREAT HORNED               | Aug 28 83             | HAWK SITE            |
| 155. | OWLS           | NORTHERN PIGMY (dead 1983) | Live 1991             | MIWOK TRAIL          |
| 156. | OWLS           | BURROWING                  | Feb 1987              | HILLS                |
| 157. | OWLS           | LONG-EARED                 | Oct 21 84             | HAWK SITE            |
| 158. | OWLS           | SHORT-EARED                | Oct 1978              | HAWK SITE            |
| 159. | OWLS           | NORTHERN SAW-WHET          | Mar 13 32             | HEADLANDS TRIP       |
| 160. | GOATSUCKERS    | COMMON POORWILL            | Oct 27 84             | MAMMAL CENTER        |
| 161. | SWIFTS         | BLACK                      | 110 FALL 1987-1991    | HAWK SITE            |
| 162. | SWIFTS         | VAUX'S                     | 15,343 FALL 1987-1991 | HAWK SITE            |
| 163. | SWIFTS         | WHITE-THROATED             | 2,894 FALL 1987-1991  | HAWK SITE            |
| 164. | HUMMINGBIRDS   | ANNA'S                     | Aug 1983              | HAWK SITE            |
| 165. | HUMMINGBIRDS   | COSTA'S                    | 3 Apr 27 84           | BOBCAT & RANGE       |
| 166. | HUMMINGBIRDS   | RUFIOUS                    | Apr 24 84             | WILLOWS              |
| 167. | HUMMINGBIRDS   | ALLEN'S                    | Aug 1983              | HAWK SITE            |
| 168. | KINGFISHERS    | BELTED                     | Aug 1983              | LAKE                 |
| 169. | WOODPECKERS    | LEWIS'                     | 45 FALL 1987-1991     | HAWK SITE            |
| 170. | "              | ACORN                      | Aug 28 83             | HAWK SITE            |
| 171. | " RED-BREASTED | SAPSUCKER                  | Oct 9 83              | HAWK SITE            |
| 172. | "              | NUTTALL'S                  | Sep 19 83             | HAWK SITE            |
| 173. | "              | DOWNY                      | Aug 1983              | WILLOWS              |
| 174. | "              | WHITE-HEADED Spec. 62790   | Jul 20 32             | Pt. BONITA David Dun |
| 175. | " YELLOW-SHAFT | NORTHERN FLICKER           | CBC 1978              | HAWK SITE            |
| a..  | " RED-SHAFTED  | NORTHERN FLICKER           | Sep 1983              | HAWK SITE            |
| b..  | " YELLOW-SHAFT | INTERGRADE                 | Oct 4 84              | HAWK SITE            |
| c..  | " RED-SHAFTED  | INTERGRADE                 | Oct 14 84             | HAWK SITE            |
| 176. | FLYCATCHERS    | OLIVE-SIDED                | Sep 2 83              | HAWK SITE            |
| 177. | FLYCATCHERS    | WESTERN WOOD-PEWEE         | Aug 28 83             | HAWK SITE            |
| 178. | FLYCATCHERS    | WILLOW                     | Sep 27 87             | HAWK SITE            |
| 179. | FLYCATCHERS    | HAMMOND'S                  | Sep 11 90             | HAWK SITE            |
| 180. | FLYCATCHERS    | DUSKY                      | Oct 10 86             | HAWK SITE            |
| 181. | FLYCATCHERS    | PACIFIC SLOPE              | Aug 28 83             | HAWK SITE            |
| 182. | FLYCATCHERS    | BLACK PHOEBE               | Aug 1983              | HAWK SITE            |
| 183. | FLYCATCHERS    | SAY'S PHOEBE               | Sep 4 83              | HAWK SITE            |
| 4.   | FLYCATCHERS    | ASH-THROATED               | May 10 83             | HAWK SITE            |
| 5.   | FLYCATCHERS    | TROPICAL KINGBIRD          | ?                     | NEAR LAGOON          |
| 186. | FLYCATCHERS    | WESTERN KINGBIRD           | Sep 4 83              | HAWK SITE            |
| 187. | FLYCATCHERS    | EASTERN KINGBIRD           | Jun 14 87             | BOBCAT TRAIL         |
| 188. | LARKS          | HORNED LARK                | Aug 1984              | HAWK SITE            |
| 189. | SWALLOWS       | PURPLE MARTIN              | Sep 18 82             | HAWK SITE            |
| 190. | SWALLOWS       | TREE                       | Oct 4 83              | HAWK SITE            |
| 191. | SWALLOWS       | VIOLET-GREEN               | 18,409 FALL 1987-1991 | HAWK SITE            |
| 192. | SWALLOWS       | NORTHERN ROUGH-WINGED      | Sep 3 83              | HAWK SITE            |
| 193. | SWALLOWS       | BANK                       | July 1985             | LAGOON               |
| 194. | SWALLOWS       | CLIFF                      | Aug 1983              | HAWK SITE            |
| 195. | SWALLOWS       | BARN                       | Aug 1983              | HAWK SITE            |
| 196. | JAYS           | STELLER'S                  | Sep 11 83             | HAWK SITE            |
| 197. | JAYS           | BLUE                       | Oct 21 77             | HAWK SITE            |
| 198. | JAYS           | SCRUB                      | Aug 1983              | HAWK SITE            |
| 199. | JAYS           | PINYON                     | 6 FALL 1987-1991      | HAWK SITE            |
| 200. | JAYS           | CLARK'S NUTCRACKER         | Oct 4 86              | HAWK SITE            |
| 201. | MAGPIES        | YELLOW-BILLED              | ?                     | NEAR LAGOON          |
| 202. | RAVENS-CROWS   | AMERICAN CROW              | CBC 1983              | GERBODE VALLEY       |
| 203. | RAVENS-CROWS   | COMMON RAVEN               | Fall 1983             | HAWK SITE            |
| 204. | CHICKADEES     | MOUNTAIN                   | May 19 84             | HAWK SITE            |
| 205. | CHICKADEES     | CHESTNUT-BACKED            | Aug 1983              | HAWK SITE            |
| 206. | BUSHTITS       | BUSHTIT                    | Aug 1983              | HAWK SITE            |
| 207. | NUTHATCHES     | RED-BREASTED               | Aug 28 83             | HAWK SITE            |
| 208. | NUTHATCHES     | WHITE-BREASTED             | Oct 2 86              | HAWK SITE            |
| 209. | NUTHATCHES     | PIGMY                      | Oct 6 90              | HAWK SITE            |
| 210. | CREEPERS       | BROWN CREEPER              | CBC 1983              | HOSTEL AREA          |
| 211. | WRENS          | ROCK                       | Sep 9 83              | HAWK SITE            |
| 212. | WRENS          | CANYON                     | Oct 3 85              | HAWK SITE            |
| 213. | WRENS          | BEWICK'S                   | Aug 1983              | HAWK SITE            |
| 214. | WRENS          | HOUSE                      | Jul 14 84             | WILLOWS              |
| 215. | WRENS          | WINTER                     | Nov 14 83             | WILLOWS              |
| 216. | WRENS          | MARSH                      | Aug 1983              | LAKE                 |
| 217. | KINGLETS       | GOLDEN-CROWNED             | Oct 1 83              | HAWK SITE            |
| 218. | KINGLETS       | RUBY-CROWNED               | Oct 3 83              | HAWK SITE            |
| 219. | GNATCATCHERS   | BLUE-GRAY                  | 586 FALL 1987-1991    | HAWK SITE            |
| 220. | BLUEBIRDS      | WESTERN                    | CBC 1983              | BARN AREA            |
| 221. | BLUEBIRDS      | MOUNTAIN                   | Sep 2 89              | HAWK SITE            |
| 222. | THRUSHES       | TOWNSEND'S SOLITAIRE       | Mar 17 35             | LIVE OAKS            |
| 223. | THRUSHES       | SWAINSON'S                 | Oct 2 84              | WILLOWS              |

|      |             |                       |           |       |    |                  |
|------|-------------|-----------------------|-----------|-------|----|------------------|
| 224. | THRUSHES    | HERMIT                | Oct       | 4     | 83 | HAWK SITE        |
| 225. | THRUSHES    | AMERICAN ROBIN        | Aug       | 1983  |    | HAWK SITE        |
| 226. | THRUSHES    | VARIED                | 1987-1991 |       |    | HAWK SITE        |
| 227. | WRENTITS    | WRENTIT               | Aug       | 1983  |    | HAWK SITE        |
| 228. | MOCKINGBIRD | NORTHERN              | Aug       | 11    | 84 | COAST TRAIL      |
| 229. | THRASHERS   | SAGE                  |           | 1981  |    | HAWK SITE        |
| 230. | THRASHERS   | CALIFORNIA            | Sep       | 3     | 84 | HAWK SITE        |
| 231. | WAGTAILS    | WHITE                 | Oct       | 1     | 89 | RODEO LAGOON     |
| 232. | PIPITS      | AMERICAN              | Sep       | 14    | 83 | HAWK SITE        |
| 233. | WAXWINGS    | CEDAR                 | Sep       | 3     | 83 | HAWK SITE        |
| 234. | SHRIKES     | LOGGERHEAD            | CBC       | 1980  |    | RANGER STATION   |
| 235. | STARLINGS   | EUROPEAN              | Fall      | 1983  |    | IN FLIGHT        |
| 236. | VIREOS      | SOLITARY              | Sep       | 12    | 83 | HAWK SITE        |
| 237. | VIREOS      | HUTTON'S              | Sep       | 5     | 83 | HAWK SITE        |
| 238. | VIREOS      | WARBLING              | May       | 10    | 84 | WILLOWS          |
| 239. | WARBLERS    | TENNESSEE             | Fall      | 1981  |    | BATTERY WALLACE  |
| 240. | WARBLERS    | ORANGE-CROWNED        | Fall      | 1983  |    | HAWK SITE        |
| a.   | WARBLERS    | ORANGE-CROWNED celata | Sep       | 18    | 88 | HAWK SITE        |
| 241. | WARBLERS    | NASHVILLE             | Sep       | 20    | 84 | BATTERY WALLACE  |
| 242. | WARBLERS    | NORTHERN PARULA       | May       | 22    | 85 | BATTERY WALLACE  |
| 243. | WARBLERS    | YELLOW                | Sep       | 23    | 83 | HAWK SITE        |
| 244. | WARBLERS    | CHESTNUT-SIDED        | Oct       | 4     | 83 | HAWK SITE        |
| 245. | WARBLERS    | MAGNOLIA              | Sep       | 24    | 84 | HAWK SITE        |
| 246. | WARBLERS    | BLACK-THROATED BLUE   | Oct       | 17    | 87 | HAWK SITE        |
| 247. | WARBLERS    | YELLOW RUMPED         | Sep       | 20    | 83 | HAWK SITE        |
| 248. | WARBLERS    | BLACK-THROATED GRAY   | Sep       | 4     | 83 | HAWK SITE        |
| 249. | WARBLERS    | TOWNSEND'S            | Aug       | 27    | 83 | HAWK SITE        |
| 250. | WARBLERS    | HERMIT                | Aug       | 9     | 85 | HAWK SITE        |
| 251. | WARBLERS    | PALM                  | Sep       | 25    | 83 | HAWK SITE        |
| 252. | WARBLERS    | BAY-BREASTED          | Sep       | 28    | 86 | VISITOR CENTER   |
| 253. | WARBLERS    | BLACKPOLL             | Sep       | 28    | 86 | VISITOR CENTER   |
| 254. | WARBLERS    | BLACK-AND-WHITE       | Nov       | 18    | 83 | WILLOWS          |
| 255. | WARBLERS    | AMERICAN REDSTART     | Oct       | 15    | 82 | BATTERY WALLACE  |
| 256. | WARBLERS    | PROTHONOTARY          | Sep       | 18    | 80 | NEAR LAKE        |
| 257. | WARBLERS    | NORTHERN WATERTHRUSH  | Sep       | 3     | 90 | LAKE             |
| 258. | WARBLERS    | KENTUCKY              | Jun       | 13    | 85 | MIWOK HEAD       |
| 259. | WARBLERS    | MacGILLIVRAY'S        | Aug       | 28    | 83 | HAWK SITE        |
|      | WARBLERS    | COMMON YELLOWTHROAT   | Fall      | 1983  |    | LAKE             |
|      | WARBLERS    | WILSON'S              | Aug       | 1983  |    | HAWK SITE        |
| 262. | WARBLERS    | YELLOW BREASTED CHAT  |           | 1978? |    | COAST BUNKER     |
| 263. | TANAGERS    | WESTERN TANAGER       | Aug       | 28    | 83 | HAWK SITE        |
| 264. | GROSBEAKS   | ROSE-BREASTED         | Jun       | 15    | 84 | FIRE STATION     |
| 265. | GROSBEAKS   | BLACK-HEADED          | Aug       | 27    | 83 | HAWK SITE        |
| 266. | BUNTINGS    | LAZULI                | May       | 10    | 84 | RIFLE RANGE      |
| 267. | BUNTINGS    | INDIGO                | Jun       | 13    | 85 | MIWOK            |
| 268. | TOWHEES     | RUFIOUS-SIDED TOWHEE  | Sep       | 1983  |    | HAWK SITE        |
| 269. | TOWHEES     | CALIFORNIA TOWHEE     | Sep       | 1983  |    | HAWK SITE        |
| 270. | SPARROWS    | RUFIOUS-CROWNED       | Apr       | 3     | 86 | ABOVE KIRBY COVE |
| 271. | SPARROWS    | CHIPPING              | Apr       | 13    | 84 | HAWK SITE        |
| 272. | SPARROWS    | CLAY-COLORED          | Sep       | 25    | 87 | LAKE WILLOWS     |
| 273. | SPARROWS    | LARK                  | Sep       | 20    | 83 | HAWK SITE        |
| 274. | SPARROWS    | LARK BUNTING          | Sep       | 8     | 84 | NEAR LAKE        |
| 275. | SPARROWS    | SAVANNAH              | Sep       | 18    | 83 | MIWOK TRAIL      |
| 276. | SPARROWS    | GRASSHOPPER           | Jun       | 22    | 84 | UPPER MIWOK      |
| 277. | SPARROWS    | FOX lilaca            | Sep       | 19    | 84 | HAWK SITE        |
| a.   | SPARROWS    | FOX western           | Sep       | 25    | 84 | HAWK SITE        |
| 278. | SPARROWS    | SONG                  | Sep       | 1983  |    | HAWK SITE        |
| 279. | SPARROWS    | LINCOLN'S             | Sep       | 17    | 83 | MIWOK TRAIL      |
| 280. | SPARROWS    | SWAMP                 | Dec       | 25    | 87 | RODEO LAGOON     |
| 281. | SPARROWS    | WHITE-THROATED        | CBC       | 1983  |    | HOSTEL AREA      |
| 282. | SPARROWS    | GOLDEN CROWNED        | Sep       | 20    | 83 | HAWK SITE        |
| 283. | SPARROWS    | WHITE-CROWNED         | Aug       | 1983  |    | HAWK SITE        |
| 284. | SPARROWS    | DARK-EYED JUNCO       | Aug       | 28    | 83 | HAWK SITE        |
| a.   | SPARROWS    | SLATE-COLORED JUNCO   | Oct       | 11    | 83 | HAWK SITE        |
| 285. | BLACKBIRDS  | BOBOLINK              | Jul       | 3     | 91 | BOBCAT TRAIL     |
| 286. | BLACKBIRDS  | RED WINGED            | Sep       | 1983  |    | BARN AREA        |
| 287. | BLACKBIRDS  | TRICOLORED            | Oct       | 1     | 83 | HAWK SITE        |
| 288. | BLACKBIRDS  | WESTERN MEADOWLARK    | Sep       | 24    | 83 | HAWK SITE        |
| 289. | BLACKBIRDS  | YELLOW-HEADED         | May       | 14    | 84 | MAMMAL CENTER    |
| 290. | BLACKBIRDS  | GREAT-TAILED GRACKLE  | Jun       | 15    | 88 | STABLES          |
| 291. | BLACKBIRDS  | BREWER'S              | CBC       | 1983  |    | BARN AREA        |
|      | BLACKBIRDS  | BROWN-HEADED COWBIRD  | May       | 2     | 84 | RIFLE RANGE      |
|      | ORIOLES     | HOODED ORIOLE         | Aug       | 11    | 91 | VISITOR CENTER   |
| 294. | ORIOLES     | NORTHERN ORIOLE       | Apr       | 27    | 84 | BOBCAT TRAIL     |
| 295. | FINCHES     | PURPLE FINCH          | Oct       | 3     | 83 | HAWK SITE        |
| 296. | FINCHES     | CASSIN'S (3)          | Oct       | 24    | 87 | HAWK SITE        |
| 297. | FINCHES     | HOUSE FINCH           | Aug       | 1983  |    | HAWK SITE        |

|                 |                      |           |              |
|-----------------|----------------------|-----------|--------------|
| 298. CROSSBILLS | RED (Thousands)      | Fall 1984 | HAWK SITE    |
| 299. FINCHES    | PINE SISKIN          | Jul 1983  | RODEO VALLEY |
| 300. FINCHES    | LESSER GOLDFINCH     | Aug 1983  | HAWK SITE    |
| FINCHES         | LAWRENCE'S GOLDFINCH | Oct 15 89 | HAWK SITE    |
| FINCHES         | AMERICAN GOLDFINCH   | Sep 24 83 | HAWK SITE    |
| 303. GROSBEAKS  | EVENING              | Sep 29 83 | HAWK SITE    |
| 304. OLD WORLD  | HOUSE SPARROW        | Aug 1983  | BARN AREA    |

HERB BRANDT   DICK CUNNINGHAM   ALTON RAIBLE   TONY GRADY   GAIL LESTER  
 DAVE HOLWAY   BILL LENARZ   PETER ALLEN   TOBY REIN   MARGARET GREENE  
 DIANE WILLIAMS   MARK FLIPPO   GEORGE HUGENBERG   DAN SEALY   ALLEN FISH  
 JOHN KEANE   JIM DANZENBAKER   BOB FIVIS  
 "BIRDS OF NORTHERN CALIFORNIA"   LAURENCE BINFORD   RICH STALCUP  
 "RARE BIRD ALERT" 528-0288, JOE MORLAN   MARY LOUISE ROSEGAY  
 "CBC" CHRISTMAS BIRD COUNT.   RODEO LAGOON, LAKE, POND. (ARMY NAMES)  
 "GOLDEN GATE RAPTOR OBSERVATORY" "THE GULL" HAWK SITE= (HILL 129)  
 "BIRDS OF MARIN COUNTY" STEPHENS-PRINGLE   AUDUBON ASSOC. OF THE  
 PACIFIC 1933.  
 CARTER L. FAUST 95 E. CRESCENT DR. SAN RAFAEL, CA. 94901. (415) 453-2899  
 1993

### HUMAN INTEREST STORY

For almost ten years I have been compiling a list of the birds of The Marin Headlands, from old records of many sources; the Wednesday Walks (the Great-tailed Grackle was a Marin first), and newer records of my own including the hawks and other migrants that use this flyway.

At first I wondered if the list could reach 200 species, but it did that rather easily. As the list began to grow, more slowly now, I began to have hopes of 300?, which would be a excellent list for almost anywhere. The closer I came to this magic number though, the slower the list grew, maybe only one bird a six months.

Finally the goal has been reached with a total of 304 species! The number 304 is important here because in my eagerness I had included three non native species.

By subtracting these three exotics we still have a total of three hundred and one!

For years I had wondered if one of the oldest records (White-headed Woodpecker 1932) was really authentic as in those days there were four power field glasses around but not much in the way of binoculars. In fact early birding was done from the sight of a gun much like a butterfly collecting. Remember this was before the Peterson field guides and a friend of Peterson had only recently demonstrated that he could identify every bird on a field trip by sight and sound.

Amazingly! after sixty years, Margaret Duncan Greene, one of the regulars on the Wednesday Walks, brought along an old faded article telling of a teenager who had claimed this sighting, which he promptly reported to the Academy. They smiled politely and said that would be a great, unusual record and suggested that perhaps he could take along an experienced birder and relocate the woodpecker. "That won't be necessary said the kid" as he reached in his pocket and handed it over! The name of the boy, Richard Duncan, brother of Margaret!

Little did I know of this story when I met him at the hawk site a couple of years ago! The bird skin is still on file at the Academy.

Carter

**APPENDIX iii**

**Terrestrial Vertebrate List**

**California Wildlife Habitat Relationship Models**

CALIFORNIA DEPARTMENT OF FISH AND GAME WILDLIFE HABITAT RELATIONSHIP SYSTEM  
PROGRAMMED BY IRENE TIMOSI FOR PACIFIC GAS AND ELECTRIC COMPANY

Base Version: 08/08/89

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SPECIES DETAIL LIST

SECTION CRITERIA:

Locations:  
IRIN COUNTY

Habitats:

|                             |                |        |
|-----------------------------|----------------|--------|
| 1 VALLEY-FOOTHILL RIPARIAN  | SEEDLING TREE  | ( 1 )  |
| 2 VALLEY-FOOTHILL RIPARIAN  | SAPLING TREE   | ( 2S ) |
| 3 VALLEY-FOOTHILL RIPARIAN  | SAPLING TREE   | ( 2P ) |
| 4 VALLEY-FOOTHILL RIPARIAN  | SAPLING TREE   | ( 2M ) |
| 5 VALLEY-FOOTHILL RIPARIAN  | SAPLING TREE   | ( 2D ) |
| 6 VALLEY-FOOTHILL RIPARIAN  | POLE TREE      | ( 3S ) |
| 7 VALLEY-FOOTHILL RIPARIAN  | POLE TREE      | ( 3P ) |
| 8 VALLEY-FOOTHILL RIPARIAN  | POLE TREE      | ( 3M ) |
| 9 VALLEY-FOOTHILL RIPARIAN  | POLE TREE      | ( 3D ) |
| 10 VALLEY-FOOTHILL RIPARIAN | SMALL TREE     | ( 4S ) |
| 11 VALLEY-FOOTHILL RIPARIAN | SMALL TREE     | ( 4P ) |
| 12 VALLEY-FOOTHILL RIPARIAN | SMALL TREE     | ( 4M ) |
| 13 VALLEY-FOOTHILL RIPARIAN | SMALL TREE     | ( 4D ) |
| 14 VALLEY-FOOTHILL RIPARIAN | MED/LARGE TREE | ( 5S ) |
| 15 VALLEY-FOOTHILL RIPARIAN | MED/LARGE TREE | ( 5P ) |
| 16 VALLEY-FOOTHILL RIPARIAN | MED/LARGE TREE | ( 5M ) |
| 17 VALLEY-FOOTHILL RIPARIAN | MED/LARGE TREE | ( 5D ) |
| 18 COASTAL SCRUB            | SEEDLING SHRUB | ( 1 )  |
| 19 COASTAL SCRUB            | YOUNG SHRUB    | ( 2S ) |
| 20 COASTAL SCRUB            | YOUNG SHRUB    | ( 2P ) |
| 21 COASTAL SCRUB            | YOUNG SHRUB    | ( 2M ) |
| 22 COASTAL SCRUB            | YOUNG SHRUB    | ( 2D ) |
| 23 COASTAL SCRUB            | MATURE SHRUB   | ( 3S ) |
| 24 COASTAL SCRUB            | MATURE SHRUB   | ( 3P ) |
| 25 COASTAL SCRUB            | MATURE SHRUB   | ( 3M ) |
| 26 COASTAL SCRUB            | MATURE SHRUB   | ( 3D ) |
| 27 COASTAL SCRUB            | DECADENT SHRUB | ( 4S ) |
| 28 COASTAL SCRUB            | DECADENT SHRUB | ( 4P ) |
| 29 COASTAL SCRUB            | DECADENT SHRUB | ( 4M ) |
| 30 COASTAL SCRUB            | DECADENT SHRUB | ( 4D ) |
| 31 FRESH EMERGENT WETLAND   | SHORT HERB     | ( 1S ) |
| 32 FRESH EMERGENT WETLAND   | SHORT HERB     | ( 1P ) |
| 33 FRESH EMERGENT WETLAND   | SHORT HERB     | ( 1M ) |
| 34 FRESH EMERGENT WETLAND   | SHORT HERB     | ( 1D ) |
| 35 FRESH EMERGENT WETLAND   | TALL HERB      | ( 2S ) |
| 36 FRESH EMERGENT WETLAND   | TALL HERB      | ( 2P ) |
| 37 FRESH EMERGENT WETLAND   | TALL HERB      | ( 2M ) |
| 38 FRESH EMERGENT WETLAND   | TALL HERB      | ( 2D ) |

|                         |            |        |        |        |
|-------------------------|------------|--------|--------|--------|
| SALINE EMERGENT WETLAND | SHORT HERB | SPARSE | 2-09%  | ( 1S ) |
| SALINE EMERGENT WETLAND | SHORT HERB | OPEN   | 10-39% | ( 1P ) |
| SALINE EMERGENT WETLAND | SHORT HERB | MODRTE | 40-59% | ( 1M ) |

CALIFORNIA DEPARTMENT OF FISH AND GAME WILDLIFE HABITAT RELATIONSHIP SYSTEM  
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SPECIES SUMMARY LIST

| SPECIES NAME                | SCIENTIFIC NAME          | FAMILY            | ETETPSS | CAL | SC | STATUS |
|-----------------------------|--------------------------|-------------------|---------|-----|----|--------|
| B091 #RING-NECKED DUCK      | Aythya collaris          | ANATIDAE          | 8       |     |    |        |
| B093 #GREATER SCAUP         | Aythya marila            | ANATIDAE          | 8       |     |    |        |
| B094 #LESSER SCAUP          | Aythya affinis           | ANATIDAE          | 8       |     |    |        |
| B103 #BUFFLEHEAD            | Bucephala albeola        | ANATIDAE          | 8       |     |    |        |
| B104 #HOODED Merganser      | Lophodytes cucullatus    | ANATIDAE          | 8       |     |    |        |
| B105 #COMMON Merganser      | Mergus merganser         | ANATIDAE          | 8       |     |    |        |
| B106 #RED-BREADED Merganser | Mergus serrator          | ANATIDAE          | 8       |     |    |        |
| B107 #RUDDY DUCK            | Oxyura jamaicensis       | ANATIDAE          | 8       |     |    |        |
| B108 #TURKEY VULTURE        | Cathartes aura           | CATHARTIDAE       |         |     |    |        |
| B110 #OSPREY                | Pandion haliaetus        | ACCIPITRIDAE      | 6       | 2   |    |        |
| B111 #BLACK-SHOULDERED KITE | Elanus caeruleus         | ACCIPITRIDAE      | 5       |     |    |        |
| B113 #BALD EAGLE            | Haliaeetus leucocephalus | ACCIPITRIDAE      | 1 3 5   | 2   |    |        |
| B114 #NORTHERN HARRIER      | Circus cyaneus           | ACCIPITRIDAE      |         |     |    |        |
| B115 #SHARP-SKINNED HAWK    | Accipiter striatus       | ACCIPITRIDAE      |         |     |    |        |
| B116 #COOPER'S HAWK         | Accipiter cooperii       | ACCIPITRIDAE      |         |     |    |        |
| B119 #RED-SHOULDERED HAWK   | Buteo lineatus           | ACCIPITRIDAE      |         |     |    |        |
| B123 #RED-TAILED HAWK       | Buteo jamaicensis        | ACCIPITRIDAE      |         |     |    |        |
| B124 #FERRUGINOUS HAWK      | Buteo regalis            | ACCIPITRIDAE      |         |     |    |        |
| B125 #ROUGH-LEGGED HAWK     | Buteo lagopus            | ACCIPITRIDAE      |         |     |    |        |
| B126 #GOLDEN EAGLE          | Aquila chrysaetos        | ACCIPITRIDAE      | 56      |     |    |        |
| B127 #AMERICAN KESTREL      | Falco sparverius         | FALCONIDAE        |         |     |    |        |
| B128 #MERLIN                | Falco columbarius        | FALCONIDAE        |         |     |    |        |
| B129 #PEREGRINE FALCON      | Falco peregrinus         | FALCONIDAE        | 1 3 5   | 1   |    |        |
| B131 #PRAIRIE FALCON        | Falco mexicanus          | FALCONIDAE        | 6       |     |    |        |
| B133 #RING-NECKED PHEASANT  | Phasianus colchicus      | PHASIANIDAE       | 8       |     |    |        |
| B140 #CALIFORNIA QUAIL      | Callipepla californica   | PHASIANIDAE       | 8       |     |    |        |
| B141 #MOUNTAIN QUAIL        | Oreortyx pictus          | PHASIANIDAE       | 8       |     |    |        |
| B143 #BLACK RAIL            | Laterallus jamaicensis   | RALLIDAE          | 45      |     |    |        |
| B144 #CLAPPER RAIL          | Rallus longirostris      | RALLIDAE          | 1 3 45  |     |    |        |
| B145 #VIRGINIA RAIL         | Rallus limicola          | RALLIDAE          |         |     |    |        |
| B146 #SORA                  | Porzana carolina         | RALLIDAE          |         |     |    |        |
| B148 #COMMON MOORHEN        | Gallinula chloropus      | RALLIDAE          | 8       |     |    |        |
| B149 #AMERICAN COOT         | Fulica americana         | RALLIDAE          | 8       |     |    |        |
| B151 #BLACK-BELLIED PLOVER  | Pluvialis squatarola     | CHARADRIIDAE      |         |     |    |        |
| B156 #SEMPALMATED PLOVER    | Charadrius semipalmatus  | CHARADRIIDAE      |         |     |    |        |
| B158 #KILLDEER              | Charadrius vociferus     | CHARADRIIDAE      |         |     |    |        |
| B163 #BLACK-NECKED STILT    | Himantopus mexicanus     | RECURVITROSTRIDAE |         |     |    |        |
| B164 #AMERICAN AVOCET       | Recurvirostra americana  | RECURVITROSTRIDAE |         |     |    |        |

[illegible]

Tringa melanoleuca  
Tringa flavipes  
Catoptrophorus semipalmatus  
Actitis macularia  
Numenius phaeopus  
Numenius americanus  
Limosa fedoa  
Calidris mauri  
Calidris minutilla

CALIFORNIA DEPARTMENT OF FISH AND GAME WILDLIFE HABITAT RELATIONSHIP SYSTEM  
PROGRAMMED BY IRENE TIMOSI FOR PACIFIC GAS AND ELECTRIC COMPANY

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SPECIES SUMMARY LIST

| ID   | SPECIES NAME            | SCIENTIFIC NAME          | FAMILY        | STATUS   | FFCCFBH | CAL | ETETPSS | SC |
|------|-------------------------|--------------------------|---------------|----------|---------|-----|---------|----|
| B191 | #DUNLIN                 | Calidris alpina          | SCOLOPACIDAE  | 12345678 |         |     |         |    |
| B196 | #SHORT-BILLED DOWITCHER | Limnodromus griseus      | SCOLOPACIDAE  |          |         |     |         |    |
| B197 | #LONG-BILLED DOWITCHER  | Limnodromus scolopaceus  | SCOLOPACIDAE  |          |         |     |         |    |
| B199 | #COMMON SNIFE           | Gallinago gallinago      | SCOLOPACIDAE  |          |         |     |         |    |
| B211 | #BONAPARTE'S GULL       | Larus philadelphia       | LARIDAE       |          |         |     |         |    |
| B214 | #RING-BILLED GULL       | Larus delawarensis       | LARIDAE       |          |         |     |         |    |
| B215 | #CALIFORNIA GULL        | Larus californicus       | LARIDAE       |          |         |     |         |    |
| B220 | #WESTERN GULL           | Larus occidentalis       | LARIDAE       |          |         |     |         |    |
| B231 | #COMMON TERM            | Sterna hiruudo           | LARIDAE       |          |         |     |         |    |
| B233 | #FORSTER'S TERM         | Sterna forsteri          | LARIDAE       |          |         |     |         |    |
| B247 | #RHINOCEROS AUKLET      | Cerorhinca monocerata    | ALCIDAE       |          |         |     |         |    |
| B251 | #BAND-TAILED PIGEON     | Columba fasciata         | COLUMBIDAE    | 8        |         |     |         |    |
| B255 | #MOURNING DOVE          | Zenaidura macroura       | COLUMBIDAE    | 8        |         |     |         |    |
| B262 | #COMMON BARN OWL        | Tyto alba                | TYTONIDAE     |          |         |     |         |    |
| B264 | #WESTERN SCREECH OWL    | Otus kennicottii         | STRIGIDAE     |          |         |     |         |    |
| B265 | #GREAT HORNED OWL       | Bubo virginianus         | STRIGIDAE     |          |         |     |         |    |
| B267 | #NORTHERN PYGMY OWL     | Glaucidium gnoma         | STRIGIDAE     |          |         |     |         |    |
| B269 | #BURROWING OWL          | Athene cunicularia       | STRIGIDAE     |          |         |     |         | 2  |
| B272 | #LONG-EARED OWL         | Asio otus                | STRIGIDAE     |          |         |     |         | 2  |
| B273 | #SHORT-EARED OWL        | Asio flammeus            | STRIGIDAE     |          |         |     |         | 2  |
| B274 | #NORTHERN SAW-WHET OWL  | Aegolius acadicus        | STRIGIDAE     |          |         |     |         |    |
| B277 | #COMMON POORWILL        | Phalaenoptilus nuttallii | CAPRIMULGIDAE |          |         |     |         |    |
| B281 | #VAUX'S SWIFT           | Chaetura vauxi           | APOIDAE       |          |         |     |         |    |
| B282 | #WHITE-THROATED SWIFT   | Aeronautes saxatalis     | APOIDAE       |          |         |     |         |    |
| B287 | #ANNA'S HUMMINGBIRD     | Calypte anna             | TROCHILIDAE   |          |         |     |         |    |
| B291 | #RUFIOUS HUMMINGBIRD    | Selasphorus rufus        | TROCHILIDAE   |          |         |     |         |    |
| B292 | #ALLEN'S HUMMINGBIRD    | Selasphorus sasin        | TROCHILIDAE   |          |         |     |         |    |
| B293 | #BELTED KINGFISHER      | Ceryle alcyon            | ALCEDINIDAE   |          |         |     |         |    |
| B294 | #LEWIS' WOODPECKER      | Melanerpes lewis         | PICIDAE       |          |         |     |         |    |
| B296 | #ACORN WOODPECKER       | Melanerpes formicivorus  | PICIDAE       |          |         |     |         |    |
| B299 | #RED-BREADED SAPSUCKER  | Sphyrapicus ruber        | PICIDAE       |          |         |     |         |    |
| B302 | #NUTTALL'S WOODPECKER   | Picoides nuttallii       | PICIDAE       |          |         |     |         |    |
| B303 | #DOWNY WOODPECKER       | Picoides pubescens       | PICIDAE       |          |         |     |         |    |
| B304 | #HAIRY WOODPECKER       | Picoides villosus        | PICIDAE       |          |         |     |         |    |
| B307 | #NORTHERN FLICKER       | Colaptes auratus         | PICIDAE       |          |         |     |         |    |
| B311 | #WESTERN WOOD-PEWEE     | Contopus sordidulus      | TYRANNIDAE    |          |         |     |         |    |
| B320 | #WESTERN FLYCATCHER     | Empidonax difficilis     | TYRANNIDAE    |          |         |     |         |    |
| B321 | #BLACK PHOEBE           | Sayornis nigricans       | TYRANNIDAE    |          |         |     |         |    |

B326 #ASH-THROATED FLYCATCHER  
B333 #WESTERN KINGBIRD  
B338 #PURPLE MARTIN  
B339 #TREE SWALLOW  
B340 #VIOLET-GREEN SWALLOW  
B341 #NORTHERN ROUGH-WINGED SWALLOW  
B343 #CLIFF SWALLOW  
B344 #BARN SWALLOW  
B346 #STELLER'S JAY

Myiarchus cinerascens  
Tyrannus verticalis  
Progne subis  
Tachycineta bicolor  
Tachycineta thalassina  
Stelgidopteryx serripennis  
Hirundo pyrrhonota  
Hirundo rustica  
Cyanocitta stelleri

TYRANNIDAE  
TYRANNIDAE  
HIRUNDINIDAE  
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CORVIDAE

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SPECIES SUMMARY LIST

| ID   | SPECIES NAME                 | SCIENTIFIC NAME         | FAMILY        | ETETPS | CAL | SC |
|------|------------------------------|-------------------------|---------------|--------|-----|----|
| B348 | #SCRUB JAY                   | Apelocoma coerulescens  | CORVIDAE      |        |     |    |
| B353 | #AMERICAN CROW               | Corvus brachyrhynchos   | CORVIDAE      |        |     | 8  |
| B354 | #COMMON RAVEN                | Corvus corax            | CORVIDAE      |        |     |    |
| B355 | #CHESTNUT-BACKED CHICKADEE   | Parus rufescens         | PARIDAE       |        |     |    |
| B356 | #PLAIN TITMOUSE              | Parus inornatus         | PARIDAE       |        |     |    |
| B357 | #BUSHTIT                     | Psaltiriparus minimus   | AEGITHALIDAE  |        |     |    |
| B361 | #RED-BREADED NUTHATCH        | Sitta canadensis        | SITTIDAE      |        |     |    |
| B362 | #WHITE-BREADED NUTHATCH      | Sitta carolinensis      | SITTIDAE      |        |     |    |
| B364 | #BROWN CREEPER               | Certhia americana       | CERTHIDAE     |        |     |    |
| B366 | #ROCK WREN                   | Salpinctes obsoletus    | TROGLODYTIDAE |        |     |    |
| B368 | #BEWICK'S WREN               | Thryomanes bewickii     | TROGLODYTIDAE |        |     |    |
| B369 | #HOUSE WREN                  | Troglodytes aedon       | TROGLODYTIDAE |        |     |    |
| B370 | #WINTER WREN                 | Troglodytes troglodytes | TROGLODYTIDAE |        |     |    |
| B372 | #MARSH WREN                  | Cistothorus palustris   | TROGLODYTIDAE |        |     |    |
| B373 | #AMERICAN DIPPER             | Cinclus mexicanus       | CINCLIDAE     |        |     |    |
| B375 | #GOLDEN-CROWNED KINGLET      | Regulus satrapa         | MUSCICAPIDAE  |        |     |    |
| B376 | #RUBY-CROWNED KINGLET        | Regulus calendula       | MUSCICAPIDAE  |        |     |    |
| B377 | #BLUE-GRAY Gnatcatcher       | Polioptila caerulea     | MUSCICAPIDAE  |        |     |    |
| B380 | #WESTERN BLUEBIRD            | Sialia mexicana         | MUSCICAPIDAE  |        |     |    |
| B385 | #SWAINSON'S THRUSH           | Catharus ustulatus      | MUSCICAPIDAE  |        |     |    |
| B386 | #HERMIT THRUSH               | Catharus guttatus       | MUSCICAPIDAE  |        |     |    |
| B389 | #AMERICAN ROBIN              | Turdus migratorius      | MUSCICAPIDAE  |        |     |    |
| B390 | #VARIED THRUSH               | Ixoreus naevius         | MUSCICAPIDAE  |        |     |    |
| B391 | #WRENTIT                     | Chamaea fasciata        | MUSCICAPIDAE  |        |     |    |
| B393 | #NORTHERN MOCKINGBIRD        | Mimus polyglottos       | MIMIDAE       |        |     |    |
| B398 | #CALIFORNIA THRASHER         | Toxostoma redivivum     | MIMIDAE       |        |     |    |
| B404 | #WATER PIPIT                 | Anthus spinoletta       | MOTACILLIDAE  |        |     |    |
| B407 | #CEDAR WAXWING               | Bombicilla cedrorum     | BOMBYCILLIDAE |        |     |    |
| B410 | #LOGGERHEAD SHRIKE           | Lanius ludovicianus     | LANIDAE       |        |     |    |
| B411 | #EUROPEAN STARLING           | Sturnus vulgaris        | STURNIDAE     |        |     |    |
| B415 | #SOLITARY VIREO              | Vireo solitarius        | VIREONIDAE    |        |     |    |
| B417 | #HUTTON'S VIREO              | Vireo huttoni           | VIREONIDAE    |        |     |    |
| B418 | #WARBLING VIREO              | Vireo gilvus            | VIREONIDAE    |        |     |    |
| B425 | #ORANGE-CROWNED WARBLER      | Vermivora celata        | EMBERIZIDAE   |        |     |    |
| B430 | #YELLOW WARBLER              | Dendroica petechia      | EMBERIZIDAE   |        |     |    |
| B435 | #YELLOW-RUMPED WARBLER       | Dendroica coronata      | EMBERIZIDAE   |        |     |    |
| B436 | #BLACK-THROATED GRAY WARBLER | Dendroica nigrescens    | EMBERIZIDAE   |        |     |    |
| B437 | #TOWNSEND'S WARBLER          | Dendroica townsendi     | EMBERIZIDAE   |        |     |    |

HERMIT WARBLER  
#MACGILLIVRAY'S WARBLER  
#COMMON YELLOWTHROAT  
#WILSON'S WARBLER  
#YELLOW-BREASTED CHAT  
#WESTERN TANAGER  
#BLACK-HEADED GROSBEEK  
#LAZULI BUNTING  
#RUFUS-SIDED TOWNEE

Dendroica occidentalis  
Oporornis tolmiei  
Geothlypis trichas  
Wilsonia pusilla  
Icteria virens  
Piranga ludoviciana  
Pheucticus melanocephalus  
Passerina amoena  
Pipilo erythrophthalmus

EMBERIZIDAE  
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SPECIES SUMMARY LIST

| SPECIES NAME                  | SCIENTIFIC NAME            | FAMILY           | STATUS   | FFCCFBH | ETETPS | CAL | SC |
|-------------------------------|----------------------------|------------------|----------|---------|--------|-----|----|
| B484 #BROWN TOWHEE            | Pipilo fuscus              | EMBERIZIDAE      | 12345678 |         |        |     |    |
| B487 #RUFIOUS-CROWNED SPARROW | Aimophila ruficeps         | EMBERIZIDAE      |          |         |        |     |    |
| B489 #CHIPPING SPARROW        | Spizella passerina         | EMBERIZIDAE      |          |         |        |     |    |
| B495 #LARK SPARROW            | Chondestes grammacus       | EMBERIZIDAE      |          |         |        |     |    |
| B497 #SAGE SPARROW            | Amphispiza belli           | EMBERIZIDAE      |          |         |        |     |    |
| B499 #SAVANNAH SPARROW        | Passerculus sandwichensis  | EMBERIZIDAE      |          |         |        |     |    |
| B504 #FOX SPARROW             | Passerella iliaca          | EMBERIZIDAE      |          |         |        |     |    |
| B505 #SONG SPARROW            | Melospiza melodia          | EMBERIZIDAE      |          |         |        |     |    |
| B506 #LINCOLN'S SPARROW       | Melospiza lincolni         | EMBERIZIDAE      |          |         |        |     |    |
| B509 #GOLDEN-CROWNED SPARROW  | Zonotrichia atricapilla    | EMBERIZIDAE      |          |         |        |     |    |
| B510 #WHITE-CROWNED SPARROW   | Zonotrichia leucophrys     | EMBERIZIDAE      |          |         |        |     |    |
| B512 #DARK-EYED JUNCO         | Junco hyemalis             | EMBERIZIDAE      |          |         |        |     |    |
| B519 #RED-WINGED BLACKBIRD    | Agelaius phoeniceus        | EMBERIZIDAE      |          |         |        |     |    |
| B520 #TRICOLORED BLACKBIRD    | Agelaius tricolor          | EMBERIZIDAE      |          |         |        |     |    |
| B521 #WESTERN MEADOWLARK      | Sturnella neglecta         | EMBERIZIDAE      |          |         |        |     |    |
| B524 #BREWER'S BLACKBIRD      | Euphagus cyanocephalus     | EMBERIZIDAE      |          |         |        |     |    |
| B528 #BROWN-HEADED COBBIRD    | Molothrus ater             | EMBERIZIDAE      |          |         |        |     |    |
| B530 #HOODED ORIOLE           | Icterus cucullatus         | EMBERIZIDAE      |          |         |        |     |    |
| B532 #NORTHERN ORIOLE         | Icterus galbula            | EMBERIZIDAE      |          |         |        |     |    |
| B535 #PURPLE FINCH            | Carpodacus purpureus       | FRINGILLIDAE     |          |         |        |     |    |
| B536 #HOUSE FINCH             | Carpodacus mexicanus       | FRINGILLIDAE     |          |         |        |     |    |
| B542 #PINE SISKIN             | Carduelis pinus            | FRINGILLIDAE     |          |         |        |     |    |
| B543 #LESSER GOLDFINCH        | Carduelis psaltria         | FRINGILLIDAE     |          |         |        |     |    |
| B545 #AMERICAN GOLDFINCH      | Carduelis tristis          | FRINGILLIDAE     |          |         |        |     |    |
| B546 #EVENING GROSBEAK        | Coccothraustes vespertinus | FRINGILLIDAE     |          |         |        |     |    |
| M001 #VIRGINIA OPOSSUM        | Didelphis virginiana       | DIDELPHIDAE      |          |         |        |     |    |
| M003 #VAGRANT SHREW           | Sorex vagrans              | SORICIDAE        |          |         |        |     |    |
| M005 #PACIFIC SHREW           | Sorex pacificus            | SORICIDAE        |          |         |        |     |    |
| M006 ORNATE SHREW             | Sorex ornatus              | SORICIDAE        |          |         |        |     |    |
| M012 #TROWBRIDGE'S SHREW      | Sorex trowbridgii          | SORICIDAE        |          |         |        |     |    |
| M015 #SHREW-MOLE              | Neurotrichus gibbsii       | TALPIDAE         |          |         |        |     |    |
| M018 #BROAD-FOOTED MOLE       | Scapanus latimanus         | TALPIDAE         |          |         |        |     |    |
| M021 #LITTLE BROWN MYOTIS     | Myotis lucifugus           | VESPERTILIONIDAE |          |         |        |     |    |
| M023 #YUMA MYOTIS             | Myotis yumanensis          | VESPERTILIONIDAE |          |         |        |     |    |
| M025 #LONG-EARED MYOTIS       | Myotis evotis              | VESPERTILIONIDAE |          |         |        |     |    |
| M026 #FRINGED MYOTIS          | Myotis thysanodes          | VESPERTILIONIDAE |          |         |        |     |    |
| M027 #LONG-LEGGED MYOTIS      | Myotis volans              | VESPERTILIONIDAE |          |         |        |     |    |
| M028 #CALIFORNIA MYOTIS       | Myotis californicus        | VESPERTILIONIDAE |          |         |        |     |    |

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SPECIES SUMMARY LIST

Habitats: (Cont)

2 SALINE EMERGENT WETLAND SHORT HERB DENSE 60-100% ( 1D )  
3 SALINE EMERGENT WETLAND TALL HERB SPARSE 2-09% ( 2S )  
4 SALINE EMERGENT WETLAND TALL HERB OPEN 10-39% ( 2P )  
5 SALINE EMERGENT WETLAND TALL HERB MODRTE 40-59% ( 2M )  
6 SALINE EMERGENT WETLAND TALL HERB DENSE 60-100% ( 2D )

STATUS

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ETETPSS SC

| ID   | SPECIES NAME                   | SCIENTIFIC NAME                     | FAMILY            | STATUS |
|------|--------------------------------|-------------------------------------|-------------------|--------|
| A001 | #TIGER SALAMANDER              | Ambystoma tigrinum                  | AMBYSTOMATIDAE    |        |
| A004 | #PACIFIC GIANT SALAMANDER      | Dicamptodon ensatus                 | AMBYSTOMATIDAE    |        |
| A006 | #ROUGH-SKINNED NEWT            | Taricha granulosa                   | SALAMANDRIDAE     |        |
| A007 | #CALIFORNIA NEWT               | Taricha torosa                      | SALAMANDRIDAE     |        |
| A012 | #ENSATINA                      | Ensatina eschscholtzi               | PLETHODONTIDAE    |        |
| A014 | #CALIFORNIA SLENDER SALAMANDER | Batrachoseps attenuatus             | PLETHODONTIDAE    |        |
| A032 | #WESTERN TOAD                  | Bufo boreas                         | BUFONIDAE         |        |
| A039 | #PACIFIC TREEFROG              | Hyla regilla                        | HYLIDAE           |        |
| A040 | #RED-LEGGED FROG               | Rana aurora                         | RANIDAE           |        |
| A043 | #FOOTHILL YELLOW-LEGGED FROG   | Rana boylei                         | RANIDAE           |        |
| A046 | #BULLFROG                      | Rana catesbeiana                    | RANIDAE           | 8      |
| B006 | #PIED-BILLED GREBE             | Podilymbus podiceps                 | PODICIPEDIDAE     |        |
| B009 | #EARED GREBE                   | Podiceps nigricollis                | PODICIPEDIDAE     |        |
| B010 | #WESTERN GREBE / CLARK'S GREBE | Aechmophorus occidentalis / Clarkii | PODICIPEDIDAE     | 1 3    |
| B043 | #BROWN PELICAN                 | Pelecanus occidentalis              | PELECANIDAE       | 2      |
| B044 | #DOUBLE-CRESTED CORMORANT      | Phalacrocorax auritus               | PHALACROCORACIDAE |        |
| B049 | #AMERICAN BITTERN              | Botaurus lentiginosus               | ARDEIDAE          |        |
| B052 | #GREAT BLUE HERON              | Ardea herodias                      | ARDEIDAE          |        |
| B053 | #GREAT EGRET                   | Casmerodius albus                   | ARDEIDAE          |        |
| B053 | #SNOWY EGRET                   | Egretta thula                       | ARDEIDAE          |        |
| B057 | #CATTLE EGRET                  | Bubulcus ibis                       | ARDEIDAE          |        |
| B058 | GREEN-BACKED HERON             | Butorides striatus                  | ARDEIDAE          |        |
| B059 | BLACK-CROWNED NIGHT HERON      | Nycticorax nycticorax               | ARDEIDAE          |        |
| B062 | #WHITE-FACED IBIS              | Plegadis chihi                      | THRESKIORNITHIDAE | 1      |
| B071 | SNOW GOOSE                     | Chen caerulescens                   | ANATIDAE          | 8      |
| B075 | #CANADA GOOSE                  | Branta canadensis                   | ANATIDAE          | 8      |
| B076 | #WOOD DUCK                     | Aix sponsa                          | ANATIDAE          | 8      |
| B077 | #GREEN-WINGED TEAL             | Anas crecca                         | ANATIDAE          | 8      |
| B079 | #MALLARD                       | Anas platyrhynchos                  | ANATIDAE          | 8      |

030 #NORTHERN PINTAIL  
032 #BLUE-WINGED TEAL  
033 #CINNAMON TEAL  
084 #NORTHERN SHOVELER  
085 #GADWALL  
086 #EURASIAN WIGEON  
087 #AMERICAN WIGEON  
089 #CANVASBACK  
090 #REDHEAD

Anas acuta  
Anas discors  
Anas cyanoptera  
Anas clypeata  
Anas strepera  
Anas penelope  
Anas americana  
Aythya valisineria  
Aythya americana

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|------|-----------------------------|-----------------------------|--------------|--------|----------|--------|-----|----|
| M051 | #BLACK-TAILED HARE          | Lepus californicus          | LEPORIDAE    | 8      |          |        |     |    |
| M052 | #MOUNTAIN BEAVER            | Aplodontia rufa             | APLODONTIDAE |        | 12345678 |        |     |    |
| M059 | SONOMA CHIPMUNK             | Tamias sonomae              | SCIURIDAE    |        |          |        |     |    |
| M072 | #CALIFORNIA GROUND SQUIRREL | Spermophilus beecheyi       | SCIURIDAE    |        |          |        |     |    |
| M077 | #WESTERN GRAY SQUIRREL      | Sciurus griseus             | SCIURIDAE    | 8      |          |        |     |    |
| M081 | #BOTTA'S POCKET GOPHER      | Thomomys bottae             | GEOMYIDAE    |        |          |        |     |    |
| M113 | #WESTERN HARVEST MOUSE      | Reithrodontomys megalotis   | CRICETIDAE   |        |          |        |     |    |
| M114 | #SALT-MARSH HARVEST MOUSE   | Reithrodontomys raviventris | CRICETIDAE   | 1      |          | 3      |     | 5  |
| M117 | DEER MOUSE                  | Peromyscus maniculatus      | CRICETIDAE   |        |          |        |     |    |
| M120 | #PINYON MOUSE               | Peromyscus truei            | CRICETIDAE   |        |          |        |     |    |
| M127 | #DUSKY-FOOTED WOODRAT       | Neotoma fuscipes            | CRICETIDAE   |        |          |        |     |    |
| M134 | #CALIFORNIA VOLE            | Microtus californicus       | CRICETIDAE   |        |          |        |     |    |
| M139 | #MUSKRAT                    | Ondatra zibethicus          | CRICETIDAE   |        |          |        |     |    |
| M140 | #BLACK RAT                  | Rattus rattus               | MURIDAE      |        |          |        |     |    |
| M141 | #NORWAY RAT                 | Rattus norvegicus           | MURIDAE      |        |          |        |     |    |
| M142 | #HOUSE MOUSE                | Mus musculus                | MURIDAE      |        |          |        |     |    |
| M144 | #PACIFIC JUMPING MOUSE      | Zapus trinotatus            | ZAPODIDAE    |        |          |        |     |    |
| M146 | #COYOTE                     | Canis latrans               | CANIDAE      | 8      |          |        |     |    |
| M149 | #GRAY FOX                   | Urocyon cinereoargenteus    | CANIDAE      | 8      |          |        |     |    |
| M152 | #RINGTAIL                   | Bassariscus astutus         | PROCYONIDAE  | 5      |          |        |     |    |
| M153 | #RACCOON                    | Procyon lotor               | PROCYONIDAE  | 8      |          |        |     |    |
| M157 | #LONG-TAILED WEASEL         | Mustela frenata             | MUSTELIDAE   | 8      |          |        |     |    |
| M158 | #MINK                       | Mustela vison               | MUSTELIDAE   | 8      |          |        |     |    |
| M160 | #BADGER                     | Taxidea taxus               | MUSTELIDAE   | 8      |          |        |     |    |
| M161 | #WESTERN SPOTTED SKUNK      | Spilogale gracilis          | MUSTELIDAE   | 8      |          |        |     |    |
| M162 | #STRIPED SKUNK              | Mephitis mephitis           | MUSTELIDAE   | 8      |          |        |     |    |
| M165 | #MOUNTAIN LION              | Felis concolor              | FELIDAE      | 8      |          |        |     |    |
| M166 | #BOBCAT                     | Felis rufus                 | FELIDAE      | 8      |          |        |     |    |
| M171 | #HARBOR SEAL                | Phoca vitulina              | PHOCIDAE     |        |          |        |     |    |
| M176 | #WILD PIG                   | Sus scrofa                  | SUIDAE       |        |          |        |     |    |
| M177 | #ELK                        | Cervus elaphus              | CERVIDAE     | 8      |          |        |     |    |
| M178 | #FALLOW DEER                | Cervus dama                 | CERVIDAE     |        |          |        |     |    |
| M181 | #MULE DEER                  | Odocoileus hemionus         | CERVIDAE     | 8      |          |        |     |    |
| R004 | #WESTERN POND TURTLE        | Clemmys marmorata           | EMYDIDAE     |        |          |        |     |    |
| R022 | #WESTERN FENCE LIZARD       | Sceloporus occidentalis     | IGUANIDAE    |        |          |        |     |    |
| R029 | #COAST HORNED LIZARD        | Phrynosoma coronatum        | IGUANIDAE    |        |          |        |     |    |
| R036 | #WESTERN SKINK              | Eumeces skiltonianus        | SCINCIDAE    |        |          |        |     |    |
| R040 | #SOUTHERN ALLIGATOR LIZARD  | Geophotus multicarinatus    | ANGUIDAE     |        |          |        |     |    |

|      |                                   |                        |            |
|------|-----------------------------------|------------------------|------------|
| R051 | #RINGNECK SNAKE                   | Diadophis punctatus    | COLUBRIDAE |
| R052 | #SHARP-TAILED SNAKE               | Contia tenuis          | COLUBRIDAE |
| R053 | #RACER                            | Coluber constrictor    | COLUBRIDAE |
| R054 | #COACKWHIP                        | Masticophis flagellum  | COLUBRIDAE |
| R055 | #CALIFORNIA WHIPSNAKE             | Masticophis lateralis  | COLUBRIDAE |
| R056 | #GOPHER SNAKE                     | Pituophis melanoleucus | COLUBRIDAE |
| R057 | #COMMON KINGSNAKE                 | Lampropeltis getulus   | COLUBRIDAE |
| R058 | #COMMON GARTER SNAKE              | Thamnophis sirtalis    | COLUBRIDAE |
| R059 | #WESTERN TERRESTRIAL GARTER SNAKE | Thamnophis elegans     | COLUBRIDAE |

CALIFORNIA DEPARTMENT OF FISH AND GAME WILDLIFE HABITAT RELATIONSHIP SYSTEM  
 PROGRAMMED BY IRENE TIMOSSI FOR PACIFIC GAS AND ELECTRIC COMPANY

Database Version: 08/08/89

15:29:57 06/09/93

PAGE: 8

SPECIES SUMMARY LIST

STATUS  
 12345678  
 FCCGFBH CAL  
 ETETPS SC

ID SPECIES NAME SCIENTIFIC NAME FAMILY

R063 #WESTERN AQUATIC GARTER SNAKE  
 R076 #WESTERN RATTLESNAKE

Thamnophis couchi  
 Crotalus viridis

COLUBRIDAE  
 VIPERIDAE

TOTAL SPECIES: 275

/ = this symbol next to the species name indicates that the species considers one or more special habitat elements to be essential or secondary. Please consult the Species Notes for more information.

**tatus Definitions:**

- . FE: Federally Endangered
- . FT: Federally Threatened
- CE: California Endangered
- . I: California Threatened
- California Protected
- Forest Service Sensitive
- .. BLM Sensitive
- " : Harvest

ISC: California Special Concern

## APPENDIX IV

### Results of the Terrestrial Vertebrate Field Study in the Rodeo Lagoon Area

# Appendix IV

Mammal Species at Kulev Lagoon during 1992 Survey.

|       |                       |
|-------|-----------------------|
| PEMT  | Deer Mouse            |
| NEFU  | Dusky Forest shrew    |
| ULCI  | Cray Fox              |
| PRLC  | Raccoon               |
| MIC+  | Meadow vole           |
| D-MIA | Copposum              |
| REME  | Western harvest mouse |
| SOVA  | Vagrant shrew         |
| MUMU  | House mouse           |
| CAFA  | Feral dog             |

| Record# | DATE     | OBSERVER | TRAP | SITE | SPECIES | WT | TAGNO | SEX | TOTALLENGTH | TAILLENGTH | HINDFOOT | EARLENGTH | AGE | COMMENTS                                                                 |
|---------|----------|----------|------|------|---------|----|-------|-----|-------------|------------|----------|-----------|-----|--------------------------------------------------------------------------|
| 415     | 07/21/92 | JAH      | TP   | 100  | PEMA    |    |       |     |             |            |          |           |     |                                                                          |
| 416     | 07/21/92 | JAH      | WS   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 417     | 07/21/92 | JAH      | SH   | 100  | PEMA    | 21 | 1508  | F   | 169         | 77         | 21       | 14        | A   |                                                                          |
| 418     | 07/21/92 | JAH      | PF   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 517     | 07/22/92 | JAH      | TP   | 100  | NEFU    |    |       |     |             |            |          |           |     |                                                                          |
| 518     | 07/22/92 | JAH      | WS   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 519     | 07/22/92 | JAH      | SH   | 100  | PEMA    |    | 1508  |     |             |            |          |           |     |                                                                          |
| 520     | 07/22/92 | JAH      | PF   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 551     | 07/22/92 | JAH      | TP   | 98   | URCI    |    |       |     |             |            |          |           |     |                                                                          |
| 552     | 07/22/92 | JAH      | WS   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 553     | 07/22/92 | JAH      | SH   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 554     | 07/22/92 | JAH      | PF   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 555     | 07/22/92 | JAH      | TP   | 98   | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 587     | 07/23/92 | CAW      | TP   | 100  | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 588     | 07/23/92 | CAW      | WS   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 589     | 07/23/92 | CAW      | SH   | 100  | PEMA    |    | 1508  |     |             |            |          |           |     |                                                                          |
| 590     | 07/23/92 | CAW      | PF   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 591     | 07/23/92 | CAW      | TP   | 98   | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 592     | 07/23/92 | CAW      | WS   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 593     | 07/23/92 | CAW      | SH   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 594     | 07/23/92 | CAW      | PF   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 595     | 07/23/92 | CAW      | TP   | 98   | URCI    |    |       |     |             |            |          |           |     |                                                                          |
| 711     | 07/24/92 | CAW      | TP   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 712     | 07/24/92 | CAW      | TP   | 100  | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 713     | 07/24/92 | CAW      | TP   | 100  | MICA    |    |       |     |             |            |          |           |     |                                                                          |
| 714     | 07/24/92 | CAW      | TP   | 100  | PEMA    |    |       |     |             |            |          |           |     |                                                                          |
| 715     | 07/24/92 | CAW      | WS   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 716     | 07/24/92 | CAW      | SH   | 100  | PEMA    | 14 | 837   | M   | 169         | 88         | 19       | 18        | A   |                                                                          |
| 717     | 07/24/92 | CAW      | PF   | 98   | PEMA    | 4  |       | F   | 91          | 57         | 14       | 10        | J   | DEAD; BLOOD FROM MOUTH; POSSIBLE OLD (NON-BLOODY) WOUNDS TO THROAT AREA  |
| 718     | 07/24/92 | CAW      | PF   | 98   | PEMA    | 11 | 834   | F   | 171         | 88         | 13       | 16        | A   | WITH INFANT JUVENILE (DEAD); NOT LACTATING; OVERALL VERY BROWN; TAIL SUB |
| 719     | 07/24/92 | CAW      | TP   | 98   | DIMA    |    |       |     |             |            |          |           |     |                                                                          |
| 720     | 07/24/92 | CAW      | TP   | 98   | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 721     | 07/24/92 | CAW      | WS   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 722     | 07/24/92 | CAW      | SH   | 98   |         |    |       |     |             |            |          |           |     |                                                                          |
| 723     | 07/24/92 | CAW      | TP   | 98   | PEMA    |    |       |     |             |            |          |           |     |                                                                          |
| 724     | 07/24/92 | CAW      | TP   | 98   | MICA    |    |       |     |             |            |          |           |     |                                                                          |
| 802     | 07/25/92 | PBD      | TP   | 100  | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 803     | 07/25/92 | PBD      | WS   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 804     | 07/25/92 | PBD      | SH   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 805     | 07/25/92 | PBD      | PF   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 806     | 07/26/92 | JAH      | TP   | 100  | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 807     | 07/26/92 | JAH      | WS   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 808     | 07/26/92 | JAH      | SH   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 809     | 07/26/92 | JAH      | PF   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 810     | 07/27/92 | JAH      | TP   | 100  | PRLO    |    |       |     |             |            |          |           |     |                                                                          |
| 811     | 07/27/92 | JAH      | WS   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 812     | 07/27/92 | JAH      | SH   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |
| 813     | 07/27/92 | JAH      | PF   | 100  |         |    |       |     |             |            |          |           |     |                                                                          |

BAIT MOVED 1 1/4 M. EAST

BAIT MISSING; URINE MARKED; COTTON PULLED OUT  
BAIT MISSING; SPACERS NEEDED; COTTON PULLED OUT

CLOSED - NO BAIT-COTTON PRESENT

BAIT MOVED

| DATE     | TIME | TP | 98 URCI  | 14 | 846 M | 94  | 53 | 14 | 4 J  | BAIT GONE |
|----------|------|----|----------|----|-------|-----|----|----|------|-----------|
| 07/25/92 | PBD  | WS | 98       |    |       |     |    |    |      |           |
| 07/25/92 | PBD  | SH | 98       |    |       |     |    |    |      |           |
| 07/25/92 | PBD  | PF | 98 REME  | 14 | 846 M | 94  | 53 | 14 | 4 J  |           |
| 07/26/92 | JAH  | TP | 98 PRLO  |    |       |     |    |    |      |           |
| 07/26/92 | JAH  | SH | 98       |    |       |     |    |    |      |           |
| 07/26/92 | JAH  | PF | 98 REME  |    | 846   |     |    |    | J    |           |
| 07/26/92 | JAH  | PF | 98 REME  | 3  | F     |     |    |    | J    |           |
| 07/27/92 | JAH  | TP | 98       |    |       |     |    |    |      |           |
| 07/27/92 | JAH  | WS | 98       |    |       |     |    |    |      |           |
| 07/27/92 | JAH  | SH | 98       |    |       |     |    |    |      |           |
| 07/27/92 | JAH  | PF | 98 REME  |    | 846   |     |    |    |      |           |
| 07/27/92 | JAH  | PF | 98 REME  |    |       |     |    |    |      |           |
| 07/27/92 | JAH  | PF | 98 REME  |    |       |     |    |    |      |           |
| 07/28/92 | JAH  | TP | 100 PRLO |    |       |     |    |    |      |           |
| 07/28/92 | JAH  | WS | 100      |    |       |     |    |    |      |           |
| 07/28/92 | JAH  | SH | 100      |    |       |     |    |    |      |           |
| 07/28/92 | JAH  | TP | 100 URCI |    |       |     |    |    |      |           |
| 07/28/92 | JAH  | TP | 98       |    |       |     |    |    |      |           |
| 07/28/92 | JAH  | SH | 98       |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | TP | 100      |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | WS | 100      |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | SH | 100      |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | PF | 100      |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | TP | 100 URCI |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | PF | 100      |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | SH | 100 PEHA |    | 1508  |     |    |    |      |           |
| 07/30/92 | CAW  | SH | 100 PEHA | 11 | 824 F | 142 | 73 | 19 | 17 S |           |
| 07/29/92 | JAH  | TP | 98       |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | WS | 98       |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | SH | 98       |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | PF | 98       |    |       |     |    |    |      |           |
| 07/29/92 | JAH  | TP | 98       |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | WS | 98       |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | SH | 98       |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | PF | 98       |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | TP | 98       |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | WS | 98       |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | SH | 98       |    |       |     |    |    |      |           |
| 07/30/92 | CAW  | PF | 98 REME  |    | 846   |     |    |    | J    |           |
| 08/05/92 | PBD  | TP | 96       |    |       |     |    |    |      |           |
| 08/05/92 | PBD  | WS | 96       |    |       |     |    |    |      |           |
| 08/05/92 | PBD  | SH | 96       |    |       |     |    |    |      |           |
| 08/05/92 | PBD  | PF | 96 MICA  | 50 | 888 M | 159 | 37 | 21 | 14 A |           |
| 08/06/92 | JAH  | TP | 96       |    |       |     |    |    |      |           |
| 08/06/92 | JAH  | WS | 96       |    |       |     |    |    |      |           |
| 08/06/92 | JAH  | SH | 96       |    |       |     |    |    |      |           |
| 08/06/92 | JAH  | PF | 96       |    |       |     |    |    |      |           |
| 08/06/92 | JAH  | TP | 89       |    |       |     |    |    |      |           |
| 08/05/92 | CAW  | WS | 89       |    |       |     |    |    |      |           |
| 08/05/92 | CAW  | SH | 89       |    |       |     |    |    |      |           |
| 08/05/92 | CAW  | PF | 89       |    |       |     |    |    |      |           |
| 08/06/92 | JAH  | TP | 89       |    |       |     |    |    |      |           |
| 08/06/92 | JAH  | WS | 89       |    |       |     |    |    |      |           |









[illegible]





[illegible]





APPENDIX V

RARE FIND DATABASE INFORMATION

FOR THE RODEO LAGOON SITE

California Natural Diversity Database

# = this symbol next to the species name indicates that the species considers one or more special habitat elements to be essential or secondary. Please consult the Species Notes for more information.

#### Status Definitions:

1. FE: Federally Endangered
2. FT: Federally Threatened
3. CE: California Endangered
4. CT: California Threatened
5. CP: California Protected
6. FS: Forest Service Sensitive
7. BS: BLM Sensitive
8. H : Harvest

CalSC: California Special Concern

```
** California Department of Fish and Game ***** Natural Diversity Data Base **
*
* GEOTHELYPIS TRICHAS SINUOSA
* Saltmarsh Common Yellowthroat
*
* -----Status----- NDDB Element Ranks -----Other Lists-----
* Federal: Category 2      Global: G5T2      CDFG:
* State: None              State: S2      Audubon:
*                               CNPS List:
* ---Habitat Associations---      CNPS RED Code:
* General: RESIDENT OF THE SAN FRANCISCO BAY REGION, IN FRESH AND SALT
* WATER MARSHES.
* Microhabitat: REQUIRES THICK, CONTINUOUS COVER DOWN TO WATER SURFACE FOR
* FORAGING; TALL GRASSES, TULE PATCHES, WILLOWS FOR NESTING.
*** Element ID: ABPBX1201A *****
```

```
Occurrence Number: 53
Quality: Unknown
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Info Source: FWS, 1986 (LIT)

--Dates Last Seen--
Element: 1985/XX/XX
Site: 1985/XX/XX
```

Quad Summary: Point Bonita (3712275)  
County(ies): Marin

Location: RODEO LAGOON, FORT BARRY MILITARY RESERVATION.

```
Lat/Long: 37d 50m 01s / 122d 31m 11s      Township: ???
UTM: Zone-10 N4187257 E542263      Range: ???
Mapping Precision: NON-SPECIFIC (1/5 Mile)      Section: UN XX Qtr
Symbol Type: POINT      Meridian: M
Group Number: 08514      More Information? N      Acres:
Map Index Number: 08514      More Map Detail? N      Elevation:
```

Threat Summary: No threats listed for this occurrence.

Comments: Distribution Notes - BREEDING PAIRS DURING 1985 SURVEY,

\*\* California Department of Fish and Game \*\*\*\*\* Natural Diversity Data Base \*\*  
 \* EUCYCLOGOBIUS NEWBERRYI \*  
 \* Tidewater Goby \*  
 \* -----Status----- NDDB Element Ranks -----Other Lists----- \*  
 \* Federal: Category 2  $\overline{P} \equiv$  Global: G2 CDFG: Special Concern \*  
 \* State: None State: S2 Audubon: \*  
 \* CNPS List: \*  
 \* ---Habitat Associations--- CNPS RED Code: \*  
 \* General: BRACKISH WATER HABITATS ALONG THE CALIFORNIA FROM AGUA \*  
 \* HEDIONDA LAGOON, SAN DIEGO CO. TO THE MOUTH OF THE SMITH \*  
 \* RIVER. \*  
 \* Microhabitat: FOUND IN SHALLOW LAGOONS AND LOWER STREAM REACHES, THEY NEED \*  
 \* FAIRLY STILL BUT NOT STAGNANT WATER & HIGH OXYGEN LEVELS. \*  
 \*\*\* Element ID: AFCQN04010 \*\*\*\*\*

Occurrence Number: 18 --Dates Last Seen--  
 Quality: Unknown Element: 1984/XX/XX  
 Type: Natural/Native occurrence Site: 1984/XX/XX  
 Presence: Presumed Extant  
 Trend: Unknown  
 Main Info Source: SWIFT, C. C. ET AL 1986 (LIT)

Quad Summary: Point Bonita (3712275)  
 County(ies): Marin, San Francisco

Location: RODEO LAGOON, FORT CRONKITE.

|                                          |                    |
|------------------------------------------|--------------------|
| Lat/Long: 37d 49m 52s / 122d 31m 49s     | Township: ???      |
| UTM: Zone-10 N4186975 E541335            | Range: ???         |
| Mapping Precision: NON-SPECIFIC (1 Mile) | Section: UN XX Qtr |
| Symbol Type: POINT                       | Meridian: M        |
| Group Number: 08494                      | Acres:             |
| Map Index Number: 08494                  | Elevation: 10 ft   |
| More Information? Y                      |                    |
| More Map Detail? Y                       |                    |

Threat Summary: No threats listed for this occurrence.

Comments: Distribution Notes - BEACH SEINING CATCH WAS 177 IN 1980, 422  
 IN 1981, & 386 IN 1982; ALL LIFE STAGES (EXCEPT EGGS) COLL IN  
 RODEO LAGOON; NONE OBS IN RODEO LAKE. POP EXTANT IN 1984. ONLY  
 EXTANT LOCATION W/IN S.F. BAY AREA. General Notes - LITTLE OR  
 NO GENETIC EXCHANGE BTWN POPS. LOW VAGILITY. CAS  
 ACC.1969:VII:16,17 COLL 3/17/69.PRESUMED EXTANT IN 1990 BY  
 SWIFT. Owner/Manager - NPS-GOLDEN GATE NRA

\*\* California Department of Fish and Game \*\*\*\*\* Natural Diversity Data Base \*\*  
 \*  
 \* ICARICIA ICARIOIDES MISSIONENSIS  
 Mission Blue Butterfly  
 \*  
 \* -----Status----- NDDB Element Ranks -----Other Lists-----  
 \* Federal: Endangered Global: G5T2 CDFG:  
 \* State: None State: S2 Audubon:  
 \* CNPS List:  
 \* ---Habitat Associations--- CNPS RED Code:  
 \* General: INHABITS GRASSLANDS OF THE SAN FRANCISCO PENINSULA.  
 \* Microhabitat: THREE LARVAL HOST PLANTS: LUPINUS ALBIFRONS, L. VARIICOLOR,  
 \* AND L. FORMOSUS, OF WHICH L. ALBIFRONS IS FAVORED.  
 \*\*\* Element ID: IILEPG801A \*\*\*\*\*

Occurrence Number: 8 --Dates Last Seen--  
 Quality: Unknown Element: 1981/XX/XX  
 Type: Natural/Native occurrence Site: 1985/XX/XX  
 Presence: Presumed Extant  
 Trend: Unknown  
 Main Info Source: U.S. FISH & WILDLIFE SERVICE, 1985 (LIT)

Quad Summary: San Francisco North (3712274), Point Bonita (3712275)  
 County(ies): Marin, San Francisco

Location: FORT BAKER, JUST N OF GOLDEN GATE BRIDGE.

|                                            |                    |
|--------------------------------------------|--------------------|
| Lat/Long: 37d 50m 05s / 122d 29m 05s       | Township: 01S      |
| UTM: Zone-10 N4187397 E545342              | Range: 06W         |
| Mapping Precision: NON-SPECIFIC (1 Mile)   | Section: UN XX Qtr |
| Symbol Type: POINT                         | Meridian: M        |
| Group Number: 08644 More Information? N    | Acres:             |
| Map Index Number: 08644 More Map Detail? N | Elevation: 400 ft  |

Threat Summary: No threats listed for this occurrence.

Comments: General Notes - NORTHERN LIMIT OF DISTRIBUTION. POPULATION  
 CHECKED IN 1984 AND 1985, BUT NO MISSION BLUE BUTTERFLIES WERE  
 FOUND. Owner/Manager - NPS-GOLDEN GATE NRA

\*\* California Department of Fish and Game \*\*\*\*\* Natural Diversity Data Base \*\*

\*  
 \* DANAUS PLEXIPPUS  
 \* Monarch Butterfly  
 \*

\* -----Status----- NDDB Element Ranks -----Other Lists----- \*

\* Federal: None Global: G5 CDFG:  
 \* State: None State: S3 Audubon:  
 \* CNPS List:  
 \* CNPS RED Code:

\* ---Habitat Associations---  
 \* General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN  
 \* MENDOCINO TO BAJA CALIFORNIA, MEXICO.  
 \* Microhabitat: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS,  
 \* MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES  
 \* NEARBY.  
 \*  
 \*\*\* Element ID: IILEPP2010 \*\*\*\*\*

Occurrence Number: 6 --Dates Last Seen--  
 Quality: Fair Element: 1988/02/11  
 Type: Natural/Native occurrence Site: 1989/01/06  
 Presence: Presumed Extant  
 Trend: Unknown  
 Main Info Source: SAKAI, W. H. 1989 (OBS & MAP)

Quad Summary: Point Bonita (3712275)  
 County(ies): Marin, San Francisco

Location: FORT BARRY MILITARY RESERVATION, ADJACENT TO THE YOUTH HOSTEL,  
 2.5 MI S OF MARIN CITY.

|                                            |                    |
|--------------------------------------------|--------------------|
| Lat/Long: 37d 49m 44s / 122d 31m 06s       | Township: 01S      |
| UTM: Zone-10 N4186734 E542388              | Range: 06W         |
| Mapping Precision: NON-SPECIFIC (1/5 Mile) | Section: UN XX Qtr |
| Symbol Type: POINT                         | Meridian: M        |
| Group Number: 08520                        | Acres:             |
| Map Index Number: 08520                    | Elevation: 200 ft  |
| More Information? N                        |                    |
| More Map Detail? Y                         |                    |

Threat Summary: No threats listed for this occurrence.

Comments: Distribution Notes - APPROXIMATELY 400 BUTTERFLIES OBSERVED  
 DURING THE PEAK IN MID-NOVEMBER OF 1987; ONLY ONE OBSERVED ON  
 11 FEB 1988. NONE OBSERVED ON 6 JAN 1989, ALTHOUGH THEY ARE NOT  
 NORMALLY FOUND HERE LATE IN THE SEASON. Ecological Notes -  
 TEMPORARY SITE; ROOST TREES ARE A ROW OF EUCALYPTUS TREES THAT  
 RUN ADJACENT TO THE NPS YOUTH HOSTEL. General Notes - THESE  
 TREES ARE #3 ON THE NPS "EUCALYPTUS REMOVAL LIST" FOR MARIN  
 COUNTY. Owner/Manager - DOD, NPS-GGNRA