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FRESHWATER FISHERIES INVENTORY
FOR POINT REYES NATIONAL SEASHORE

Research Proposal

Submitted by

John F. Ranlett

and

David W. Self

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INTRODUCTION

Point Reyes National Seashore contains at least 22 permanent streams and a number of natural freshwater lakes and man-made ponds. The potential exists for the streams to support anadromous fisheries but little data is presently available. Many of the freshwater impoundments contain known fisheries while the status of others is unknown.

The streams of Point Reyes ultimately empty into the Pacific Ocean, Tomales Bay, or Bolinas Lagoon, or are tributaries to larger streams that empty into these coastal waters. These streams may be important to anadromous fisheries. Olema Creek is known to be a Steelhead Trout (Salmo gairdneri) and Silver (Coho) Salmon (Oncorhynchus kisutch) spawning and nursery bed (Anderson, 1980). Steelhead Trout fingerlings were recently found in Coast Creek, and juvenile salmonids are also present in Bear Valley Creek. Other fish found in Olema Creek are California Roach (Hesperoleucas symmetricus), Threespine Stickleback (Gasterosteus aculeatus), Sacramento Sucker (Catostomus occidentalis), and Sculpin (Cottus sp.). However, further knowledge on stream fisheries is not available. A backpack electroshocker was used in the 1980 stream survey.

Lake surveys have been conducted in the past by Shapovalov and Thompson (1947), Strohschein (1972), and Patterson (1976); Widmer (1976) conducted a limnology study at Bass Lake. Impoundments surveyed include Wildcat (1972), Bass (1947, 1972, 1976), Crystal (1947, 1972, 1976), Lower Muddy Hollow (1972, 1976), Upper Muddy Hollow (1976), Turney (1972, 1976), Vision (1976), and Abbotts Lagoon (1972). Point Reyes staff also have provided information based on personal angling experience. Fish species known to occur at Point Reyes include Largemouth Bass (Micropterus salmoides), Black Crappie (Pomoxis nigromaculatus), Sacramento Perch (Archoplites interruptus), Golden Shiner (Notemigonus crysoleucas), Pacific Herring (Clupea harengus), Prickly Sculpin (Cottus asper), Catfish (Ictalurus sp.), Rainbow Trout (Salmo gairdneri), Steelhead

Trout, Threespine Stickleback, and California Roach (See Table 1). Methods for past inventories have included gill and seine nets, rod and reel, and visual observation.

The purpose of this project is to provide information on species composition, size class, relative abundance, and distribution of fish within selected freshwater impoundments and streams of Point Reyes National Seashore.

TABLE 1

KNOWN OCCURRENCE OF FRESHWATER FISH AT POINT REYES NATIONAL SEASHORE

BASS LAKE:	Rainbow Trout, Catfish
CRYSTAL LAKE:	California Roach, Largemouth Bass, Sculpin sp., Sunfish sp.
WILDCAT LAKE:	Threespine Stickleback
TURNER POND:	Rainbow Trout, Steelhead Trout, Prickly Sculpin, Golden Shiner, Threespine Stickleback
VISION POND:	Largemouth Bass, Black Crappie
ABBOTTS LAGOON (upper):	Sacramento Perch, Pacific Herring, Sculpin sp.
LOWER MUDDY HOLLOW POND:	Rainbow Trout
UPPER MUDDY HOLLOW POND:	Rainbow Trout (pond no longer exists)

METHODS

Streams to be surveyed include Coast, Bear Valley, Muddy Hollow, Pine Gulch, Santa Maria, Santa Maria Beach, Glenbrook, and Wildcat Creeks. Representative habitats (i.e. vegetation types, pool, riffle, bottom substrate, etc.) for each stream will be sampled; sampling stations will be a minimum of 100 feet long. UTM coordinates, photographs, and a description of the habitat will be recorded for each sampling station so that the survey can be repeated accurately in the future if desired.

A backpack electroshocker, provided by Sequoia/Kings Canyon National Park, will

be used for stream sampling. The standard electroshocking technique of two consecutive shocking runs within a "closed" section of stream will be used. A third run will be employed if a statistically significant number of fish are caught on the second run. A closed section of stream will be delineated by setting block nets at the upstream and downstream limits of the sampling station. Streams will be shocked working upstream. Shocked fish will be put into temporary holding basins, identified, measured (fork length), and then released after the sampling run is complete. A four person crew is required. If the crew works efficiently, three sections of stream can be sampled in a day. The sampling will occur in August when juvenile salmonids attain their largest size.

Lakes and ponds to be sampled include Crystal, Pelican, Bass, Wildcat, Ocean, and Mud lakes, Muddy Hollow Pond, Abbotts Lagoon, and Vision Pond (in that order). Methods of sampling will include gill and seine netting. Gill nets will be _____ feet long and of the experimental type, consisting of four different mesh sizes:

A seine net, _____ feet long, of the bag type will be used; mesh size of the seine will be _____ x _____. Gill and seine nets will be provided by the California Department of Fish and Game. Good species composition can usually be derived using these two methods together.

Gill nets will be used to sample deep water habitats. A minimum of two nets will be set at each sampling period (overnight). Gill nets will be set out in the afternoon and checked the following morning. Fish caught will be identified, measured (fork length), and released. The nets will then be moved to other locations within the impoundment. Two to three nights with several sets should provide a good sampling of the species present.

Seine nets will be used to sample shallow water habitats. Fish caught will be identified, measured (fork length), and released. Seining will occur on a one-time

basis at each impoundment.

For species identification, Moyle's' Inland Fishes of California will be used.
Size measurements will be in centimeters.

RESULTS AND PRODUCTS

A final report describing the findings of the project will be prepared. Data on species composition, size class, and relative abundance for each impoundment and stream will be provided. Salmonid population estimates for each stream will be calculated using the regression model: $N = C_1^2 / C_1 - C_2$ (for 2 run method) or
 $N =$ (for 3 run method).

LOGISTICS AND EQUIPMENT

TIME ESTIMATION:

2-3 days/lake with a 2-3 person crew
1-2 days/stream with a 4 person crew

EQUIPMENT REQUIRED:

gill net
seine net
backpack electroshocker
raft
measuring board
hip waders
dip nets
holding containers
formalin
labels
Inland Fishes of California, by Peter Moyle

DATA SHEET

DATE: _____

LOCATION (UTM) : _____

TIME: _____

INVESTIGATORS: _____

METHODS/PROCEDURES: _____

HABITAT: _____

COMMENTS: _____

[illegible]

REFERENCES

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