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STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME
MARINE RESOURCES REGION

MENDOCINO POWER PLANT SITE
ECOLOGICAL STUDY
QUARTERLY REPORT No. 5
July 1 - September 30, 1972

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PACIFIC GAS AND ELECTRIC COMPANY
COOPERATIVE RESEARCH AGREEMENT S-1902

MARINE RESOURCES REGION
Administrative Report 72-10

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This report is the fifth quarterly report submitted in partial fulfillment of Research Contract No. S-1902 between the Department of Fish and Game and the Pacific Gas and Electric Company. Through this contract the Department of Fish and Game is to conduct a pre-operational ecological study to establish a base line inventory of the marine biota with special reference to fish and to abalone, including food chains.

Quarterly reports will be followed by annual reports. The first annual report will cover all work from September 1971 through December 1972. Full tables and species lists will be included in each annual report.

Submitted to:

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MENDOCINO POWER PLANT SITE ECOLOGICAL STUDY 1/

QUARTERLY REPORT No. 5

July 1 to September 30, 1972

INTRODUCTION

This is a fifth report of ecological studies at the Mendocino Power Plant site. The report covers studies at subtidal and intertidal stations and sportfishery surveys, including abalone and skiff censuses during the third quarter of 1972.

OPERATIONS

Rough weather and heavy sea conditions occurred with increasing frequency during this quarter. These conditions hampered movement of our boat from moorage at Albion River to the study area and limited the number of field days in the latter part of the quarter.

During the quarter, 22 subtidal stations were occupied; eight in the north control area and 14 in the central area (Figure 1). Three reconnaissance dives were also made; two in Arena Cove and one on Arena Rock. Due to the lack of workable low tides, only three random intertidal transects were performed; all located in the central area. Two subtidal and two intertidal fish collections were made, all within the confines of Arena Cove.

Sampling of skiff fishermen's catches continued. In addition, a charter boat began operating out of the cove in July and these catches were sampled as time permitted. The catch-per-unit-of-effort of skiff fishermen increased from 4.2 fish observed during April, May and June to 9.3 fish per rod per day during this period. In July, black rockfish

1/ Prepared at Marine Resources Laboratory, Marine Resources Region, 2201 Garden Road, Monterey, California 93940.

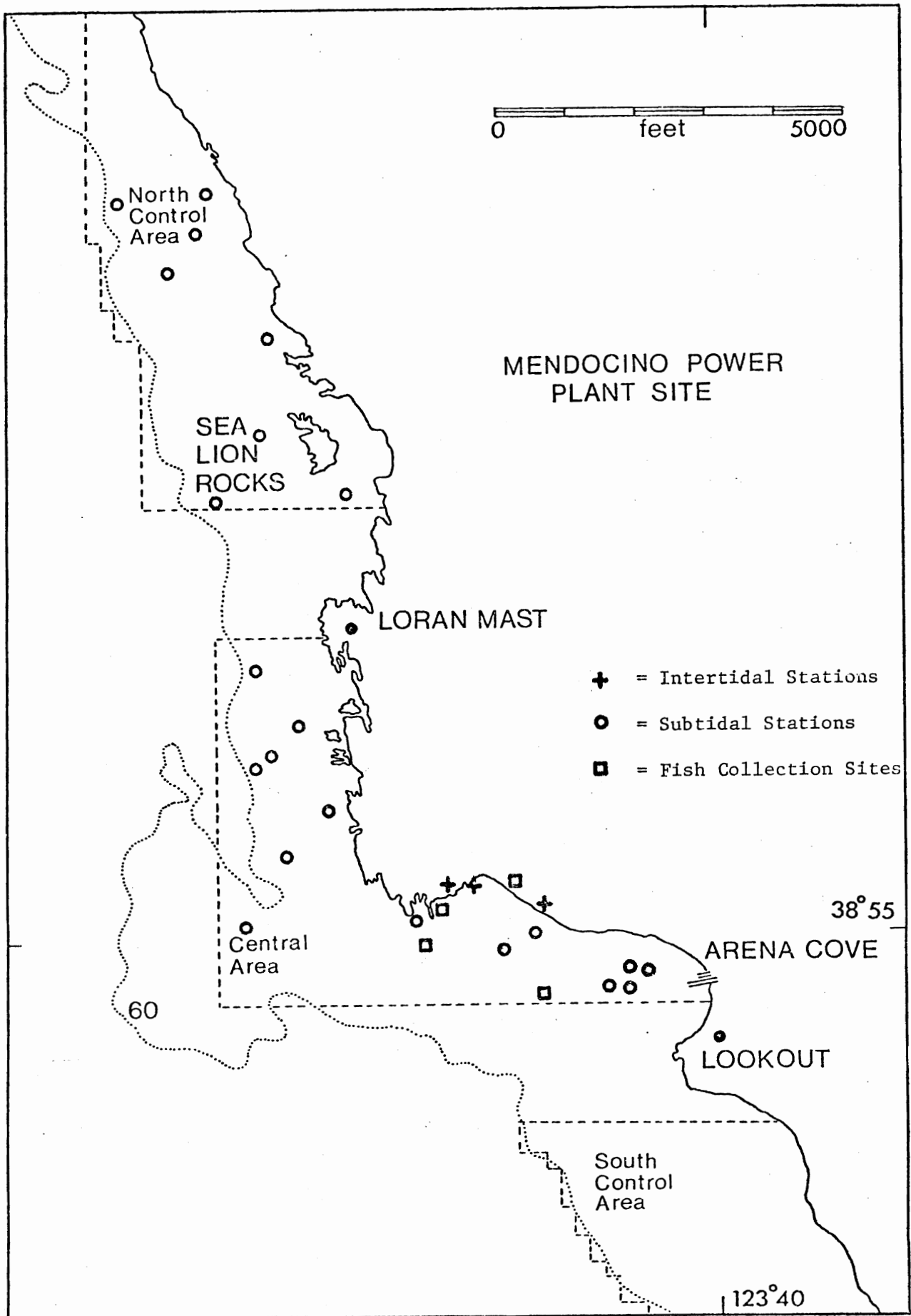


FIGURE 1. Random Intertidal and Subtidal Stations and Fish Collection Sites Occupied During July 1 - September 30, 1972.

dominated catches followed by copper rockfish. Black rockfish continued to dominate catches in August, but lingcod replaced copper rockfish in second place. Lingcod assumed dominance in September as fish moved into shallower waters for spawning. A total of 69 charter boat fishermen was interviewed during this period. Their catch consisted of 746 fish, with black rockfish the most numerous fish in their catches.

Abalone sportfish effort was much lower than in previous quarters due to the absence of good minus tides. One hundred thirteen shore-pickers and 24 divers were interviewed on seven days; a total of 586 abalone was harvested by these individuals. Shore-pickers averaged 4.0 abalone per person in the south area and 4.3 abalone per person in the central area while all interviewed divers obtained limits (5 abalone).

In late September, two project members met with AEC biologists at the Mendocino site. The purpose of the meeting was to familiarize AEC scientists with the marine environment in the general area of the proposed power plant site.

In the laboratory organisms taken from intertidal, subtidal and fish collection stations were rough sorted. A reference list of preserved invertebrate specimens was compiled. A list of fishes observed by project divers during this quarter is included (Appendix A).

A total of 115 fish stomachs was collected from eleven species of fish. Preliminary analysis has been completed on 55 stomachs. Contents have included several species of crabs and shrimp that have not been observed in our subtidal and intertidal studies.

A comparison of abalone, urchin, and selected brown algae densities in Arena Cove was made. The Cove was divided into the Finger Reef area and the inner Arena Cove and all data collected to date were utilized (Appendices B and C).

APPENDIX A

FISHES OBSERVED BY PROJECT DIVERS, MENDOCINO STUDY SITE

July 1 - September 30, 1972.

	<u>AREAS</u>	
	<u>North Control</u>	<u>Central</u>
<i>Artedius</i> sp.		X
<i>Chirolophis nugator</i>		X
<i>Clupea harengus pallasii</i>		X
COTTIDAE	X	X
<i>Damalichthys vacca</i>		X
<i>Embiotica lateralis</i>	X	X
<i>Gibbonsia</i> sp.	X	X
<i>Hexagrammos decagrammus</i>	X	X
<i>Jordania zonope</i>	X	
<i>Ophiodon elongatus</i>	X	X
<i>Rhacochilus toxotes</i>	X	X
<i>Scorpaenichthys marmoratus</i>	X	X
<i>Sebastes chrysomelas</i>		X
<i>Sebastes flavidus</i> - <i>serranoides</i> complex, juveniles	X	X
<i>Sebastes melanops</i> , adults and juveniles	X	X
<i>Sebastes mystinus</i> , adults and juveniles	X	X
<i>Sebastes nebulosus</i>	X	

APPENDIX B

DENSITY OF ABALONE IN ARENA COVE:

Area I: Finger Reef Area

Area II: Inner Arena Cove

Station Number	Number of <i>Haliotis</i>			Density (<i>Haliotis</i> /m ²)	
	<i>H. rufescens</i>	Others	Total	<i>H. rufescens</i>	Total
Area I:					
75	21	0	21	0.70	0.70
85	2	2	4	0.07	0.13
85	6	0	6	0.20	0.20
93	115	1	116	1.92	1.93
280	49	0	49	1.63	1.63
Mean Density				0.90	0.92
Range				0.07-1.92	0.13-1.93
Median				0.20	0.20
Area II:					
108	1	1	2	0.04	0.07
118	2	0	2	0.03	0.03
121	2	1	3	0.07	0.10
130	0	0	0	0.00	0.00
146	9	1	10	0.15	0.17
148	3	0	3	0.10	0.10
156	2	0	2	0.07	0.07
159	0	0	0	0.00	0.00
159	19	1	20	0.63	0.67
173	13	0	13	0.43	0.43
Mean Density				0.15	0.16
Range				0.00-0.63	0.00-0.67
Median				0.07	0.08

APPENDIX C
DENSITY OF URCHINS AND BROWN ALGAE IN ARENA COVE
AREA I: Finger Reef Area
AREA II: Inner Arena Cove

Station Number	<i>Strongylo-centrotus purpuratus</i>		<i>Strongylo-centrotus franciscanus</i>		<i>Laminaria setchelli</i>		<i>Pterogophora californica</i>		<i>Desmarestia munda</i>		<i>Nereocystis luetkeana</i>	
	Number	Density	Number	Density	Number	Density	Number	Density	Number	Density	Number	Density
Area I:												
75	0	0.00	43	1.43	9	0.30	0	0.00	33	1.10	0	0.00
85	0	0.00	0	0.00	217	7.23	37	1.23	Abundant		0	0.00
85	0	0.00	98	3.27	31	1.03	5	0.17	130	4.33	57	1.90
93	0	0.00	0	0.00	Abundant		0	0.00	0	0.00	0	0.00
280	0	0.00	0	0.00	101	3.37	17	0.57	0	0.00	0	0.00
Density (N/m ²)		0.00		0.94		2.98		0.39		1.36		0.38
Area II:												
108	0	0.00	170	5.67	4	0.13	0	0.00	0	0.00	5	0.17
118	0	0.00	361	6.02	3	0.05	0	0.00	0	0.00	0	0.00
121	83	2.77	99	3.30	58	1.93	23	0.77	20	0.67	0	0.00
130	0	0.00	135	4.50	few juveniles		0	0.00	Common		22	0.73
146	7	0.23	327	5.45	Common		6	0.10	Abundant		3	0.05
148	0	0.00	116	3.87	60	2.00	38	1.27	0	0.00	169+	5.63
156	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
159	0	0.00	0	0.00	13	0.43	2	0.07	30	1.00	3	0.10
159	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
173	0	0.00	0	0.00	1	0.03	1	0.00	0	0.00	0	0.00
Density (N/m ²)		0.30		2.88		0.57		0.22		0.21		0.67

APPENDIX D

MAN-DAYS SPENT AT MENDOCINO POWER PLANT SITE

July 1 - September 30, 1972.

Subtidal Surveys:	July 5 - 11
Participants:	Gotshall, Laurent, Hoban, Baumler
Subtidal Surveys:	July 19 - 26
Participants:	Gotshall, Laurent, Hoban, Baumler
Fish Collections:	August 14 - 18
Participants:	Gotshall, Lea, Laurent, Hoban, Baumler
Subtidal Surveys:	September 6 - 11
Participants:	Lea, Laurent, Baumler, Farrens
Subtidal Surveys:	September 21 - 25
Participants:	Lea, Laurent, Farrens
Total man-days during quarter:	354
Total man-days at site:	88
Boat-days lost to wather:	8
Total stations sampled:	29
Travel time man-days:	40
Boat time (hours)	37
Laboratory time man-days	226

PROJECT PERSONNEL:

Daniel W. Gotshall, Senior Marine Biologist - Project Leader

Robert N. Lea, Associate Marine Biologist - Assistant Project
Leader. Responsible for Subtidal Surveys.

Laurence L. Laurent, Assistant Marine Biologist. Responsible for
Intertidal Surveys.

Therese L. Hoban, Jr. Aquatic Biologist. Responsible for Plankton
Studies.

Margaret M. Hughes, Stenographer II.

Jay Baumler, Seasonal Aid.

Gary Farrens, Seasonal Aid.