

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

SOUTHERN CALIFORNIA INDEPENDENT SPORT FISHING SURVEY

QUARTERLY REPORT NO. 11

by

Vickie L. Wine

MARINE RESOURCES

Administrative Report No. 78-9

June 1978

SOUTHERN CALIFORNIA INDEPENDENT SPORT FISHING SURVEY ^{1/}

QUARTERLY REPORT NO. 11

by

Vickie L. Wine ^{2/}

ABSTRACT

During the January 1 - March 31, 1978 quarter, 28 launch ramps, hoists, and boat rental locations were sampled a total of 253 times. During the sample days 6,296 anglers and 279 divers were interviewed. They expended 42,296 effort-hours and landed 16,165 fishes and other organisms of 125 identified species.

The ten most commonly landed species were 1) white croaker, *Genyonemus lineatus*, 12%; 2) Pacific mackerel, *Scomber japonicus*, 7%; 3) blue rockfish, *Sebastes mystinus*, 7%; 4) chilipepper, *S. goodei*, 5%; 5) bocaccio, *S. paucispinis*, 5%; 6) kelp bass, *Paralabrax clathratus*, 4%; 7) barred sand bass, *P. nebulifer*, 4%; 8) halftoon, *Medialuna californiensis*, 4%; 9) greenspotted rockfish, *Sebastes chlorostictus*, 3%; and 10) black surfperch, *Embiotoca jacksoni*, 3%.

^{1/} Marine Resources Region, Administrative Report No. 78-9, June 1978.

^{2/} Marine Resources Region, California State Fisheries Laboratory, 350 Golden Shore, Long Beach, California 90802.

SOUTHERN CALIFORNIA INDEPENDENT SPORT FISHING SURVEY
QUARTERLY REPORT NO. 11

INTRODUCTION

This is the third year of the Southern California Independent Sport Fishing study conducted by the California Department of Fish and Game in cooperation with the National Marine Fisheries Service. The purposes of the study are to estimate effort levels expended by sport anglers and divers fishing from privately owned boats, to estimate the magnitude and species composition of their catch, and to determine the degree of sport fishermen's compliance with size limit regulations. This information is used to evaluate the impact of private-boat sport fishermen on southern California's marine resources.

OPERATIONS

The sampling plan consists of a program of random field sampling at the major launch ramps, hoists, and boat rental locations from San Diego to Santa Barbara Counties. Sampling is conducted on all weekends and holidays and on randomly chosen weekdays in accordance with available manpower. Field samplers remain at sampling locations from 1000 to 1800 hours, and an effort is made to interview all returning anglers and divers. Information on length of fishing trip, number of fishing poles used, and number of people angling or diving is gathered along with the identification and enumeration of all fishes, molluscs, crabs, and lobsters in possession (no data are requested about species caught but not kept). An attempt is made to measure all species with legal size requirements. Eight other species are also measured to provide data for life history studies.

Sampling sites are located in Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties. During the quarter we sampled 18 launch

ramps, 5 boat hoists, and 5 boat rental locations. Due to storm-related problems, several locations in the northern section of the sampled area were closed during parts of the quarter. The Goleta hoist and rental facility in Santa Barbara County was closed during January and early February. Gaviota hoist in Santa Barbara County and Paradise Cove hoist and rental facility in Los Angeles County were both closed during the latter part of February and throughout the month of March.

RESULTS AND DISCUSSION

During the January 1 - March 31, 1978 quarter, 28 launch ramps, hoists, and boat rental facilities were sampled 253 times. During the sample days 6,296 anglers and 279 divers were interviewed; they expended 40,784 angler-trip-hours^{3/} and 1,512 diver-trip-hours^{3/}. The total catch was composed of 16,165 fishes and other organisms of 125 identified species, and 814 unidentified filleted fishes (Table 1).

Effort

Activity levels were extremely low during the quarter due to continual storms and frequent high winds. Record rainfall caused most fishermen to postpone fishing trips until the appearance of calmer seas and more hospitable weather. Anglers and divers were aware that fishing would remain poor until the turbid inshore water (caused by excessive fresh water run-off from streams and by the churning action of storm waves) cleared.

Catch

Of the 125 species identified in sampled catches, 34 accounted for 90% of the identified catch (Table 2), and rockfishes, *Sebastes* spp.,

^{3/} The unit of effort is 1 hour of trip time per angler or diver. Adjustments are made for those using more than one fishing pole concurrently.

contributed 43% of the total catch. The ten most commonly landed species were 1) white croaker, 12%; 2) Pacific mackerel, 7%; 3) blue rockfish, 7%; 4) chilipepper, 5%; 5) bocaccio, 5%; 6) kelp bass, 4%; 7) barred sand bass, 4%; 8) halfmoon, 4%; 9) greenspotted rockfish, 3%; and 10) black surfperch, 3%.

More than 5% of the total catch was composed of filleted fishes whose species could not be determined. According to the California Sport Fishing Regulations certain fishes may be landed in filleted form provided that the fillets meet size limit requirements and can be identified. Most of the filleted fishes we saw were rockfishes, and less than 0.25% of the total catch was completely unidentifiable.

In Santa Barbara County 68% of the total angler catch was composed of rockfishes, but good catches of kelp bass were also taken. Divers were very successful in this area and brought in rock scallops, *Hinnites multirugosus*; California sheephead, *Semicossyphus pulcher*; and California spiny lobster, *Panulirus interruptus*.

Rockfishes contributed over 75% of the total angler catch in Ventura County. In the remaining 25% of the catch Pacific sanddabs, *Citharichthys sordidus*; kelp bass; and Pacific mackerel were prominent (Table 3). Divers landed small catches of rock scallops, California spiny lobsters, and California sheephead.

Los Angeles County anglers landed 30% rockfishes and 21% white croaker. The Pacific mackerel catch dropped from 25% landed during the previous quarter to 8% landed during this quarter. Divers landed mostly rock scallops.

In Orange County 44% of the angler catch was composed of rockfishes, although frequent catches of white croaker, Pacific mackerel, and barred sand bass were also reported. Very little diving activity originated in Orange County, but the most common catch of the few diving parties

encountered was rock scallop.

Surface fishes were landed more often than rockfishes by San Diego County anglers. More than 50% of the total catch was composed of white croaker; Pacific mackerel; barred sand bass; Pacific bonito, *Sarda chiliensis*; ocean whitefish, *Caulolatilus princeps*; kelp bass; and half-moon. Divers landed red abalones, *Haliotis rufescens*; California sheep-head; and rock scallops.

Catch Per Unit of Effort

The catch per unit of effort (CPUE) for anglers ranged from 0.08 to 0.83 fish/angler-trip-hour (Table 4). The average CPUE value for Ventura County anglers has held steady at 0.62 since July 1977. However, the catch success rate for Santa Barbara County anglers plummeted from 0.64 to 0.29 fish/angler-trip-hour this quarter, as many anglers searched for salmon, *Oncorhynchus* spp., but the salmon were uncooperative and did not make an appearance. The average CPUE value for Los Angeles County anglers dropped from 0.59 to 0.45 as the take of Pacific mackerel declined. In both Orange and San Diego Counties a small increase in the average CPUE values occurred.

The CPUE for divers ranged from 0.03 to 1.83 organisms/diver-trip-hour (Table 5). Santa Barbara County divers averaged 0.99 organisms/diver-trip-hour, the most successful in the sample area. Los Angeles County divers rated second, with an average CPUE value of 0.80. San Diego, Orange, and Ventura Counties divers averaged 0.59, 0.51, and 0.46 organisms/diver-trip-hour respectively.

Length Frequencies

Due to the small number of game fishes landed, length measurements were correspondingly scarce (Table 6, Figures 1-3). There were, however, sufficient measurements taken of several species for statistical analysis. The percentages of legal size barred sand bass and spotted sand bass,

Paralabrax maculatofasciatus, remained the same as they were during the preceding quarter (October through December). The proportion of legal size kelp bass rose from 73% to 84%, but more than 50% of the California halibut, *Paralichthys californicus*, measured were sub-legal.

ESTIMATES

We estimated 24,000 angler days and 1,000 diver days were spent fishing in southern California marine waters during January through March 1978 (Tables 7 and 8). This represents a decrease of 80% of the angler effort and 85% of the diver effort expended during the summer months.

An estimated 63,000 fishes were landed by anglers. White croaker and Pacific mackerel were the largest single-species components of the catch, with an estimated 8,500 and 5,000 fishes landed respectively. More than 70% of the catch of these two species occurred in Los Angeles and Orange Counties. The major portion of the angler catch was composed of members of the rockfish family: an estimated 27,500 rockfishes were landed, nearly one-half of the catch.

Divers brought in an estimated 3,500 fishes and other organisms. Four species composed more than three-fourths of the catch: an estimated 1,500 rock scallops, 500 California sheephead, 400 California spiny lobsters, and 300 abalones, *Haliotis* spp., were landed.

TABLE 1. List of Species Sampled from Southern California Private Boats; January through March 1978.

Scientific name	Common name	No. sampled
	<u>Fishes</u>	
<i>Alopias vulpinus</i>	thresher shark	4
<i>Amphistichus argenteus</i>	barred surfperch	15
<i>A. koelzi</i>	calico surfperch	1
<i>Anisotremus davidsonii</i>	sargo	8
<i>Anoplopoma fimbria</i>	sablefish	69
<i>Atherinops affinis</i>	topsmelt	6
<i>Atherinopsis californiensis</i>	jacksmelt	36
<i>Atractoscion nobilis</i>	white seabass	7
<i>Balistes polylepis</i>	finescale triggerfish	2
<i>Caulolatilus princeps</i>	ocean whitefish	507
<i>Cephaloscyllium ventriosum</i>	swell shark	1
<i>Cheilotrema saturnum</i>	black croaker	43
<i>Chromis punctipinis</i>	blacksmith	7
<i>Citharichthys sordidus</i>	Pacific sanddab	474
<i>C. stigmaeus</i>	speckled sanddab	17
<i>Damalichthys vacca</i>	pile surfperch	18
<i>Embiotoca jacksoni</i>	black surfperch	534
<i>E. lateralis</i>	striped surfperch	6
<i>Eopsetta jordani</i>	petrale sole	10
<i>Galeorhinus zyopterus</i>	soupin shark	1
<i>Genyonemus lineatus</i>	white croaker	1,926
<i>Girella nigricans</i>	opaleye	356
<i>Halichoeres semicinctus</i>	rock wrasse	17
<i>Heterodontus francisci</i>	horn shark	4
<i>Heterostichus rostratus</i>	giant kelpfish	24
<i>Hippoglossina stomata</i>	bigmouth sole	2
<i>Hydrolagus colliei</i>	ratfish	3
<i>Hyperprosopon argenteum</i>	walleye surfperch	37
<i>H. ellipticum</i>	silver surfperch	9
<i>Hypsopsetta guttulata</i>	diamond turbot	24
<i>Hypsurus caryi</i>	rainbow surfperch	21
<i>Leptocottus armatus</i>	staghorn sculpin	1
<i>Medialuna californiensis</i>	halfmoon	572
<i>Menticirrhus undulatus</i>	California corbina	2
<i>Merluccius productus</i>	Pacific hake	17
<i>Mola mola</i>	common mola	1
<i>Mustelus californicus</i>	gray smoothhound	6
<i>M. henlei</i>	brown smoothhound	6
<i>Myliobatis californica</i>	bat ray	1
<i>Neoclinus blanchardi</i>	sarcastic fringehead	1
<i>Ophiodon elongatus</i>	lingcod	67
<i>Oxyjulis californica</i>	senorita	32
<i>Paralabrax clathratus</i>	kelp bass	656
<i>P. maculatofasciatus</i>	spotted sand bass	142
<i>P. nebulifer</i>	barred sand bass	591
<i>Paralichthys californicus</i>	California halibut	67
<i>Parophrys vetulus</i>	English sole	2

TABLE 1.-cont.

Scientific name	Common name	No. sampled
<i>Phanerodon furcatus</i>	white surfperch	59
<i>Platyrrhinoidis triseriata</i>	thornback	2
<i>Pleuronichthys verticalis</i>	hornyhead turbot	3
<i>Porichthys myriaster</i>	specklefin midshipman	1
<i>Prionace glauca</i>	blue shark	84
<i>Rhacochilus toxotes</i>	rubberlip surfperch	43
<i>Rhinobatos productus</i>	shovelnose guitarfish	10
<i>Roccus saxatilis</i>	striped bass	2
<i>Roncador stearnsii</i>	spotfin croaker	10
<i>Sarda chiliensis</i>	Pacific bonito	384
<i>Scomber japonicus</i>	Pacific mackerel	1,159
<i>Scorpaena guttata</i>	sculpin	224
<i>Scorpaenichthys marmoratus</i>	cabezon	89
<i>Sebastes atrovirens</i>	kelp rockfish	29
<i>S. auriculatus</i>	brown rockfish	173
<i>S. aurora</i>	aurora rockfish	15
<i>S. carnatus</i>	gopher rockfish	111
<i>S. caurinus</i>	copper rockfish	356
<i>S. chlorostictus</i>	greenspotted rockfish	536
<i>S. chrysomelas</i>	black & yellow rockfish	10
<i>S. constellatus</i>	starry rockfish	150
<i>S. dallii</i>	calico rockfish	6
<i>S. diploproa</i>	splitnose rockfish	14
<i>S. elongatus</i>	greenstriped rockfish	255
<i>S. ensifer</i>	swordspine rockfish	7
<i>S. entomelas</i>	widow rockfish	34
<i>S. eos</i>	pink rockfish	17
<i>S. flavidus</i>	yellowtail rockfish	5
<i>S. gilli</i>	bronzespotted rockfish	26
<i>S. goodei</i>	chilipepper	784
<i>S. hopkinsi</i>	squarespot rockfish	52
<i>S. levis</i>	cowcod	33
<i>S. macdonaldi</i>	Mexican rockfish	3
<i>S. melanostomus</i>	blackgill rockfish	1
<i>S. miniatus</i>	vermilion rockfish	484
<i>S. mystinus</i>	blue rockfish	1,112
<i>S. ovalis</i>	speckled rockfish	118
<i>S. paucispinis</i>	bocaccio	775
<i>S. phillipsi</i>	chameleon rockfish	18
<i>S. pinniger</i>	canary rockfish	7
<i>S. rastrelliger</i>	grass rockfish	87
<i>S. rosaceus</i>	rosy rockfish	119
<i>S. rosenblatti</i>	greenblotched rockfish	129
<i>S. rubrivinctus</i>	flag rockfish	135
<i>S. rufus</i>	bank rockfish	49
<i>S. saxicola</i>	stripetail rockfish	3
<i>S. semicinctus</i>	halfbanded rockfish	1
<i>S. serranoides</i>	olive rockfish	474
<i>S. serriceps</i>	reefish	52
<i>S. umbrosus</i>	honeycomb rockfish	46
<i>Sebastolobus altivelis</i>	longspine thornyhead	1

TABLE 1.-cont.

Scientific name	Common name	No. sampled
<i>Semicossyphus pulcher</i>	California sheephead	368
<i>Seriola dorsalis</i>	yellowtail	2
<i>Seriphus politus</i>	queenfish	99
<i>Sphyræna argentea</i>	California barracuda	16
<i>Squalus acanthias</i>	spiny dogfish	79
<i>Squatina californica</i>	angel shark	1
<i>Synodus lucioceps</i>	California lizardfish	47
<i>Trachurus symmetricus</i>	jack mackerel	156
<i>Triakis semifasciata</i>	leopard shark	3
<i>Umbrina roncador</i>	yellowfin croaker	20
<i>Xystreurys liolepis</i>	fantail sole	1
<i>Sebastes</i> spp.	unidentified rockfish fillets	773
	unidentified fish fillets	41

Molluscs and Crustaceans

<i>Acmaea</i> spp.	unidentified limpet	2
<i>Cancer anthonyi</i>	yellow crab	1
<i>C. productus</i>	red crab	1
<i>Cypræa spadicea</i>	chestnut cowry	1
<i>Haliotis assimilis</i>	threaded abalone	2
<i>H. corrugata</i>	pink abalone	6
<i>H. cracherodii</i>	black abalone	1
<i>H. fulgens</i>	green abalone	10
<i>H. rufescens</i>	red abalone	89
<i>H. sorenseni</i>	white abalone	2
<i>Hinnites multirugosus</i>	rock scallop	462
<i>Octopus bimaculatus</i>	twospot octopus	4
<i>Panulirus interruptus</i>	California spiny lobster	122
<i>Brachyura</i>	unclassified spider crab	10

Echinoderms

<i>Pisaster</i> spp.	sea star	2
<i>Strongylocentrotus purpuratus</i>	purple urchin	8

TABLE 2. Most Commonly Landed Species During January Through March 1978.

Scientific name	Common name	No. sampled
<u>Fishes</u>		
<i>Genyonemus lineatus</i>	white croaker	1,926
<i>Scomber japonicus</i>	Pacific mackerel	1,159
<i>Sebastes mystinus</i>	blue rockfish	1,112
<i>S. goodei</i>	chilipepper	784
<i>S. paucispinis</i>	bocaccio	775
<i>Paralabrax clathratus</i>	kelp bass	656
<i>P. nebulifer</i>	barred sand bass	591
<i>Medialuna californiensis</i>	halfmoon	572
<i>Sebastes chlorostictus</i>	greenspotted rockfish	536
<i>Embiotoca jacksoni</i>	black surfperch	534
<i>Caulolatilus princeps</i>	ocean whitefish	507
<i>Sebastes miniatus</i>	vermilion rockfish	484
<i>Citharichthys sordidus</i>	Pacific sanddab	474
<i>Sebastes serranoides</i>	olive rockfish	474
<i>Sarda chiliensis</i>	Pacific bonito	384
<i>Semicossyphus pulcher</i>	California sheephead	368
<i>Girella nigricans</i>	opaleye	356
<i>Sebastes caurinus</i>	copper rockfish	356
<i>S. elongatus</i>	greenstriped rockfish	255
<i>Scorpaena guttata</i>	sculpin	224
<i>Sebastes auriculatus</i>	brown rockfish	173
<i>Trachurus symmetricus</i>	jack mackerel	156
<i>Sebastes constellatus</i>	starry rockfish	150
<i>Paralabrax maculatofasciatus</i>	spotted sand bass	142
<i>Sebastes rubrivinctus</i>	flag rockfish	135
<i>S. rosenblatti</i>	greenblotched rockfish	129
<i>S. rosaceus</i>	rosy rockfish	119
<i>S. ovalis</i>	speckled rockfish	118
<i>S. carnatus</i>	gopher rockfish	111
<i>Seriphus politus</i>	queenfish	99
<i>Scorpaenichthys marmoratus</i>	cabezon	89
<u>Molluscs and Crustaceans</u>		
<i>Hinnites multirugosus</i>	rock scallop.	462
<i>Panulirus interruptus</i>	California spiny lobster	122
<i>Haliotis rufescens</i>	red abalone	89

TABLE 3. Ten Most Commonly Landed Species in Each County; January Through March 1978.

County	Rank	Scientific name	Common name
Santa Barbara	1.	<i>Hinnites multirugosus</i>	rock scallop
	2.	<i>Sebastes mystinus</i>	blue rockfish
	3.	<i>Semicossyphus pulcher</i>	California sheephead
	4.	<i>Paralabrax clathratus</i>	kelp bass
	5.	<i>Sebastes chlorostictus</i>	greenspotted rockfish
	6.	<i>S. caurinus</i>	copper rockfish
	7.	<i>S. paucispinis</i>	bocaccio
	8.	<i>Panulirus interruptus</i>	California spiny lobster
	9.	<i>Sebastes auriculatus</i>	brown rockfish
	10.	<i>Genyonemus lineatus</i>	white croaker
Ventura	1.	<i>Sebastes mystinus</i>	blue rockfish
	2.	<i>S. paucispinis</i>	bocaccio
	3.	<i>S. caurinus</i>	copper rockfish
	4.	<i>Citharichthys sordidus</i>	Pacific sanddab
	5.	<i>Sebastes chlorostictus</i>	greenspotted rockfish
	6.	<i>Paralabrax clathratus</i>	kelp bass
	7.	<i>Sebastes miniatus</i>	vermilion rockfish
	8.	<i>Scomber japonicus</i>	Pacific mackerel
	9.	<i>Caulolatilus princeps</i>	ocean whitefish
	10.	<i>Sebastes goodei</i>	chilipepper
Los Angeles	1.	<i>Genyonemus lineatus</i>	white croaker
	2.	<i>Scomber japonicus</i>	Pacific mackerel
	3.	<i>Embiotoca jacksoni</i>	black surfperch
	4.	<i>Medialuna californiensis</i>	halfmoon
	5.	<i>Sebastes goodei</i>	chilipepper
	6.	<i>Girella nigricans</i>	opaleye
	7.	<i>Sebastes paucispinis</i>	bocaccio
	8.	<i>S. miniatus</i>	vermilion rockfish
	9.	<i>S. mystinus</i>	blue rockfish
	10.	<i>Caulolatilus princeps</i>	ocean whitefish
Orange	1.	<i>Sebastes goodei</i>	chilipepper
	2.	<i>Genyonemus lineatus</i>	white croaker
	3.	<i>Scomber japonicus</i>	Pacific mackerel
	4.	<i>Paralabrax nebulifer</i>	barred sand bass
	5.	<i>Sebastes paucispinis</i>	bocaccio
	6.	<i>S. chlorostictus</i>	greenspotted rockfish
	7.	<i>Embiotoca jacksoni</i>	black surfperch
	8.	<i>Sebastes elongatus</i>	greenstriped rockfish
	9.	<i>Medialuna californiensis</i>	halfmoon
	10.	<i>Sebastes mystinus</i>	blue rockfish
San Diego	1.	<i>Genyonemus lineatus</i>	white croaker
	2.	<i>Scomber japonicus</i>	Pacific mackerel
	3.	<i>Paralabrax nebulifer</i>	barred sand bass
	4.	<i>Sarda chiliensis</i>	Pacific bonito
	5.	<i>Sebastes serranoides</i>	olive rockfish
	6.	<i>Caulolatilus princeps</i>	ocean whitefish
	7.	<i>Paralabrax clathratus</i>	kelp bass
	8.	<i>Sebastes goodei</i>	chilipepper
	9.	<i>Medialuna californiensis</i>	halfmoon
	10.	<i>Semicossyphus pulcher</i>	California sheephead

TABLE 4. Angler Catch Per Unit of Effort*.

Location	County	CPUE
Cabrillo	Los Angeles	0.83
Gaviota	Santa Barbara	0.71
Oxnard	Ventura	0.67
Golden Shore	Los Angeles	0.56
Glorietta Bay	San Diego	0.53
Ventura	Ventura	0.42
Marina del Rey	Los Angeles	0.42
Sunset Aquatic Park	Orange	0.42
Redondo Hoist	Los Angeles	0.38
Dana Basin	San Diego	0.37
Shelter Island	San Diego	0.35
Dana Hoist	Orange	0.34
Marine Stadium	Los Angeles	0.32
National City	San Diego	0.30
Santa Barbara	Santa Barbara	0.29
Paradise Cove	Los Angeles	0.29
Chula Vista	San Diego	0.28
Ski Beach	San Diego	0.25
Dana Launch	Los Angeles	0.22
Oceanside	San Diego	0.22
De Anza	San Diego	0.20
Art's Landing	Orange	0.17
Bayside	Orange	0.16
Redondo Rental	Los Angeles	0.15
Goleta	Santa Barbara	0.08
Newport Dunes	Orange	0.08

* Number of fishes per angler-trip-hour.

TABLE 5. Diver Catch Per Unit of Effort*.

<u>Location</u>	<u>County</u>	<u>CPUE</u>
Marine Stadium	Los Angeles	1.83
Redondo Hoist	Los Angeles	1.44
Dana Launch	Orange	1.30
Santa Barbara	Santa Barbara	1.17
De Anza	San Diego	1.05
Cabrillo	Los Angeles	0.93
Ventura	Ventura	0.84
Bayside	Orange	0.80
Ski Beach	San Diego	0.72
Shelter Island	San Diego	0.56
Oxnard	Ventura	0.39
Paradise Cove	Los Angeles	0.38
Dana Basin	San Diego	0.37
Marina del Rey	Los Angeles	0.14
Gaviota	Santa Barbara	0.07
Newport Dunes	Orange	0.03

* Number of organisms per diver-trip-hour.

TABLE 6. Occurrence of Sub-legal Fishes in Examined Catches.

<u>Scientific name</u>	<u>Common name</u>	<u>No. sampled</u>	<u>% legal</u>
<u>Fishes</u>			
<i>Paralabrax clathratus</i>	kelp bass	522	83.9
<i>P. maculatofasciatus</i>	spotted sand bass	129	72.9
<i>P. nebulifer</i>	barred sand bass	516	91.3
<i>Paralichthys californicus</i>	California halibut	55	47.3
<u>Molluscs</u>			
<i>Haliotis rufescens</i>	red abalone	95	74.7
<i>Parulirus interruptus</i>	California spiny lobster	92	100.0

TABLE 7. Catch and Effort Estimates for Anglers; January through March 1978.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
Angler Parties				
weekend	1,314	5,051	2,323	8,688
weekday	33	113	39	185
total	1,347	5,164	2,362	8,873
Angler Days				
weekend	3,734	13,698	5,979	23,411
weekday	78	244	110	432
total	3,812	13,942	6,089	23,843
Angler-Trip-Hours				
weekend	23,683	87,741	40,986	152,410
weekday	472	1,369	600	2,441
total	24,155	89,110	41,586	154,851
No. Fishes Landed				
weekend	12,955	35,066	13,897	61,858
weekday	226	394	365	985
total	13,181	35,400	14,262	62,843
No. Rockfishes Landed				
weekend	9,776	13,009	4,322	27,107
weekday	147	93	89	329
total	9,923	13,102	4,411	27,436
<i>Anoplopoma fimbria</i> (sablefish)	21	298	16	335
<i>Atractoscion nobilis</i> (white seabass)	4	14	3	21
<i>Caulolatilus princeps</i> (ocean whitefish)	208	1,304	752	2,264
<i>Citharichthys sordidus</i> (Pacific sanddab)	784	788	302	1,874
<i>Embiotoca jacksoni</i> (black surfperch)	97	2,089	131	2,317
<i>Genyonemus lineatus</i> (white croaker)	209	6,480	1,775	8,464

TABLE 7.-cont.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
<i>Girella nigricans</i> (opaleye)	73	1,151	222	1,446
<i>Medialuna californiensis</i> (halfmoon)	34	1,856	419	2,309
<i>Oncorhynchus tshawytscha</i> (king salmon)	0	0	0	0
<i>Ophiodon elongatus</i> (lingcod)	117	28	32	177
<i>Paralabrax clathratus</i> (kelp bass)	671	794	597	2,062
<i>P. maculatofasciatus</i> (spotted sand bass)	4	178	287	469
<i>P. nebulifer</i> (barred sand bass)	10	751	1,286	2,047
<i>Paralichthys californicus</i> (California halibut)	20	216	19	255
<i>Sarda chiliensis</i> (Pacific bonito)	3	590	982	1,575
<i>Scomber japonicus</i> (Pacific mackerel)	337	3,036	1,600	4,973
<i>Scorpaena guttata</i> (sculpin)	42	700	208	950
<i>Sebastes atrovirens</i> (kelp rockfish)	15	11	50	76
<i>S. auriculatus</i> (brown rockfish)	170	497	54	721
<i>S. caurinus</i> (copper rockfish)	926	135	68	1,129
<i>S. chlorostictus</i> (greenspotted rockfish)	787	1,003	236	2,026
<i>S. miniatus</i> (vermilion rockfish)	409	965	390	1,764

TABLE 7.-contd.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
<i>Sebastes mystinus</i> (blue rockfish)	2,668	1,179	265	4,112
<i>S. paucispinis</i> (bocaccio)	1,288	1,575	127	2,990
<i>S. serranoides</i> (olive rockfish)	183	1,106	725	2,014
<i>S. rastrelliger</i> (grass rockfish)	71	230	8	309
<i>Semicossyphus pulcher</i> (California sheephead)	199	99	298	596
<i>Sphyraena argentea</i> (California barracuda)	0	21	30	51
<i>Trachurus symmetricus</i> (jack mackerel)	8	385	188	581

TABLE 8. Catch and Effort Estimates for Divers; January through March 1978.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego Co.	Total
Diving Parties				
weekend	103	161	122	386
weekday	<u>3</u>	<u>2</u>	<u>2</u>	<u>7</u>
total	106	163	124	393
Divers				
weekend	278	395	291	964
weekday	<u>6</u>	<u>4</u>	<u>2</u>	<u>12</u>
total	284	399	293	976
Diver-Trip-Hours				
weekend	1,914	2,073	1,216	5,203
weekday	<u>39</u>	<u>9</u>	<u>2</u>	<u>50</u>
total	1,953	2,082	1,218	5,253
Total Organisms				
weekend	1,401	1,424	648	3,473
weekday	<u>9</u>	<u>2</u>	<u>9</u>	<u>20</u>
total	1,410	1,426	657	3,493
<i>Haliotis corrugata</i> (pink abalone)				
	12	0	3	15
<i>H. cracherodii</i> (black abalone)				
	4	0	0	4
<i>H. fulgens</i> (green abalone)				
	0	33	6	39
<i>H. rufescens</i> (red abalone)				
	54	0	194	248
<i>Hinnites multirugosus</i> (rock scallop)				
	635	770	141	1,546
<i>Panulirus interruptus</i> (California spiny lobster)				
	253	74	20	347
<i>Paralabrax clathratus</i> (kelp bass)				
	33	56	76	165
<i>Semicossyphus pulcher</i> (California sheephead)				
	313	60	145	518

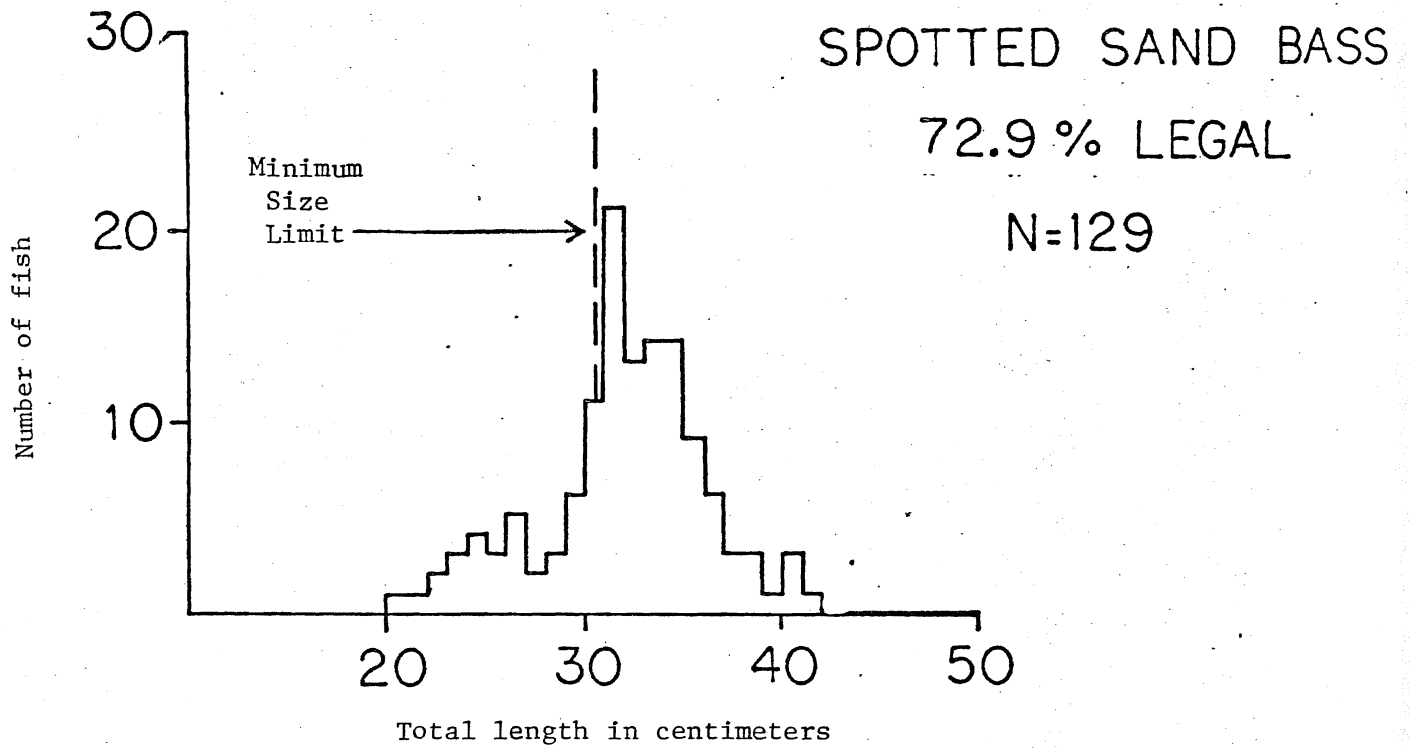
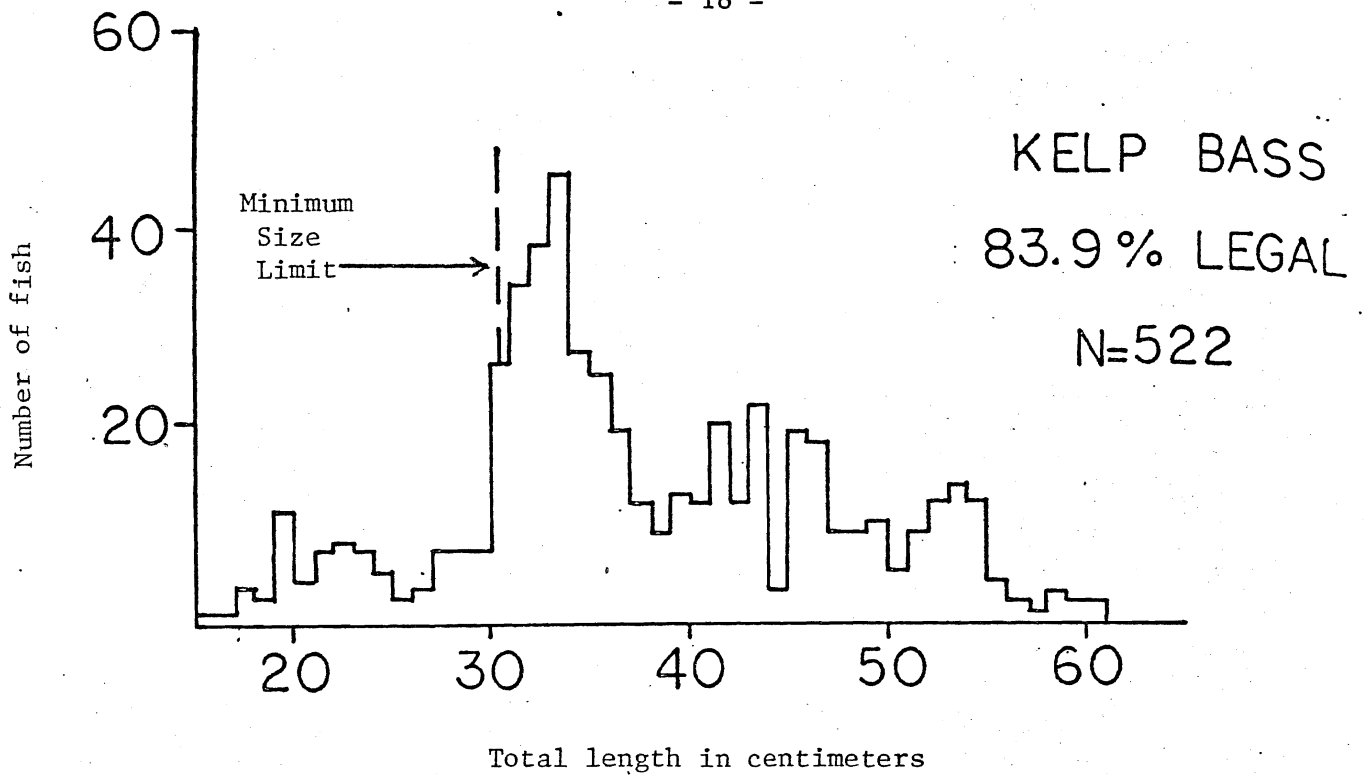


FIGURE 1. Length frequencies of kelp bass and spotted sand bass.

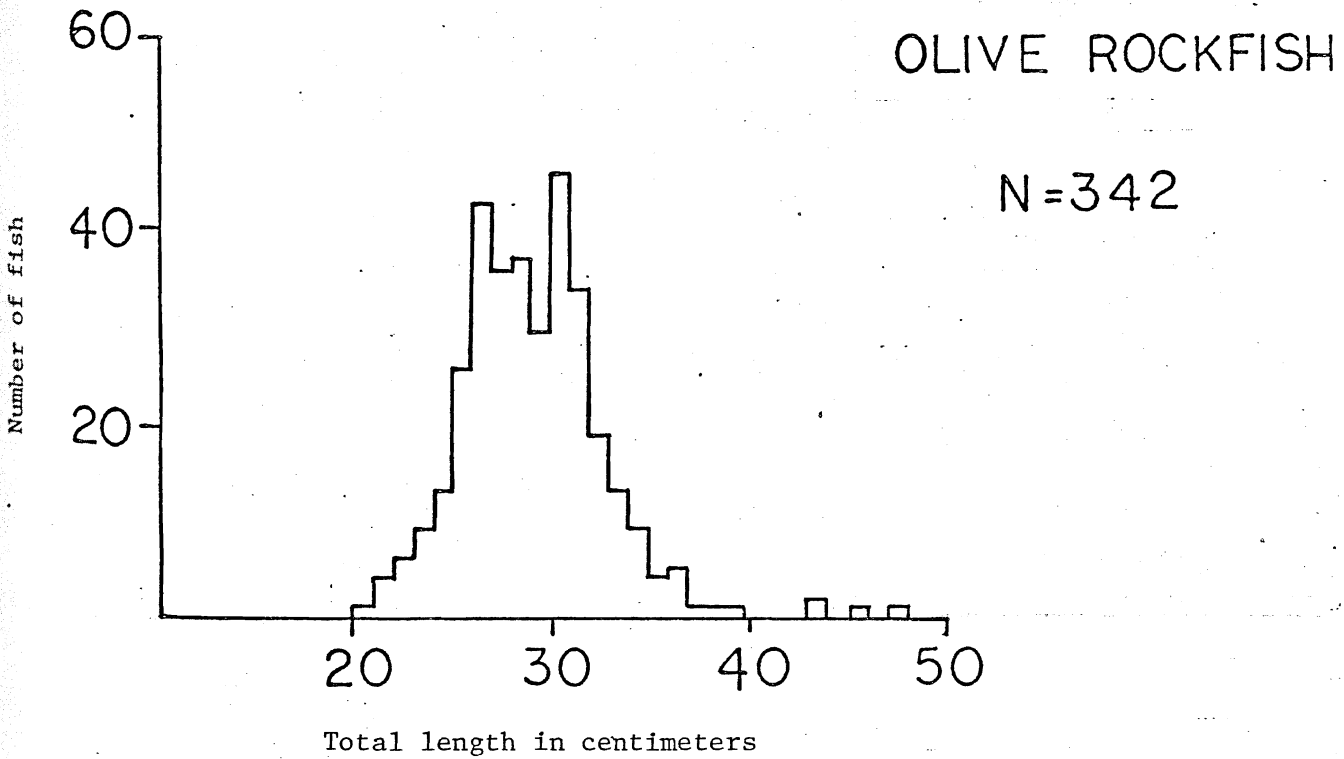
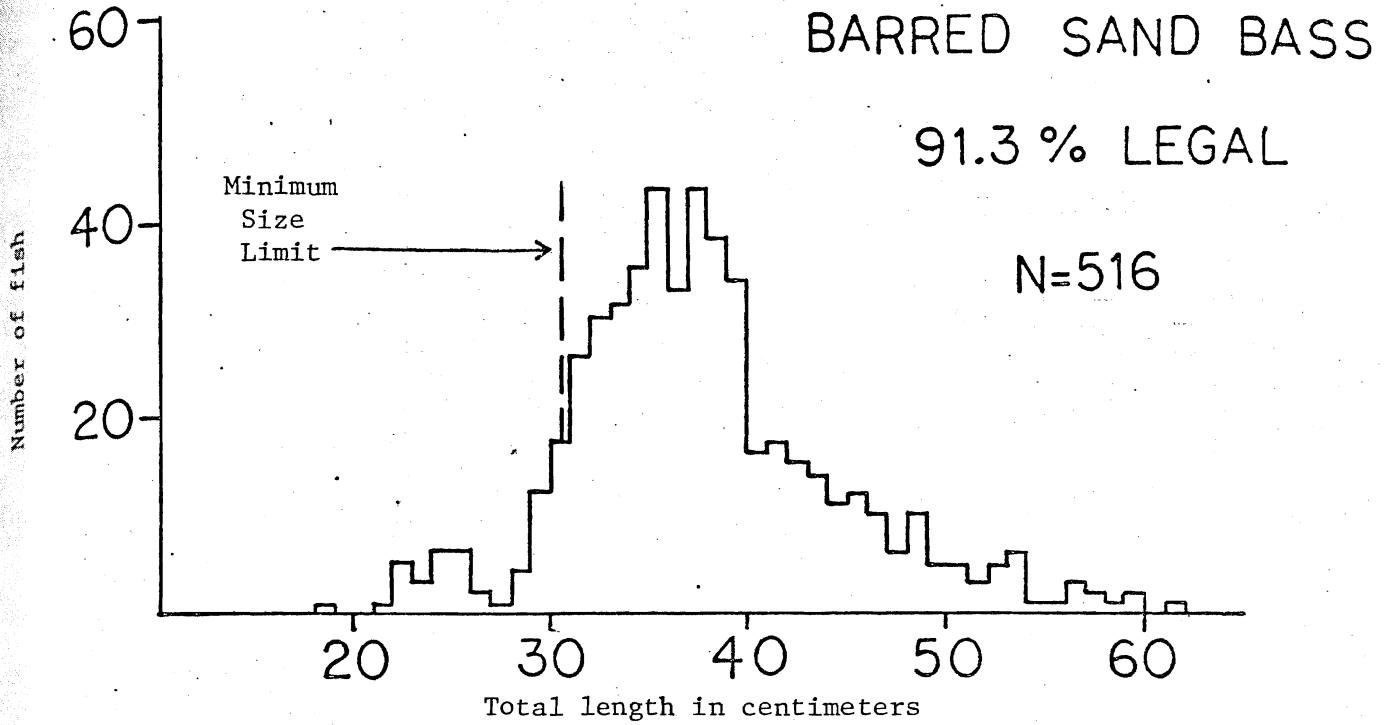


FIGURE 2. Length frequencies of barred sand bass and olive rockfish.

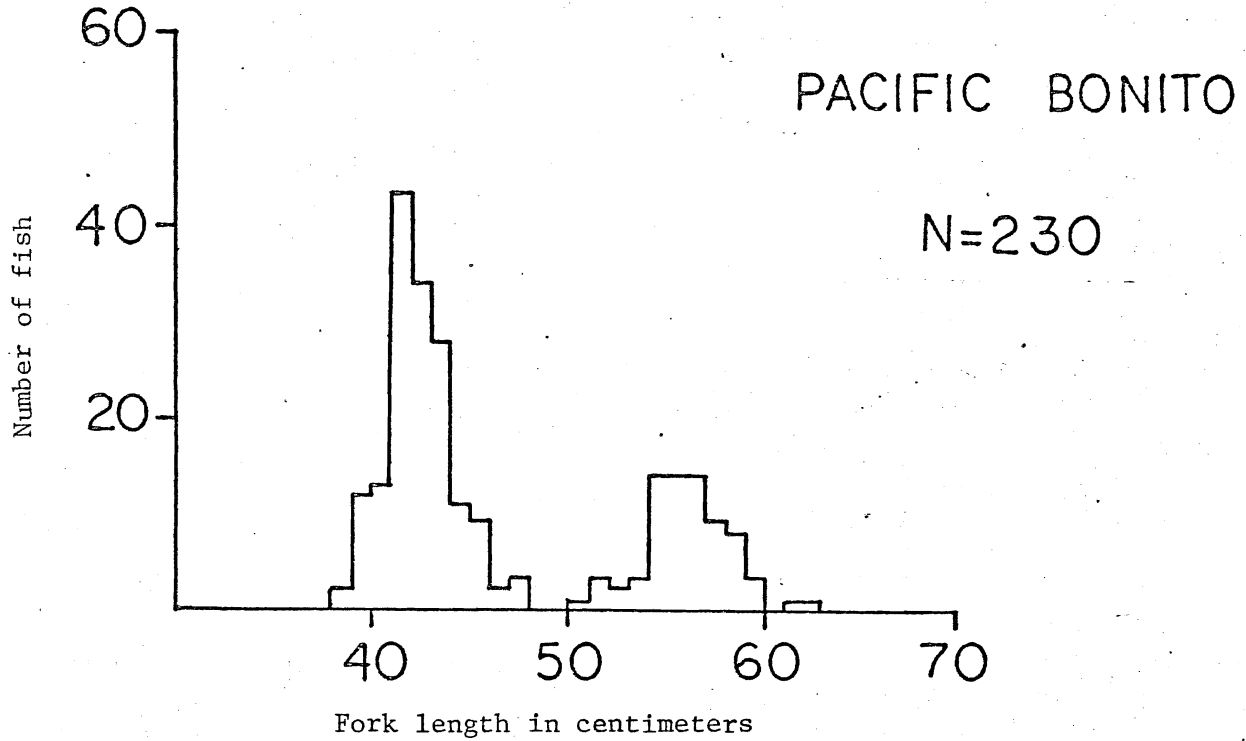
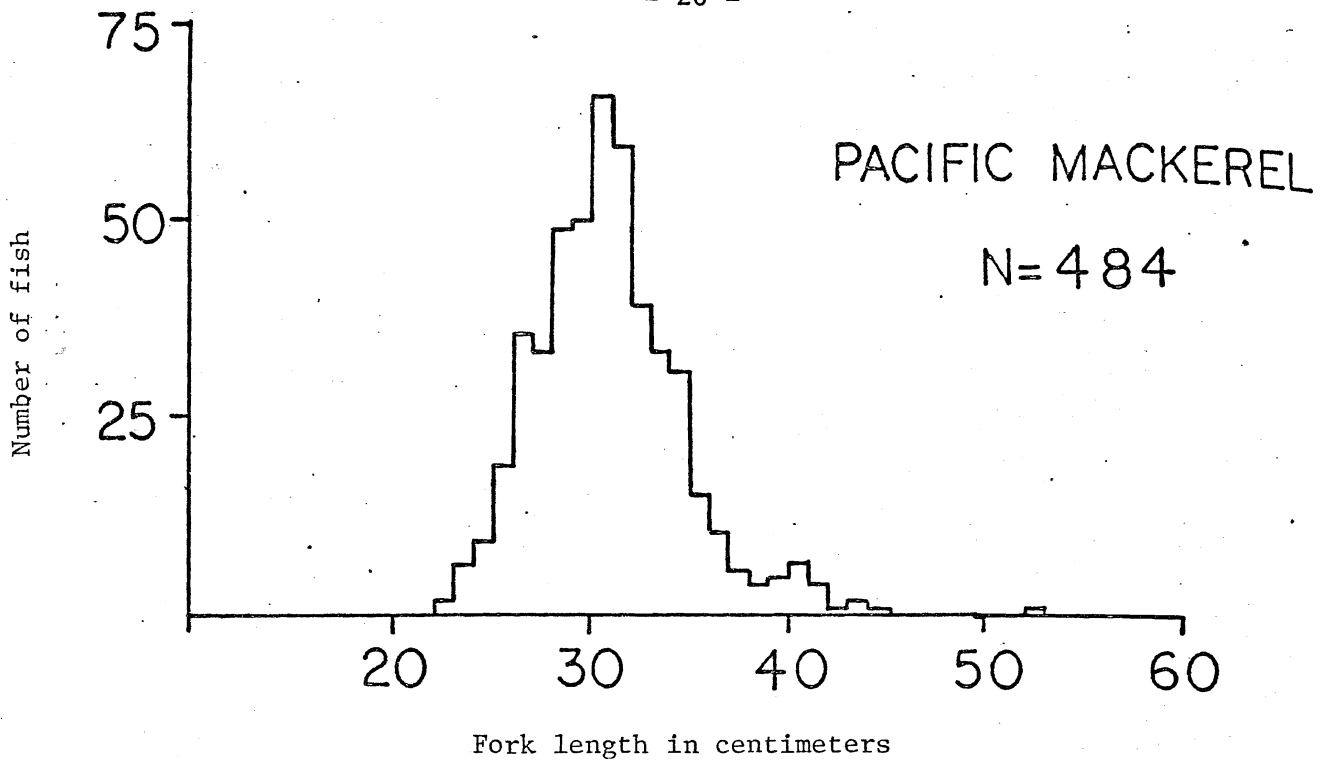


FIGURE 3. Length frequencies of Pacific mackerel and Pacific bonito.