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SOUTHERN CALIFORNIA INDEPENDENT SPORT FISHING SURVEY
QUARTERLY REPORT NO. 10

by

Vickie L. Wine

MARINE RESOURCES
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ABSTRACT

During the October 1 - December 31, 1977 quarter, 28 launch ramps, hoists, and boat rental locations were sampled a total of 294 times. During the sample days 11,942 anglers and 1,025 divers were interviewed. They expended 83,882 effort-hours and landed 36,741 fishes and other organisms of 163 identified species.

The ten most commonly landed species were 1) Pacific mackerel, *Scomber japonicus*, 16%; 2) white croaker, *Genyonemus lineatus*, 16%; 3) olive rockfish, *Sebastes serranoides*, 6%; 4) blue rockfish, *S. mystinus*, 4%; 5) halfmoon, *Medialuna californiensis*, 4%; 6) Pacific bonito, *Sarda chiliensis*, 3%; 7) rock scallop, *Hinnites multirugosus*, 2%; 8) chilipepper, *Sebastes gooderi*, 2%; 9) greenspotted rockfish, *S. chlorostictus*, 2%; and 10) kelp bass, *Paralabrax clathratus*, 2%.

^{1/} Marine Resources Region, Administrative Report No. 78-6
May 1978.

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

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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.

RESULTS AND DISCUSSION

During the October 1 - December 31, 1977 quarter, 28 launch ramps, hoists, and boat rental locations were sampled 294 times. During the sample days 11,942 anglers and 1,025 divers were interviewed. They expended 78,447 angler-trip-hours ^{3/} and 5,435 diver-trip-hours ^{3/}, and landed 36,741 fishes and other organisms of 163 identified species as well as 1,035 unidentified filleted fishes (Table 1).

Effort

Angler effort decreased this quarter to less than one-half of the summertime level. This was due to an abrupt decline soon after Labor Day in the number of vacationing fishermen. Weather conditions remained conducive to fishing until late December when a series of storms brought fishing activity to a standstill.

Diving activity decreased by almost one-half during this time. Effort levels were high in October when the season opened for California spiny lobster, *Panulirus interruptus*, a favorite catch of divers.

Very few anglers ventured out on weekdays during this quarter. The ratio of weekend to weekday anglers changed from 4:1 during the summer quarter to 7:1 during the fall quarter.

Catch

Until this quarter, white croaker had been the most frequently landed species throughout the 2+ years this survey has been conducted. But the entrance of the very strong 1976 year class of Pacific mackerel into the local fishery nudged the white croaker out of its number-one position. The Pacific mackerel catch just barely topped

^{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.

that of the white croaker though; they both constituted 16% of the identified catch. The rockfishes, *Sebastes* spp., which are usually the mainstay of the sportfishery during the winter months, contributed 31% of the total catch. Samplers identified 163 species of fishes, crustaceans, molluscs, coelenterates, and echinoderms, of which 49 species accounted for 95% of the identified catch (Table 2).

The ten most commonly landed species were 1) Pacific mackerel, 16%; 2) white croaker, 16%, 3) olive rockfish, 6%; 4) blue rockfish, 4%; 5) halfmoon, 4%; 6) Pacific bonito, 3%; 7) rock scallop, 2%; 8) chili-pepper, 2%; 9) greenspotted rockfish, 2%; and 10) kelp bass, 2%.

In Santa Barbara County two-thirds of the catch was composed of rockfishes, although Pacific mackerel was the most frequently landed single species (Table 3). Divers brought in very good catches of lobsters, rock scallops, and red abalones, *Haliotis rufescens*.

Rockfishes were also predominant in the Ventura County catch, but white croaker, Pacific mackerel, and Pacific sanddab, *Citharichthys sordidus*, were taken in substantial numbers. Divers concentrated their efforts on lobsters; rock scallops, pink abalones, *Haliotis corrugata*; and California sheephead, *Pimelometopon pulchrum*.

Pacific mackerel and white croaker vied for first place in the Los Angeles County catch; Pacific mackerel narrowly won. The two species accounted for nearly one-half of the county's identified catch. Rockfishes contributed only a small portion of the catch (19%). As is usual for this area in the fall and winter months, halfmoon; black surfperch, *Embiotoca jacksoni*; and queenfish, *Seriphus politus*, were landed frequently.

The Orange County catch was composed mainly of surface fishes. Pacific mackerel and white croaker contributed 23% of the catch, and Pacific sanddabs, Pacific bonito, kelp bass, and barred sand bass, *Paralabrax nebulifer*, were landed frequently. There was not a lot of diving activity in the area, but good catches of rock scallops were landed by the few divers who did venture out.

Olive rockfish was the most commonly landed fish in San Diego County. The rockfish family contributed 37% of the catch, but surface fishes such as white croaker, Pacific mackerel, barred sand bass, Pacific bonito, and ocean whitefish, *Caulolatilus princeps*, composed more than one-fourth of the total catch. Divers landed substantial catches of red abalones, rock scallops, California sheephead, and green abalones, *Haliotis fulgens*.

Catch Per Unit of Effort

The catch per unit of effort (CPUE) for anglers ranged from 0.12 to 0.91 fish/angler-trip-hour (Table 4). The best catch successes in the sampled region were, as usual, in Santa Barbara and Ventura Counties. In these areas the target species are rockfishes, which are readily available to anglers. In Los Angeles County the large catches of Pacific mackerel and white croaker resulted in a higher CPUE value than normal for this time of year. Some Orange County and San Diego County anglers spent much time searching for marlin, *Tetrapturus* spp., which lowered the CPUE values for these areas.

The CPUE values for divers ranged from 0.14 to 1.92 (Table 5). Divers in Los Angeles County fared best, averaging 0.95 organisms/diver-trip-hour. In Santa Barbara, Orange, and Ventura Counties the CPUE values averaged 0.69, 0.68, and 0.66 respectively. San Diego County divers averaged 0.61 organisms/diver-trip-hour.

Length Frequencies

The proportion of legal size fishes sampled during the quarter dropped somewhat compared with the previous quarter's data. Favored game species became less available to anglers at this time of year, and the temptation to retain "short" fishes was great. The percentage of legal kelp bass taken fell from 87 during the summer to 73 during the fall. Although the percentage of legal barred sand bass remained the same, the proportion of legal spotted sand bass, *Paralabrax maculatofasciatus*, dropped 10%. One-half of all California halibut, *Paralichthys californicus*, measured were sub-legal (Table 6). Abalones, *Haliotis* spp., averaged 91% legal, and less than 3% of the lobsters measured were sub-legal.

ESTIMATES

We estimated 41,000 angler days and 3,200 diver days were spent fishing in southern California marine waters during October through December 1977 (Tables 7 and 8). This represents a decrease of about two-thirds of the angler effort and two-fifths of the diver effort expended during the summer quarter. An estimated 115,000 fishes were landed by anglers, and divers brought back 12,000 fishes, abalones, and other organisms.

Two species, the Pacific mackerel and the white croaker, formed the largest component of the catch, with an estimated 20,000 Pacific mackerel and 20,000 white croaker landed. Almost 80% of the catch of these species was landed in Los Angeles and Orange Counties. The rockfish family contributed 39,000 fishes--nearly one-third of the estimated catch. The three bass species, *Paralabrax* spp., accounted for less than 5% of the catch. Divers landed an estimated 1,800 lobsters, 3,500 abalones, and 2,900 rock scallops.

TABLE 1. List of Species Sampled from Southern California Private Boats; October through December 1977.

<u>Fishes</u>		
Scientific name	Common name	No. sampled
<i>Albula vulpes</i>	bonefish	2
<i>Alopias vulpinus</i>	thresher shark	10
<i>Amphistichus argenteus</i>	barred surfperch	27
<i>A. koelzi</i>	calico surfperch	1
<i>Anisotremus davidsonii</i>	sargo	29
<i>Anoplopoma fimbria</i>	sablefish	118
<i>Atherinops affinis</i>	topsmelt	62
<i>Atherinopsis californiensis</i>	jacksmelt	187
<i>Atractoscion nobilis*</i>	white seabass	52
<i>Auxis rochei</i>	bullet mackerel	1
<i>Balistes polylepis</i>	finescale triggerfish	1
<i>Caulolatilus princeps</i>	ocean whitefish	714
<i>Cephaloscyllium ventriosum</i>	swell shark	2
<i>Cheilotrema saturnum</i>	black croaker	38
<i>Chromis punctipinnis</i>	blacksmith	10
<i>Citharichthys sordidus</i>	Pacific sanddab	775
<i>C. stigmaeus</i>	speckled sanddab	10
<i>Cymatogaster aggregata</i>	shiner surfperch	20
<i>Cypselurus californicus</i>	California flying fish	1
<i>Damalichthys vacca</i>	pile surfperch	66
<i>Decapterus hypodus</i>	Mexican scad	2
<i>Embiotoca jacksoni</i>	black surfperch	657
<i>E. lateralis</i>	striped surfperch	6
<i>Eopsetta jordani</i>	petrale sole	14
<i>Euthynnus pelamis</i>	skipjack	96
<i>Genyonemus lineatus</i>	white croaker	5,715
<i>Girella nigricans</i>	opaleye	398
<i>Gymnothorax mordax</i>	California moray	1
<i>Halichoeres semicinctus</i>	rock wrasse	22
<i>Heterodontus francisci</i>	horn shark	2
<i>Heterostichus rostratus</i>	giant kelpfish	116
<i>Hippoglossina stomata</i>	bigmouth sole	6
<i>Hydrolagus colliei</i>	ratfish	2
<i>Hyperprosopon argenteum</i>	walleye surfperch	58
<i>H. ellipticum</i>	silver surfperch	5
<i>Hypsopsetta guttulata</i>	diamond turbot	20
<i>Hypsurus caryi</i>	rainbow surfperch	24
<i>Hypsypops rubicundus</i>	garibaldi	6
<i>Isurus oxyrinchus</i>	bonito shark	19
<i>Lepidopsetta bilineata</i>	rock sole	4
<i>Leptocottus armatus</i>	staghorn sculpin	3
<i>Leuresthes tenuis</i>	California grunion	1
<i>Medialuna californiensis</i>	halfmoon	1,305
<i>Menticirrhus undulatus</i>	California corbina	7
<i>Merluccius productus</i>	Pacific hake	63
<i>Mola mola</i>	common mola	6
<i>Mustelus californicus</i>	gray smoothhound	26
<i>M. henlei</i>	brown smoothhound	15

*formerly *Cynoscion nobilis*

TABLE 1.-cont.

Scientific name	Common name	No. sampled
<i>Myliobatis californica</i>	bat ray	8
<i>Naucrates ductor</i>	pilotfish	1
<i>Ophiodon elongatus</i>	lingcod	87
<i>Oxyjulis californica</i>	senorita	32
<i>Paralabrax clathratus</i>	kelp bass	797
<i>P. maculatofasciatus</i>	spotted sand bass	192
<i>P. nebulifer</i>	barred sand bass	720
<i>Paralichthys californicus</i>	California halibut	350
<i>Parophrys vetulus</i>	English sole	1
<i>Phanerodon furcatus</i>	white surfperch	78
<i>P. atripes</i>	sharpnose surfperch	1
<i>Pimelometopon pulchrum</i>	California sheephead	547
<i>Platyrhinoidis triseriata</i>	thornback	2
<i>Pleuronichthys coenosus</i>	C O turbot	1
<i>P. verticalis</i>	hornyhead turbot	7
<i>Porichthys notatus</i>	plainfin midshipman	1
<i>Prionace glauca</i>	blue shark	149
<i>Remora remora</i>	remora	1
<i>Rhacochilus toxotes</i>	rubberlip surfperch	82
<i>Rhinobatos productus</i>	shovelnose guitarfish	13
<i>Roccus saxatilis</i>	striped bass	3
<i>Roncador stearnsii</i>	spotfin croaker	118
<i>Sarda chiliensis</i>	Pacific bonito	1,071
<i>Scomber japonicus</i>	Pacific mackerel	5,898
<i>Scorpaena guttata</i>	sculpin	398
<i>Scorpaenichthys marmoratus</i>	cabezon	180
<i>Sebastes alutus</i>	Pacific ocean perch	16
<i>S. atrovirens</i>	kelp rockfish	430
<i>S. auriculatus</i>	brown rockfish	434
<i>S. babcocki</i>	redbanded rockfish	2
<i>S. carnatus</i>	gopher rockfish	172
<i>S. caurinus</i>	copper rockfish	602
<i>S. chlorostictus</i>	greenspotted rockfish	846
<i>S. chrysomelas</i>	black & yellow rockfish	48
<i>S. constellatus</i>	starry rockfish	204
<i>S. dalli</i>	calico rockfish	17
<i>S. diploproa</i>	splitnose rockfish	12
<i>S. elongatus</i>	greenstriped rockfish	374
<i>S. ensifer</i>	swordspine rockfish	29
<i>S. entomelas</i>	widow rockfish	11
<i>S. eos</i>	pink rockfish	30
<i>S. flavidus</i>	yellowtail rockfish	13
<i>S. gilli</i>	bronzespotted rockfish	3
<i>S. goodei</i>	chilipepper	896
<i>S. helvomaculatus</i>	rosethorn rockfish	1
<i>S. hopkinsi</i>	squarespot rockfish	17
<i>S. jordani</i>	shortbelly rockfish	1
<i>S. levis</i>	cowcod	31
<i>S. macdonaldi</i>	Mexican rockfish	10
<i>S. melanostomus</i>	blackgill rockfish	20
<i>S. miniatus</i>	vermilion rockfish	620
<i>S. mystinus</i>	blue rockfish	1,455
<i>S. ovalis</i>	speckled rockfish	77
<i>S. paucispinis</i>	bocaccio	738

TABLE 1.-cont.

Scientific name	Common name	No. sampled
<i>S. phillipsi</i>	chameleon rockfish	4
<i>S. pinniger</i>	canary rockfish	39
<i>S. rastrelliger</i>	grass rockfish	453
<i>S. rosaceus</i>	rosy rockfish	200
<i>S. rosenblatti</i>	greenblotched rockfish	409
<i>S. ruberrimus</i>	yelloweye rockfish	. 3
<i>S. rubrivinctus</i>	flag rockfish	153
<i>S. rufus</i>	bank rockfish	28
<i>S. saxicola</i>	stripetail rockfish	5
<i>S. semicinctus</i>	halfbanded rockfish	3
<i>S. serranoides</i>	olive rockfish	2,031
<i>S. serriceps</i>	treefish	100
<i>S. umbrosus</i>	honeycomb rockfish	177
<i>Sebastolobus alascanus</i>	shortspine thornyhead	4
<i>Seriola dorsalis</i>	yellowtail	16
<i>Seriphus politus</i>	queenfish	562
<i>Sphyrna argentea</i>	California barracuda	110
<i>Sphyrna zygaena</i>	smooth hammerhead	4
<i>Squalus acanthias</i>	spiny dogfish	74
<i>Strongylura exilis</i>	California needlefish	8
<i>Synodus lucioceps</i>	California lizardfish	195
<i>Tetrapturus audax</i>	striped marlin	5
<i>Thunnus albacares</i>	yellowfin tuna	30
<i>T. thynnus</i>	bluefin tuna	1
<i>Trachurus symmetricus</i>	jack mackerel	335
<i>Triakis semifasciata</i>	leopard shark	4
<i>Unbrina roncador</i>	yellowfin croaker	100
<i>Urolophus halleri</i>	round stingray	1
<i>Sebastes</i> spp.	unidentified rockfish fillets	870
----	unidentified fish fillets	165

Molluscs and Crustaceans

Scientific name	Common name	No. sampled
<i>Acmaea</i> spp.	unidentified limpet	1
<i>Astraea gibberosa</i>	red top	3
<i>A. undosa</i>	wavy top	11
<i>Cancer anthonyi</i>	yellow crab	11
<i>C. antennarius</i>	rock crab	87
<i>C. productus</i>	red crab	6
<i>Cypraea spadicea</i>	chestnut cowry	25
<i>Hemigrapsus nudus</i>	purple shore crab	1
<i>Haliotis corrugata</i>	pink abalone	239
<i>H. cracherodii</i>	black abalone	25
<i>H. fulgens</i>	green abalone	299
<i>H. rufescens</i>	red abalone	565
<i>H. sorenseni</i>	white abalone	6
<i>Hinnites multirugosus</i>	rock scallop	900
<i>Kelletia kelletii</i>	kellets whelk	8
<i>Loligo opalescens</i>	market squid	2
<i>Megathura crenulata</i>	giant keyhole limpet	6

TABLE 1.-cont.

Scientific name	Common name	No. sampled
<i>Mytilus edulis</i>	bay mussel	100
<i>Octopus bimaculatus</i>	twospot octopus	14
<i>Pachygrapsus crassiceps</i>	striped shore crab	3
<i>Panulirus interruptus</i>	California spiny lobster	633
<i>Protothaca staminea</i>	common littleneck	30
<i>Pugettia gracilis</i>	graceful kelp crab	1
<i>Tegula brunnea</i>	brown turban	2
<i>T. funebris</i>	black turban	1
<i>Tivela stultorum</i>	pismo clam	20
Brachyura	unclassified spider crab	7

Echinoderms and Coelenterates

Scientific name	Common name	No. sampled
<i>Pisaster</i> spp.	sea star	26
<i>Strongylocentrotus franciscanus</i>	red urchin	34
<i>S. purpuratus</i>	purple urchin	23
Anthozoa	sea anemone	20
Holothuroidea	sea cucumber	3
Gorgonacea	sea fan	3

TABLE 2. Most Commonly Landed Species; October Through December 1977.

<u>Fishes</u>		
Scientific name	Common name	No. sampled
<i>Scomber japonicus</i>	Pacific mackerel	5,898
<i>Genyonemus lineatus</i>	white croaker	5,715
<i>Sebastes serranoides</i>	olive rockfish	2,031
<i>Sebastes mystinus</i>	blue rockfish	1,455
<i>Medialuna californiensis</i>	halfmoon	1,305
<i>Sarda chiliensis</i>	Pacific bonito	1,071
<i>Sebastes goodei</i>	chilipepper	896
<i>S. chlorostictus</i>	greenspotted rockfish	846
<i>Paralabrax clathratus</i>	kelp bass	797
<i>Citharichthys sordidus</i>	Pacific sanddab	775
<i>Sebastes paucispinis</i>	bocaccio	738
<i>Paralabrax nebulifer</i>	barred sand bass	720
<i>Caulolatilus princeps</i>	ocean whitefish	714
<i>Embiotoca jacksoni</i>	black surfperch	657
<i>Sebastes miniatus</i>	vermilion rockfish	620
<i>S. caurinus</i>	copper rockfish	602
<i>Seriphus politus</i>	queenfish	562
<i>Pimelometopon pulchrum</i>	California sheephead	547
<i>Sebastes rastrelliger</i>	grass rockfish	453
<i>S. auriculatus</i>	brown rockfish	434
<i>S. atrovirens</i>	kelp rockfish	430
<i>S. rosenblatti</i>	greenblotched rockfish	409
<i>Girella nigricans</i>	opaleye	398
<i>Scorpaena guttata</i>	sculpin	398
<i>Sebastes elongatus</i>	greenstriped rockfish	374
<i>Paralichthys californicus</i>	California halibut	350
<i>Trachurus symmetricus</i>	jack mackerel	335
<i>Sebastes constellatus</i>	starry rockfish	204
<i>S. rosaceus</i>	rosy rockfish	200
<i>Synodus lucioceps</i>	California lizardfish	195
<i>Paralabrax maculatofasciatus</i>	spotted sand bass	192
<i>Atherinopsis californiensis</i>	jacksmelt	187
<i>Scorpaenichthys marmoratus</i>	cabezon	180
<i>Sebastes umbrosus</i>	honeycomb rockfish	177
<i>S. carnatus</i>	gopher rockfish	172
<i>S. rubrivinctus</i>	flag rockfish	153
<i>Prionace glauca</i>	blue shark	149
<i>Anoplopoma fimbria</i>	sablefish	118
<i>Roncador stearnsii</i>	spotfin croaker	118
<i>Heterostichus rostratus</i>	giant kelpfish	116
<i>Sphyræna argentea</i>	California barracuda	110
<i>Umbrina roncadore</i>	yellowfin croaker	100
<i>Sebastes serriiceps</i>	treefish	100

TABLE 2.-cont.

Molluscs and Crustaceans

<u>Scientific name</u>	<u>Common name</u>	<u>No. sampled</u>
<i>Hinnites multirugosus</i>	rock scallop	900
<i>Panulirus interruptus</i>	California spiny lobster	633
<i>Haliotis rufescens</i>	red abalone	565
<i>H. fulgens</i>	green abalone	299
<i>H. corrugata</i>	pink abalone	239
<i>Mytilus edulis</i>	bay mussel	100

TABLE 3. Ten Most Commonly Landed Species in Each County; October through December 1977.

County	Rank	Common name
Santa Barbara	1.	<i>Scomber japonicus</i> Pacific mackerel
	2.	<i>Panulirus interruptus</i> California spiny lobster
	3.	<i>Sebastes serranoides</i> olive rockfish
	4.	<i>Hinnites multirugosus</i> rock scallop
	5.	<i>Sebastes caurinus</i> copper rockfish
	6.	<i>S. chlorostictus</i> greenspotted rockfish
	7.	<i>S. mystinus</i> blue rockfish
	8.	<i>S. rastrelliger</i> grass rockfish
	9.	<i>Haliotis rufescens</i> red abalone
	10.	<i>Paralabrax clathratus</i> kelp bass
Ventura	1.	<i>Genyonemus lineatus</i> white croaker
	2.	<i>Sebastes mystinus</i> blue rockfish
	3.	<i>Scomber japonicus</i> Pacific mackerel
	4.	<i>Sebastes caurinus</i> copper rockfish
	5.	<i>S. paucispinis</i> bocaccio
	6.	<i>Citharichthys sordidus</i> Pacific sanddab
	7.	<i>Sebastes serranoides</i> olive rockfish
	8.	<i>Pimelometopon pulchrum</i> California sheephead
	9.	<i>Sebastes goodei</i> chilipepper
	10.	<i>S. chlorostictus</i> greenspotted rockfish
Los Angeles	1.	<i>Genyonemus lineatus</i> white croaker
	2.	<i>Scomber japonicus</i> Pacific mackerel
	3.	<i>Medialuna californiensis</i> halfmoon
	4.	<i>Sebastes serranoides</i> olive rockfish
	5.	<i>Sarda chiliensis</i> Pacific bonito
	6.	<i>Embiotoca jacksoni</i> black surfperch
	7.	<i>Sebastes mystinus</i> blue rockfish
	8.	<i>Seriphus politus</i> queenfish
	9.	<i>Hinnites multirugosus</i> rock scallop
	10.	<i>Paralabrax clathratus</i> kelp bass
Orange	1.	<i>Scomber japonicus</i> Pacific mackerel
	2.	<i>Genyonemus lineatus</i> white croaker
	3.	<i>Citharichthys sordidus</i> Pacific sanddab
	4.	<i>Sebastes goodei</i> chilipepper
	5.	<i>Hinnites multirugosus</i> rock scallop
	6.	<i>Sarda chiliensis</i> Pacific bonito
	7.	<i>Paralabrax clathratus</i> kelp bass
	8.	<i>Sebastes paucispinis</i> bocaccio
	9.	<i>Paralabrax nebulifer</i> barred sand bass
	10.	<i>Medialuna californiensis</i> halfmoon
San Diego	1.	<i>Sebastes serranoides</i> olive rockfish
	2.	<i>Genyonemus lineatus</i> white croaker
	3.	<i>Scomber japonicus</i> Pacific mackerel
	4.	<i>Haliotis rufescens</i> red abalone
	5.	<i>Sebastes goodei</i> chilipepper
	6.	<i>Paralabrax nebulifer</i> barred sand bass
	7.	<i>Sebastes chlorostictus</i> greenspotted rockfish
	8.	<i>Sarda chiliensis</i> Pacific bonito
	9.	<i>Caulolatilus princeps</i> ocean whitefish
	10.	<i>Sebastes mystinus</i> blue rockfish

TABLE 4. Angler Catch Per Unit of Effort*

Location	County	CPUE
Cabrillo	Los Angeles	0.91
Gaviota	Santa Barbara	0.70
Golden Shore	Los Angeles	0.70
Oxnard	Ventura	0.65
Santa Barbara	Santa Barbara	0.64
Goleta	Santa Barbara	0.63
Ventura	Ventura	0.58
Marine Stadium	Los Angeles	0.55
Marina del Rey	Los Angeles	0.48
Glorietta Bay	San Diego	0.47
Paradise Cove	Los Angeles	0.44
De Anza	San Diego	0.39
Redondo Hoist	Los Angeles	0.37
Ski Beach	San Diego	0.37
Chula Vista	San Diego	0.35
Shelter Island	San Diego	0.31
Sunset Aquatic Park	Orange	0.30
Oceanside	San Diego	0.28
Dana Basin	San Diego	0.28
Redondo Rental	Los Angeles	0.27
Dana Launch	Orange	0.24
Dana Hoist	Orange	0.18
National City	San Diego	0.18
Bayside	Orange	0.15
Newport Dunes	Orange	0.15
Art's Landing	Orange	0.12

* Number of fishes per angler-trip-hour.

TABLE 5. Diver Catch Per Unit of Effort*

Location	County	CPUE
Sunset Aquatic Park	Orange	1.92
Redondo Hoist	Los Angeles	1.89
Cabrillo Beach	Los Angeles	1.06
Marina del Rey	Los Angeles	0.83
Goleta	Santa Barbara	0.81
Oxnard	Ventura	0.75
Gaviota	Santa Barbara	0.73
Dana Basin	San Diego	0.71
Santa Barbara	Santa Barbara	0.66
Shelter Island	San Diego	0.62
Newport Dunes	Orange	0.59
Ski Beach	San Diego	0.59
National City	San Diego	0.58
Paradise Cove	Los Angeles	0.57
Bayside	Orange	0.56
Golden Shore	Los Angeles	0.54
Dana Launch	Orange	0.54
De Anza	San Diego	0.54
Glorietta Bay	San Diego	0.53
Ventura	Ventura	0.39
Oceanside	San Diego	0.19
Marine Stadium	Los Angeles	0.14

* Number of organisms per diver-trip-hour

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

Scientific name	Common name	No. examined	% legal
<u>Fishes</u>			
<i>Atractoscion nobilis</i> *	white seabass	50	6.0*
<i>Paralabrax clathratus</i>	kelp bass	654	72.9
<i>P. maculatofasciatus</i>	spotted sand bass	151	75.5
<i>P. nebulifer</i>	barred sand bass	618	89.0
<i>Paralichthys californicus</i>	California halibut	306	51.0
<i>Sphyraena argentea</i>	California barracuda	94	30.8
<u>Molluscs and Crustaceans</u>			
<i>Cancer antennarius</i>	rock crab	55	100.0
<i>Haliotis corrugata</i>	pink abalone	210	89.1
<i>H. cracherodii</i>	black abalone	19	100.0
<i>H. fulgens</i>	green abalone	268	98.1
<i>H. rufescens</i>	red abalone	562	87.4
<i>Panulirus interruptus</i>	California spiny lobster	539	97.6

* California Sport Fishing Regulations allow one sub-legal sized white seabass to be kept by an angler; therefore these short fish are not illegal, but they are less than minimum size.

TABLE 7. Catch and Effort Estimates for Anglers; October through December 1977.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
Angler Parties				
weekend	1,951	8,485	4,423	14,589
weekday	59	293	251	603
total	2,010	8,778	4,674	15,462
Angler Days				
weekend	5,040	23,036	11,568	39,644
weekday	133	661	544	1,338
total	5,173	23,697	12,112	40,982
Angler Trip Hours				
weekend	30,205	152,298	78,238	260,741
weekday	831	4,225	3,257	8,313
total	31,036	156,523	81,495	269,054
No. Fishes Landed				
weekend	19,119	68,533	23,115	110,767
weekday	631	2,262	1,296	4,189
total	19,750	70,795	24,411	114,956
No. Rockfishes Landed				
weekend	11,993	14,851	10,940	37,784
weekday	365	440	517	1,322
total	12,358	15,291	11,457	39,106
<i>Anoplopoma fimbria</i> (sablefish)	120	233	26	379
<i>Atractoscion nobilis</i> (white seabass)	3	116	97	216
<i>Caulolatilus princeps</i> (ocean whitefish)	301	1,204	946	2,451
<i>Citharichthys sordidus</i> (Pacific sanddab)	694	987	745	2,426
<i>Embiotoca jacksoni</i> (black surfperch)	15	1,871	84	1,970
<i>Genyonemus lineatus</i> (white croaker)	1,831	15,824	2,160	19,815
<i>Girella nigricans</i> (opaleye)	24	988	130	1,142
<i>Medialuna californiensis</i> (halfmoon)	119	4,235	186	4,540
<i>Oncorhynchus tshawytscha</i> (king salmon)	0	0	0	0

TABLE 7.-cont.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
<i>Ophiodon elongatus</i> (lingcod)	94	21	140	255
<i>Paralabrax clathratus</i> (kelp bass)	527	1,328	427	2,282
<i>P. maculatofasciatus</i> (spotted sand bass)	50	257	286	593
<i>P. nebulifer</i> (barred sand bass)	75	1,036	1,357	2,468
<i>Paralichthys californicus</i> (California halibut)	145	748	174	1,067
<i>Pimelometopon pulchrum</i> (California sheephead)	218	306	353	877
<i>Sarda chiliensis</i> (Pacific bonito)	27	2,660	1,088	3,775
<i>Scomber japonicus</i> (Pacific mackerel)	2,472	16,290	1,670	20,432
<i>Scorpaena guttata</i> (sculpin)	43	1,002	333	1,378
<i>Sebastes atrovirens</i> (kelp rockfish)	448	663	168	1,279
<i>S. auriculatus</i> (brown rockfish)	561	730	105	1,396
<i>S. caurinus</i> (copper rockfish)	1,246	222	217	1,685
<i>S. chlorostictus</i> (greenspotted rockfish)	918	686	1,285	2,889
<i>S. miniatus</i> (vermillion rockfish)	670	656	805	2,131
<i>S. mystinus</i> (blue rockfish)	2,148	1,608	776	4,532
<i>S. paucispinis</i> (bocaccio)	791	1,310	274	2,375
<i>S. serranoides</i> (olive rockfish)	1,148	3,345	2,218	6,711
<i>S. rastrelliger</i> (grass rockfish)	781	549	16	1,346
<i>Sphyræna argentea</i> (California barracuda)	32	219	103	354
<i>Trachurus symmetricus</i> (jack mackerel)	5	898	237	1,140

TABLE 8. Catch and Effort Estimates for Divers; October through December 1977.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
Diver Parties				
weekend	338	380	507	1,225
weekday	21	16	29	66
total	359	396	536	1,291
Diver Days				
weekend	886	930	1,259	3,075
weekday	51	40	65	156
total	937	970	1,324	3,231
Diver Trip Hours				
weekend	5,683	4,420	5,808	15,911
weekday	354	152	348	854
total	6,037	4,572	6,156	16,765
No. Organisms Landed				
weekend	3,997	3,846	3,514	11,357
weekday	188	139	302	629
total	4,185	3,985	3,816	11,986
<i>Haliotis corrugata</i> (pink abalone)	357	169	208	734
<i>H. cracherodii</i> (black abalone)	50	17	0	67
<i>H. fulgens</i> (green abalone)	50	296	576	922
<i>H. rufescens</i> (red abalone)	580	7	1,182	1,769
<i>Hinnites multirugosus</i> (rock scallop)	884	1,664	360	2,908
<i>Panulirus interruptus</i> (Calif. spiny lobster)	974	545	250	1,769
<i>Paralabrax clathratus</i> (kelp bass)	45	481	97	623
<i>Pimelometopon pulchrum</i> (California sheephead)	293	264	364	921

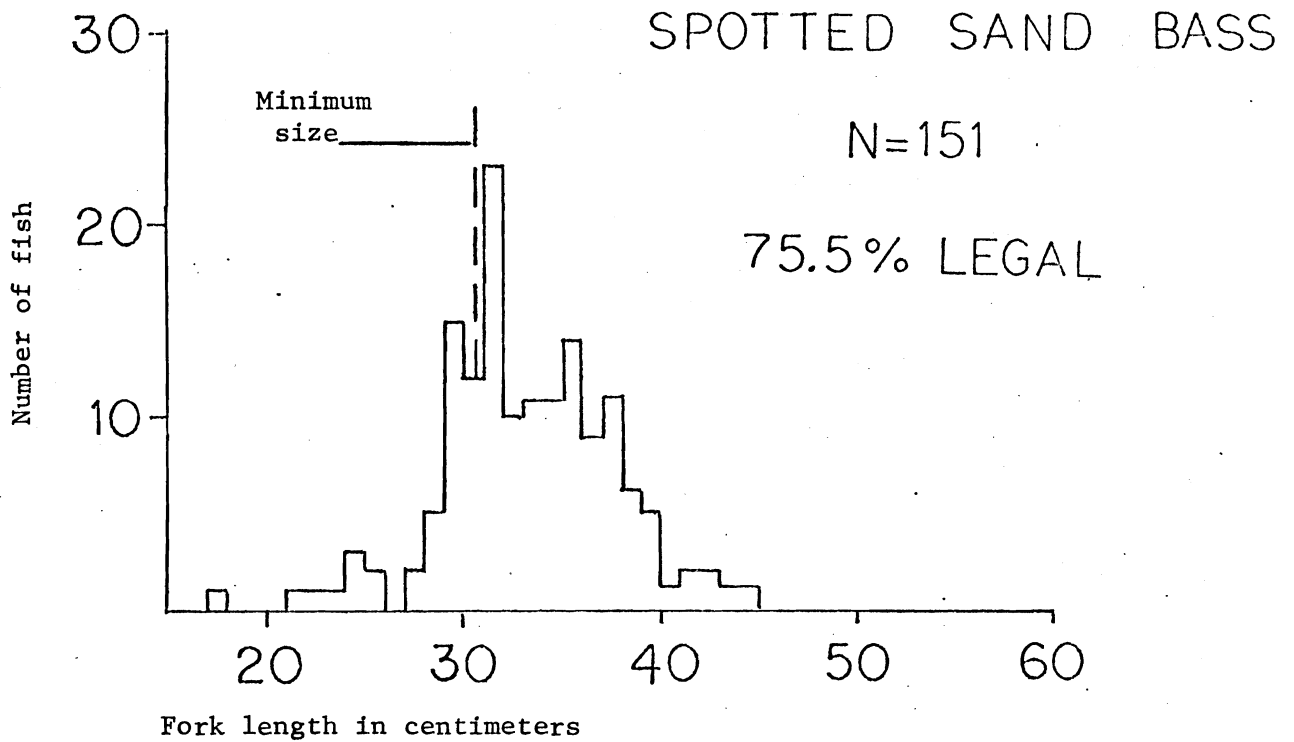
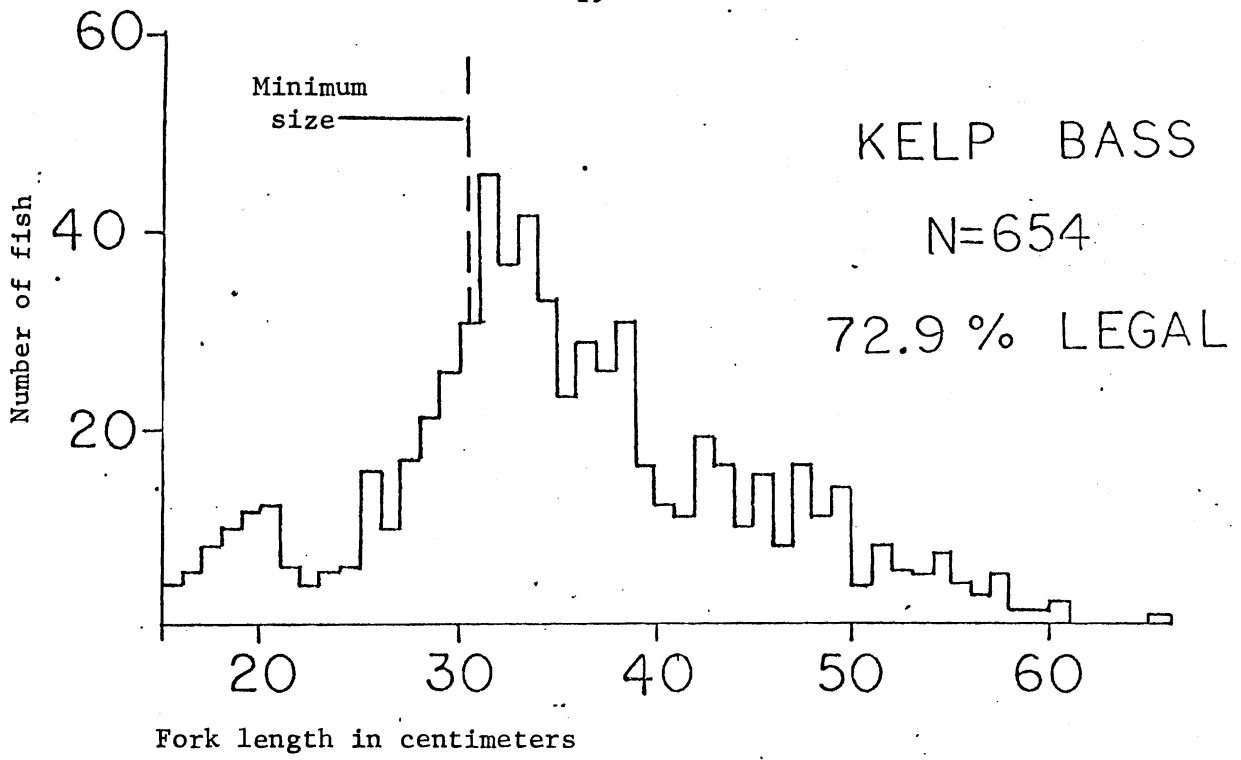


FIGURE 1. Length frequencies of kelp bass and spotted sand bass.

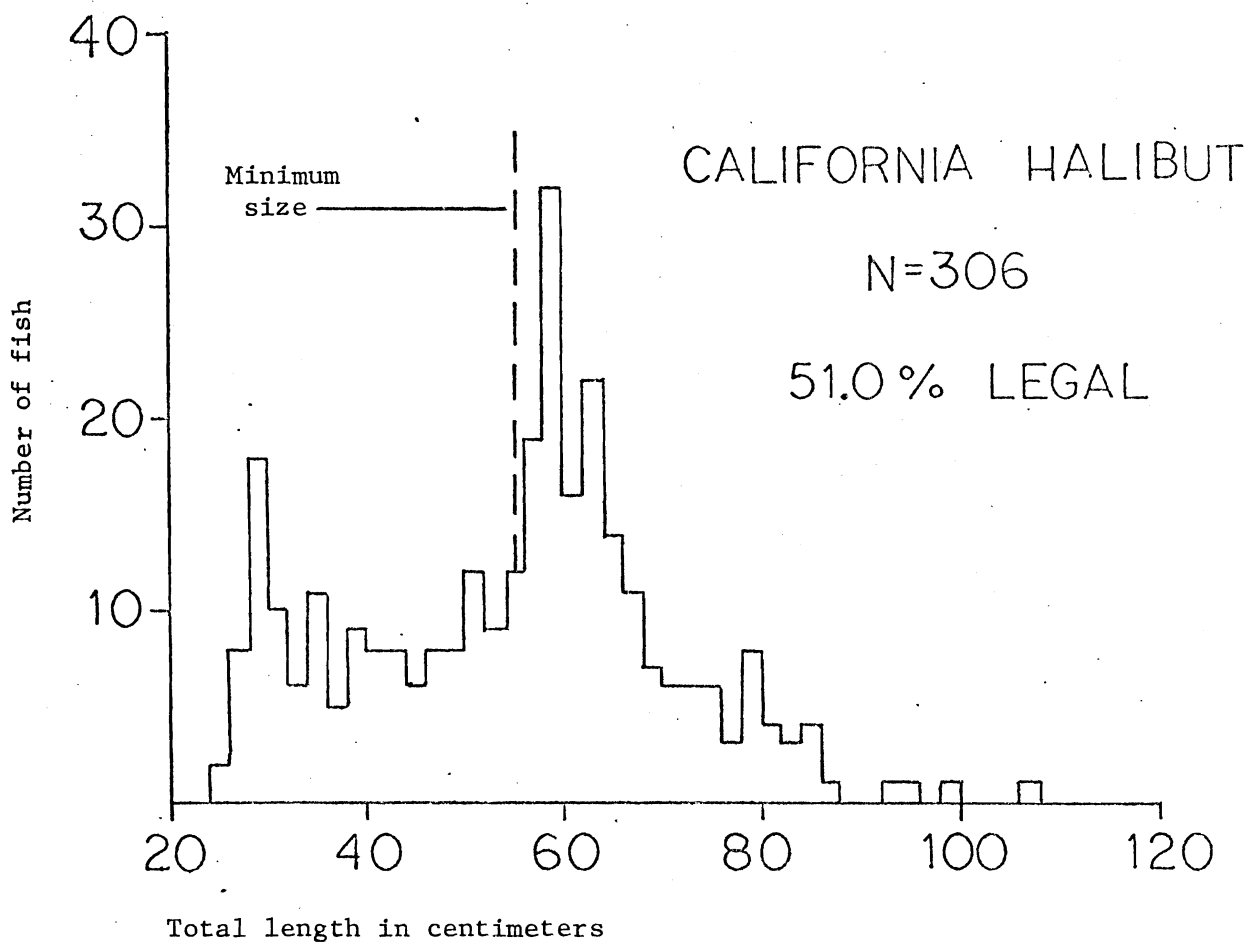
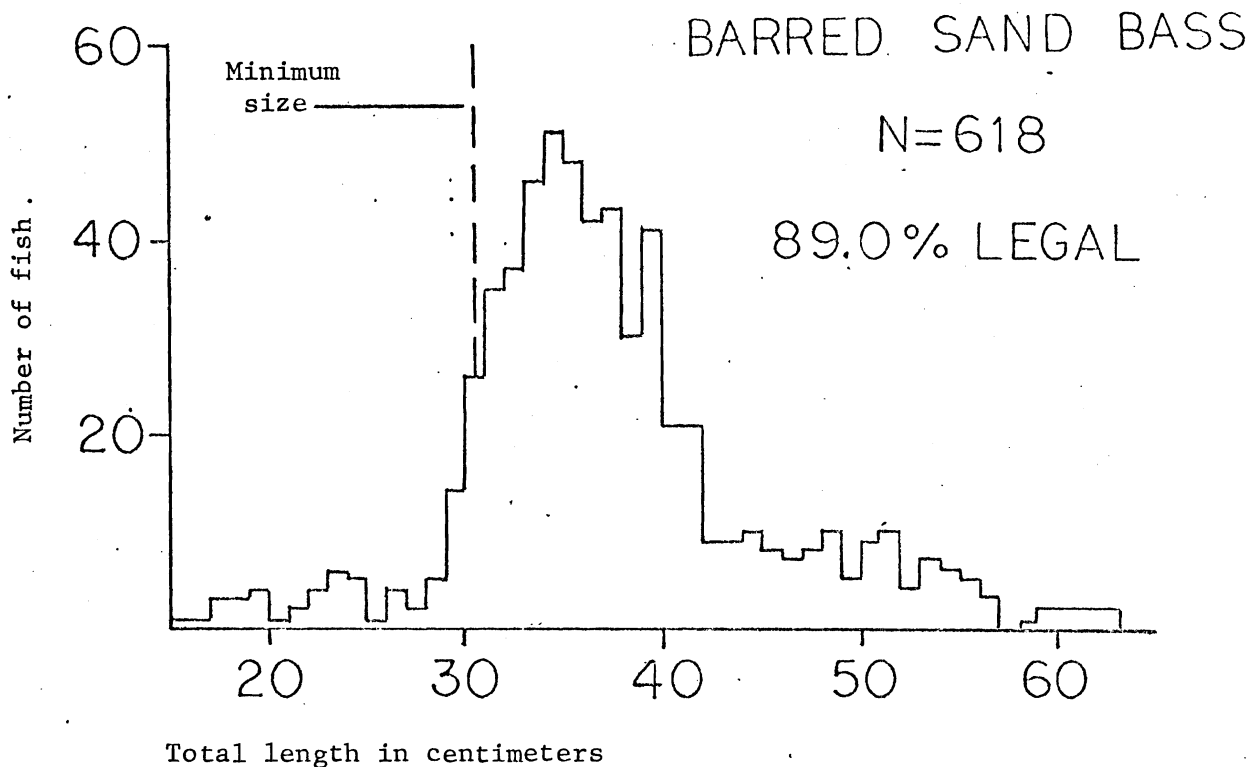


FIGURE 2. Length frequencies of barred sand bass and California halibut.

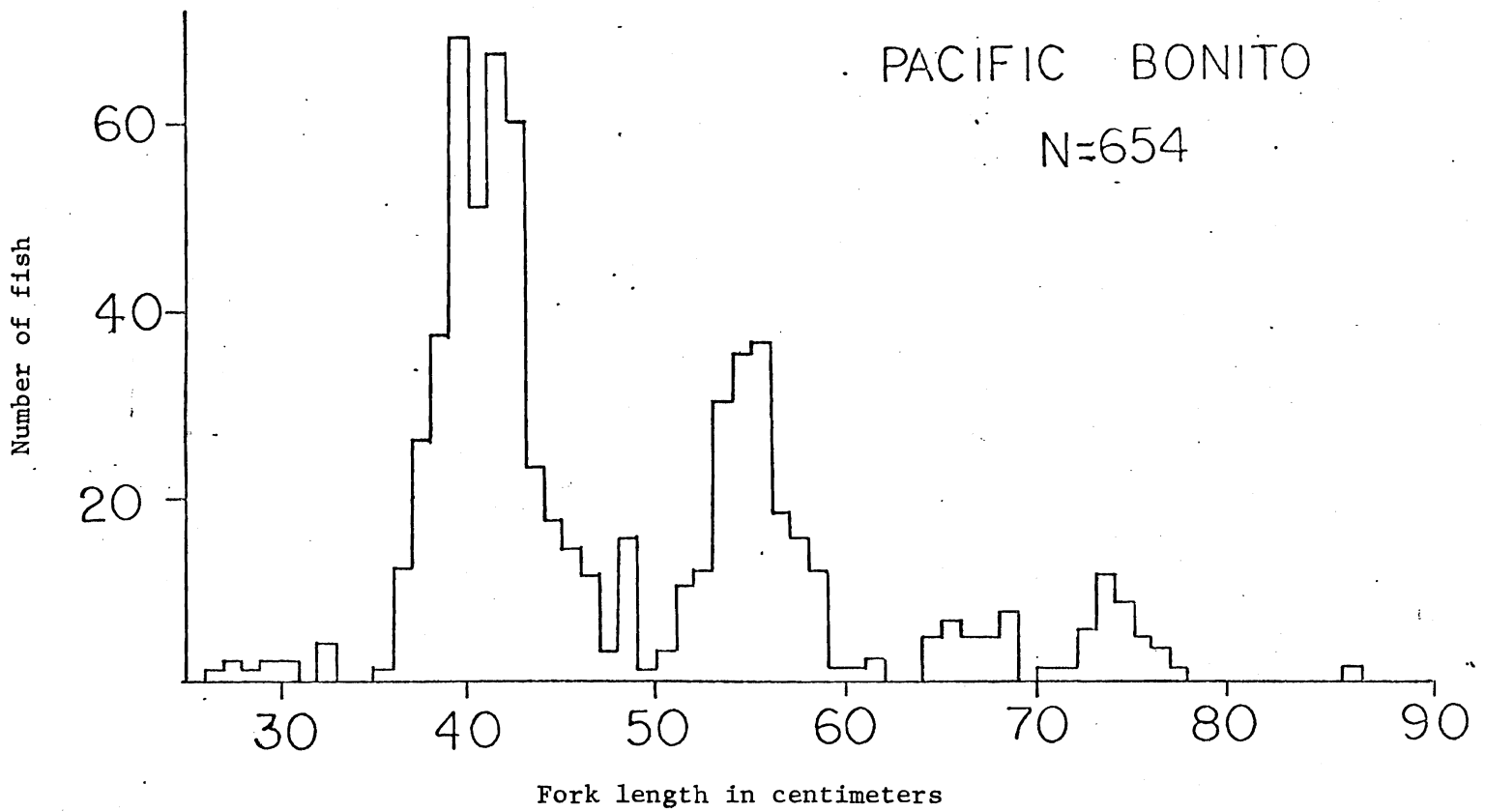
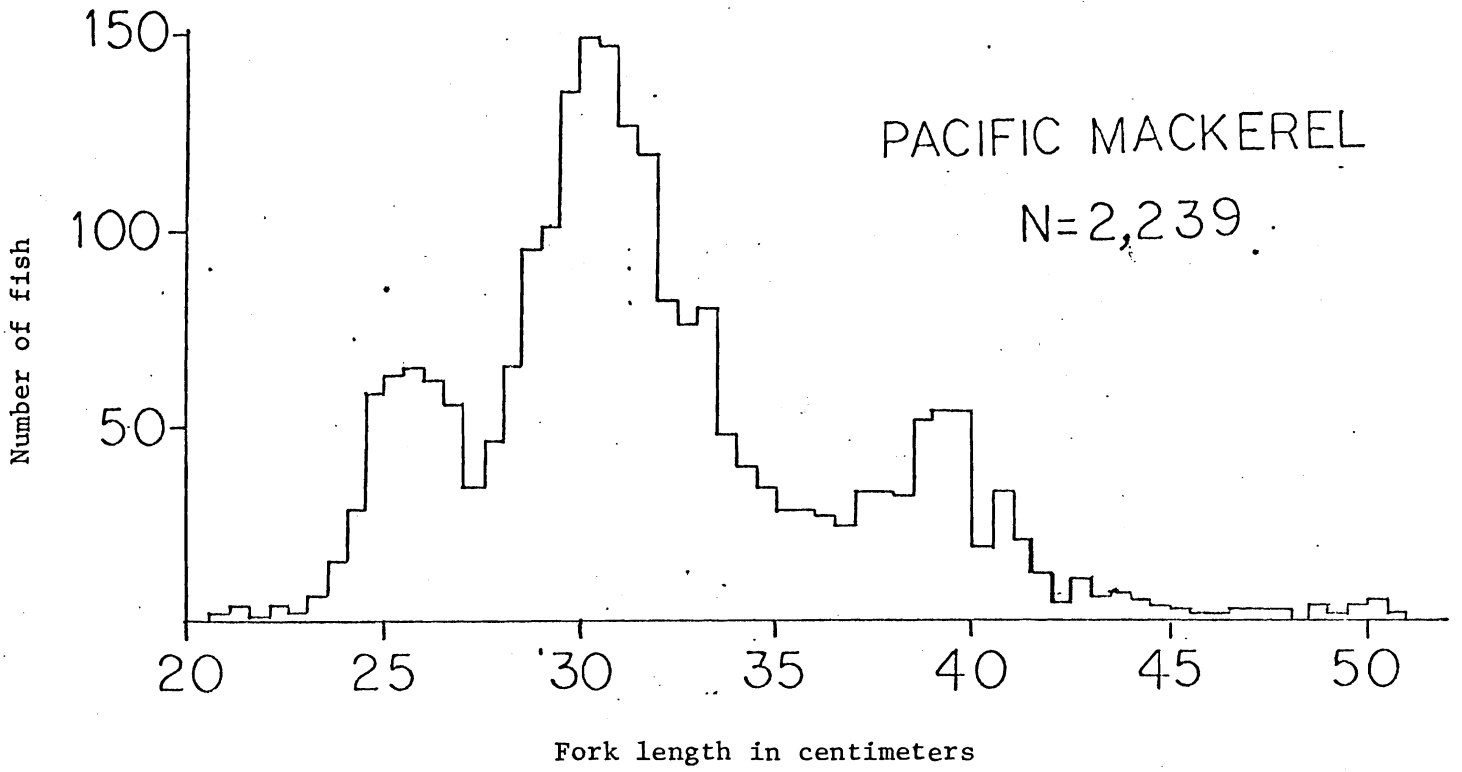


FIGURE 3. Length frequencies of Pacific mackerel and Pacific bonito.

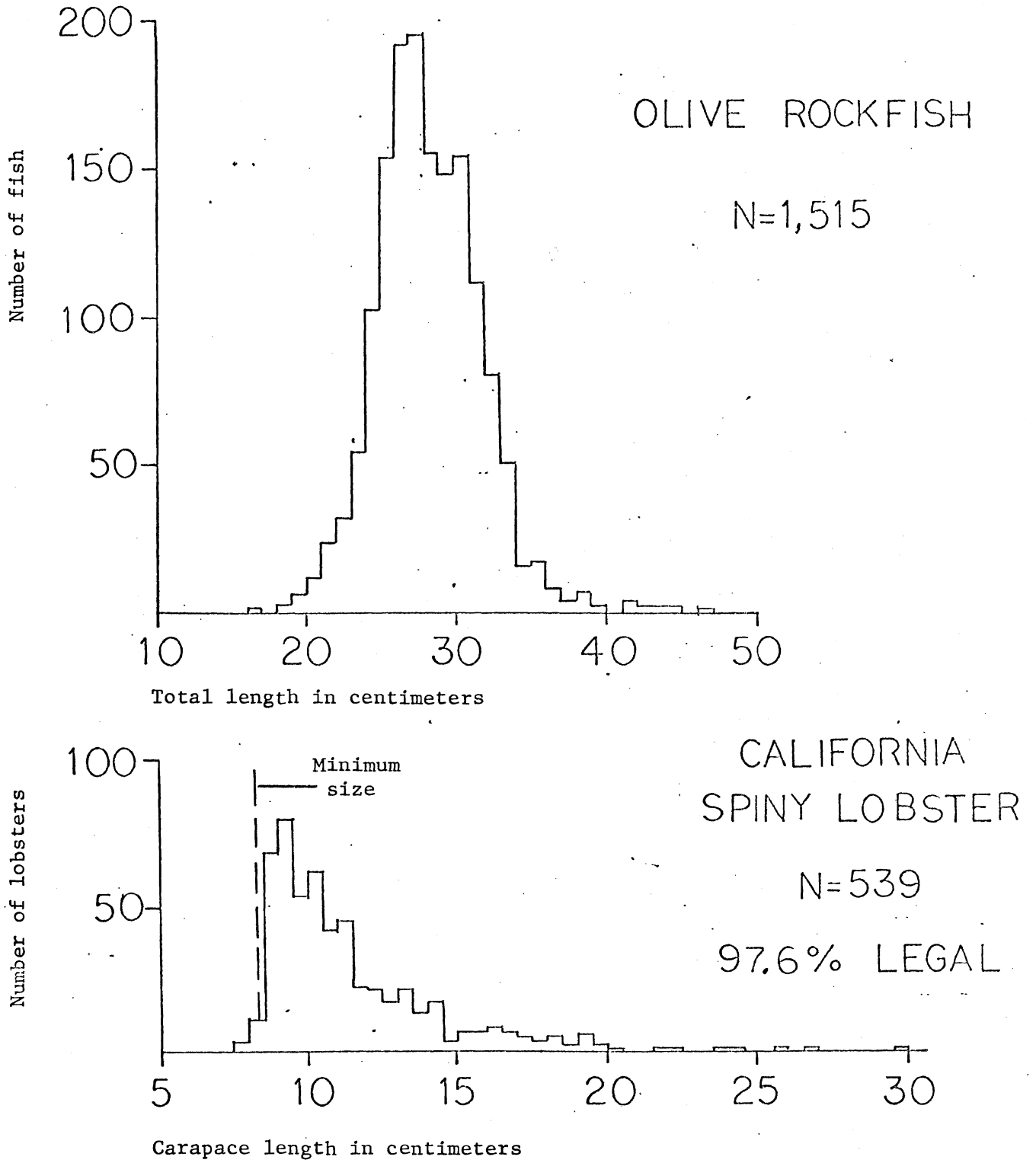
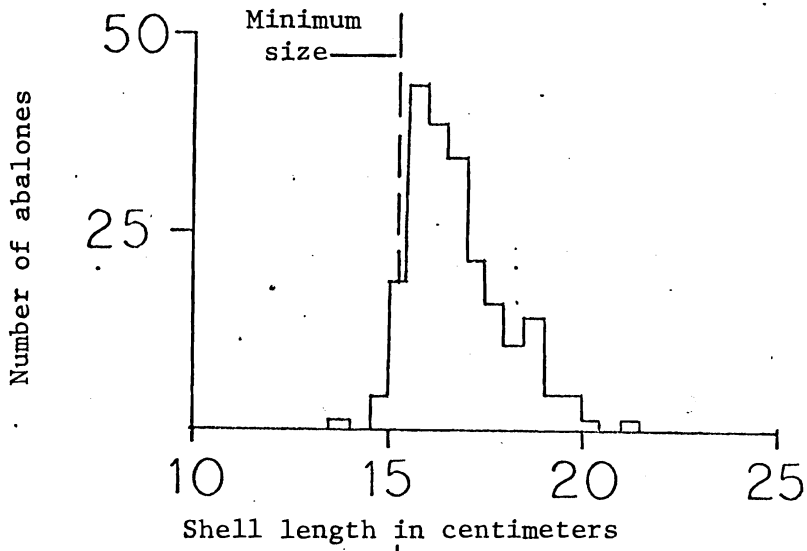


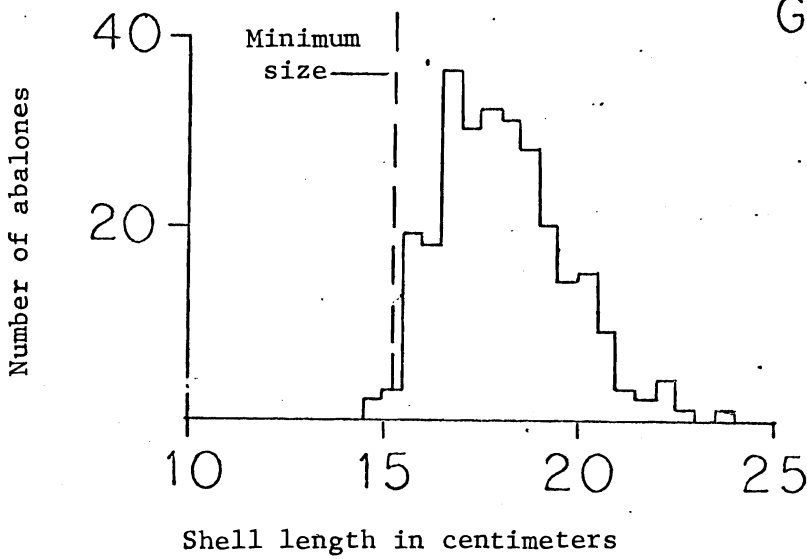
FIGURE 4. Length frequencies of olive rockfish and California spiny lobster.



PINK ABALONE

N=210

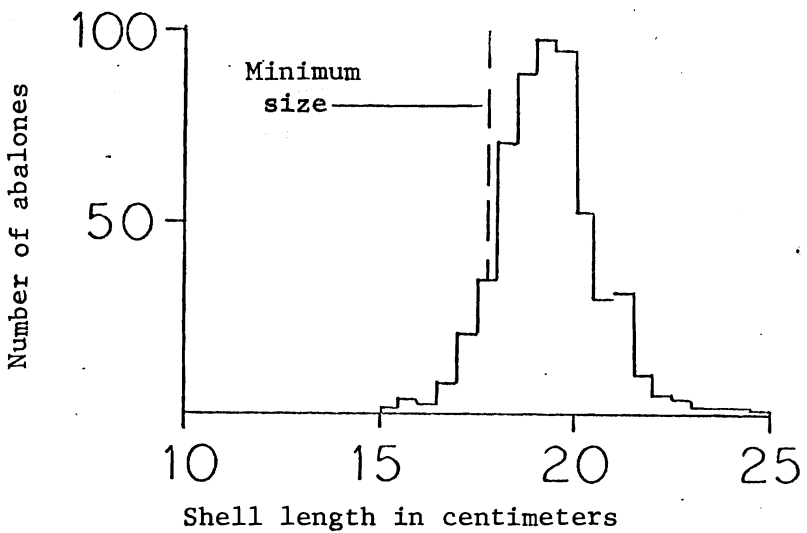
89.1% LEGAL



GREEN ABALONE

N=268

98.1% LEGAL



RED ABALONE

N=562

87.4% LEGAL

FIGURE 5. Length frequencies for pink, green, and red abalones.