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SOUTHERN CALIFORNIA INDEPENDENT SPORT FISHING SURVEY
QUARTERLY REPORT NO. 9

by
Vickie L. Wine

MARINE RESOURCES
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ABSTRACT

During the July 1 - September 30, 1977 quarter, 29 launch ramps, hoists, and boat rental locations were sampled 380 times. During the sample days 25,256 anglers and 1,445 divers were interviewed. They expended 179,564 effort-hours and landed 64,371 fishes, molluscs, crustaceans, echinoderms, and coelenterates of 179 identified species.

The ten most commonly landed species were 1) white croaker, *Genyonemus lineatus*, 25%; 2) Pacific mackerel, *Scomber japonicus*, 8%; 3) olive rockfish, *Sebastes serranoides*, 7%; 4) kelp bass, *Paralabrax clathratus*, 6%; 5) blue rockfish, *Sebastes mystinus*, 3%; 6) barred sand bass, *Paralabrax nebulifer*, 3%; 7) brown rockfish, *Sebastes auriculatus*, 2%; 8) spotted sand bass, *Paralabrax maculatofasciatus*, 2%; 9) grass rockfish, *Sebastes rastrelliger*, 2%; and 10) queenfish, *Seriphus politus*, 2%.

^{1/} Marine Resources Region, Administrative Report No. 78-3
April, 1978.

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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 19 launch

ramps, 5 boat hoists, and 5 boat rental locations. The hoist and launch ramps at Redondo Beach were closed during most of September while new docks were being installed. An additional launch ramp was sampled in San Diego County during July to determine if fishing activity at the location was sufficient to warrant continued sampling. A maximum of three fishing parties used this facility during the sample days. Therefore, further sampling was discontinued.

RESULTS AND DISCUSSION

During the July 1 - September 30, 1977 quarter, 29 launch ramps, hoists, and boat rental locations were sampled 380 times. During the sample days 25,256 anglers and 1,445 divers were interviewed. They expended 172,111 angler-trip-hours ^{3/} and 7,453 diver-trip-hours ^{3/} and landed 64,371 fishes, molluscs, crustaceans, echinoderms, and coelenterates of 179 identified species (Table 1). They also landed 225 unidentified filleted fishes and 1,146 filleted rockfishes whose species could not be determined.

Effort

This report covers the summer fishing season when effort levels are highest due to good weather, availability of preferred game fish species, and an influx of vacationing fishermen. Although fishing activity was heavy throughout the quarter, it did not reach the high effort level expended last summer.

The expected--or rather, hoped for--appearance of big game fishes (albacore, *Thunnus alalunga*; yellowfin tuna, *T. albacares*; bluefin tuna, *T. thynnus*; yellowtail, *Seriola dorsalis*; and barracuda, *Sphyraena argentea*) off the coast did not occur this summer, resulting in a lower

^{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.

level of fishing activity since many anglers do not plan a fishing trip until they hear or read of good catches of these fishes in the local area.

Los Angeles facilities were most heavily used by anglers while divers preferred Ventura and Santa Barbara Counties.

Catch

Of the 179 species identified in sampled catches, 44 accounted for 93% of the identified catch (Table 2), and ten species constituted 61% of the identified catch. These ten species are 1) white croaker, 25%; 2) Pacific mackerel, 8%; 3) olive rockfish, 7%; 4) kelp bass, 6%; 5) blue rockfish, 3%; 6) barred sand bass, 3%; 7) brown rockfish, 2%; 8) spotted sand bass, 2%; 9) grass rockfish, 2%; 10) queenfish, 2%.

About 2% of the total catch was composed of fishes which could not be identified due to the form in which they were landed. 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, *Sebastes* spp., but 225 fishes were landed that were completely unidentifiable.

Although divers landed mostly abalones, *Haliotis* spp., and rock scallops, *Himmites multirugosus*, they also brought in good catches of California sheephead, *Pimelometopon pulchrum*; kelp bass; and California halibut, *Paralichthys californicus*.

The majority of the catch for Santa Barbara County was composed of rockfishes, although some preferred game species did appear in the catch. Kelp bass was the second most commonly landed species; white croaker and halibut were landed frequently, and even a few barracuda were caught.

In Ventura County less than half of the catch was composed of rockfishes, and white croaker was the number one sport-caught fish (Table 3). Anglers also landed kelp bass, Pacific mackerel, sheephead, and Pacific sanddabs, *Citharichthys sordidus*, in good numbers.

Nearly 40% of the total catch for Los Angeles County was composed of white croaker, but much of this catch came from a single sample location. Surface fishes predominated the catch: olive rockfish; Pacific mackerel; kelp bass; queenfish; halfmoon, *Medialuna californiensis*; and ocean whitefish, *Caulolatilus princeps*. Very few big game fish appeared in the catch. Samplers saw only two bluefin tuna, two yellowtail, three albacore, and one marlin, *Tetrapturus audax*, during the entire 3-month sampling period.

Usually Orange County is the best area to fish for barracuda during the summer months, but this year very few barracuda showed up. We estimated that over 7,000 barracuda were landed in the Los Angeles-Orange County area last summer, whereas this year we estimated only 3,200 landed. Even though barracuda were not prevalent in the catch this year, other favorite game species were. Bass, *Paralabrax* spp., made up 20% of the catch, and halibut, sheephead, and white seabass, *Atractoscion nobilis*, were taken frequently.

In San Diego County white croaker was the most frequently landed single species, accounting for 15% of the total catch. Bass species constituted 20% of the catch, and favored game species made up 13% of the catch. The big game species (tunas, for example) showed up more frequently in San Diego County than anywhere else in the sampled area. Substantial numbers of albacore were seen, along with a few skipjack, *Euthynnus pelamis*, and dolphinfish, *Coryphaena hippurus*.

Catch-Per-Unit-of-Effort

The catch per unit of effort (CPUE) for anglers ranged from 0.12 to 0.81 fish/angler-trip-hour (Table 4). Ventura County anglers enjoyed the best catch success in the sampled region, averaging 0.62 fish/angler-trip-hour. CPUE values for Santa Barbara and Los Angeles County anglers averaged 0.49 and 0.42 respectively. Anglers in Orange and San Diego Counties were even less successful; CPUE values averaged 0.18 and 0.27 respectively.

The CPUE for divers ranged from 0.08 to 1.53 organisms/diver-trip-hour (Table 5). Divers in Los Angeles County fared best, averaging 1.14 organisms/diver-trip-hour. Santa Barbara and Orange County divers also enjoyed good catch success, resulting in average CPUE values of 0.77 and 0.66 respectively. In Ventura and San Diego Counties the average CPUE ranged from 0.52 to 0.58 organisms/diver-trip-hour.

Length Frequencies

Summer appears to be the season when infractions of size limit regulations occur most frequently. Our data for the past 2+ years show that for most species with size limits, the highest percentage of "shorts" landed occurs between July and September. There may be several reasons for this, but the most probable cause is the type of angler present at this time. During summer the "occasional angler" makes his appearance. He fishes very rarely, perhaps a half-dozen times each year, and usually goes out only during the warm summer months. He is either ignorant of the size limit regulations (possibly), or he is simply more concerned with keeping whatever he may catch, regardless of size, since he may not have another chance to fish until the following summer (more probably).

The percentage of legal size fishes landed was higher this quarter than last year at this time, but compared to the previous 3-month period the proportion of legal fish dropped somewhat (Figures 1-7). The three bass species averaged 87% legal fish, and 8% of the white seabass measured were longer than the 28-inch minimum size limit. Less than 3/5 of the halibut and 2/3 of the barracuda landed were legal (Table 6).

ESTIMATES

We estimated more than 115,000 angler-days and 5,700 diver-days were spent fishing in southern California marine waters during the July - September 1977 (Table 7 and 8). An estimated total of 290,000 fishes were landed by anglers, and divers brought back 18,500 fishes, molluscs, and other organisms.

Anglers landed an estimated 82,000 white croaker, 64% of which was landed at Los Angeles-Orange Counties sample locations. The rockfish family was the second largest component of the angler catch, with an estimated 73,000 landed. Pacific mackerel accounted for 9% of the catch (an estimated 26,500 landed), and the three bass species contributed 12% of the catch (an estimated 36,000 landed).

The big game fishes were not as prevalent in the offshore areas as had been expected. Fewer than 3,800 barracuda were landed this quarter compared to the 10,000 landed last year during the summer. The California halibut and the bass catches decreased this year also. Approximately 3,600 halibut were landed this summer compared to 4,700 landed last summer, and the bass catch (36,000 fish) was 2,000 fish less than last summer's estimated catch.

TABLE 1. List of Species Sampled from Southern California Private Boats, July through September, 1977.

Scientific name	Fishes	
	Common name	No. sampled
<i>Alopias vulpinus</i>	thresher shark	22
<i>Amphistichus argenteus</i>	barred surfperch	56
<i>A. koelzi</i>	calico surfperch	5
<i>Anisotremus davidsonii</i>	sargo	49
<i>Anoplopoma fimbria</i>	sablefish	282
<i>Atherinops affinis</i>	topsmelt	82
<i>Atherinopsis californiensis</i>	jacksmelt	123
<i>Atractoscion nobilis*</i>	white seabass	280
<i>Balistes polylepis</i>	finescale triggerfish	1
<i>Caulolatilus princeps</i>	ocean whitefish	1,129
<i>Cephaloscyllium ventriosum</i>	swell shark	2
<i>Cheilotrema saturnum</i>	black croaker	180
<i>Chromis punctipinis</i>	blacksmith	11
<i>Citharichthys sordidus</i>	Pacific sanddab	842
<i>C. stigmatæus</i>	speckled sanddab	12
<i>C. xanthostigma</i>	longfin sanddab	1
<i>Clinocottus analis</i>	wolly sculpin	1
<i>Coryphaena hippurus</i>	dolphinfish	69
<i>Cymatogaster aggregata</i>	shiner surfperch	19
<i>Cypselurus californicus</i>	California flying fish	4
<i>Damalichthys vacca</i>	pile surfperch	71
<i>Dasyatis dipterura</i>	diamond stingray	1
<i>Embiotoca jacksoni</i>	black surfperch	769
<i>E. lateralis</i>	striped surfperch	4
<i>Eopsetta jordani</i>	petrale sole	34
<i>Euthynnus pelamis</i>	skipjack	98
<i>Galeorhinus zyopterus</i>	souffin shark	1
<i>Genyonemus lineatus</i>	white croaker	16,206
<i>Girella nigricans</i>	opaleye	261
<i>Gibbonsia metzi</i>	striped kelpfish	1
<i>Gymnothorax mordax</i>	California moray	3
<i>Halichoeres semicinctus</i>	rock wrasse	24
<i>Hermosilla azurea</i>	zebraperch	2
<i>Heterodontus francisci</i>	horn shark	5
<i>Heterostichus rostratus</i>	giant kelpfish	261
<i>Hexagrammos decagrammus</i>	kelp greenling	1
<i>Hippoglossina stomata</i>	bigmouth sole	10
<i>Hippoglossoides elassodon</i>	flathead sole	1
<i>Hydrolagus colliei</i>	ratfish	4
<i>Hyperprosopon argenteum</i>	walleye surfperch	53
<i>H. ellipticum</i>	silver surfperch	5
<i>Hypsopsetta guttulata</i>	diamond turbot	154
<i>Hypsurus caryi</i>	rainbow surfperch	28
<i>Hypsypops rubicundus</i>	garibaldi	1
<i>Isurus oxyrinchus</i>	bonito shark	13
<i>Lepidopsetta bilineata</i>	rock sole	3
<i>Leptocottus armatus</i>	staghorn sculpin	1
<i>Medialuna californiensis</i>	halfmoon	998
<i>Menticirrhus undulatus</i>	California corbina	11
<i>Merluccius productus</i>	Pacific hake	80

* Formerly *Cynoscion nobilis*

TABLE 1-cont.

Scientific name	Common name	No. sampled
<i>Microstomus pacificus</i>	dover sole	1
<i>Mola mola</i>	common mola	2
<i>Mustelus californicus</i>	gray smoothhound	102
<i>M. henlei</i>	brown smoothhound	15
<i>M. lunatus*</i>	sicklefin smoothhound	1
<i>Mycteroperca xenarcha</i>	broomtail grouper	1
<i>Myliobatis californica</i>	bat ray	17
<i>Neoclinus blanchardi</i>	sarcastic fringehead	5
<i>N. uninotatus</i>	onespot fringehead	1
<i>Oncorhynchus kisutch</i>	silver salmon	2
<i>O. tshawytscha</i>	king salmon	1
<i>Ophiodon elongatus</i>	lingcod	152
<i>Oxyjulis californica</i>	senorita	64
<i>Paralabrax clathratus</i>	kelp bass	3,733
<i>P. maculatofasciatus</i>	spotted sand bass	1,404
<i>P. nebulifer</i>	barred sand bass	1,684
<i>Paralichthys californicus</i>	California halibut	900
<i>Parophrys vetulus</i>	English sole	1
<i>Phanerodon furcatus</i>	white surfperch	67
<i>P. atripes</i>	sharpnose surfperch	6
<i>Pimelometopon pulchrum</i>	California sheephead	683
<i>Platichthys stellatus</i>	starry flounder	1
<i>Platyrrhinoidis triseriata</i>	thornback	2
<i>Pleuronichthys coenosus</i>	C O turbot	3
<i>P. ritteri</i>	spotted turbot	1
<i>P. verticalis</i>	hornyhead turbot	3
<i>Porichthys notatus</i>	plainfin midshipman	2
<i>Prionace glauca</i>	blue shark	147
<i>Psettichthys melanostictus</i>	sand sole	1
<i>Rhacochilus toxotes</i>	rubberlip surfperch	118
<i>Rhinobatos productus</i>	shovelnose guitarfish	67
<i>Roccus saxatilis</i>	striped bass	9
<i>Roncador stearnsii</i>	spotfin croaker	18
<i>Sarda chiliensis</i>	Pacific bonito	953
<i>Scomber japonicus</i>	Pacific mackerel	5,403
<i>Scorpaena guttata</i>	sculpin	743
<i>Scorpaenichthys marmoratus</i>	cabezon	299
<i>Sebastes atrovirens</i>	kelp rockfish	701
<i>S. auriculatus</i>	brown rockfish	1,601
<i>S. auroa</i>	aurora rockfish	4
<i>S. carnatus</i>	gopher rockfish	403
<i>S. caurinus</i>	copper rockfish	1,127
<i>S. chlorostictus</i>	greenspotted rockfish	691
<i>S. chrysomelas</i>	black & yellow rockfish	164
<i>S. constellatus</i>	starry rockfish	331
<i>S. dallii</i>	calico rockfish	92
<i>S. diploproa</i>	splitnose rockfish	3
<i>S. elongatus</i>	greenstriped rockfish	233
<i>S. ensifer</i>	swordspine rockfish	21
<i>S. entomelas</i>	widow rockfish	47
<i>S. eos</i>	pink rockfish	14
<i>S. flavidus</i>	yellowtail rockfish	26
<i>S. gilli</i>	bronzespotted rockfish	2

*unverified identification

TABLE 1-cont.

Scientific name	Common name	No. sampled
<i>Sebastes goodei</i>	chilipepper	350
<i>S. helvomaculatus</i>	rosethorn rockfish	2
<i>S. hopkinsi</i>	squarespot rockfish	33
<i>S. juvenile</i>	juvenile rockfish	3
<i>S. lentiginosus</i>	freckled rockfish	2
<i>S. levis</i>	cowcod	83
<i>S. macdonaldi</i>	Mexican rockfish	18
<i>S. maliger</i>	quillback rockfish	3
<i>S. miniatus</i>	vermilion rockfish	1,186
<i>S. mystinus</i>	blue rockfish	2,215
<i>S. ovalis</i>	speckled rockfish	22
<i>S. paucispinis</i>	bocaccio	715
<i>S. pinniger</i>	canary rockfish	72
<i>S. rastrelliger</i>	grass rockfish	1,334
<i>S. rosaceus</i>	rosy rockfish	235
<i>S. rosenblatti</i>	greenblotched rockfish	349
<i>S. ruberrimus</i>	yelloweye rockfish	3
<i>S. rubrivinctus</i>	flag rockfish	106
<i>S. rufus</i>	bank rockfish	2
<i>S. saxicola</i>	stripetail rockfish	3
<i>S. semicinctus</i>	halfbanded rockfish	4
<i>S. simulator</i>	pinkrose rockfish	3
<i>S. serranoides</i>	olive rockfish	4,637
<i>S. serriceps</i>	treefish	174
<i>S. umbrosus</i>	honeycomb rockfish	309
<i>Seriola dorsalis</i>	yellowtail	40
<i>Seriphus politus</i>	queenfish	1,293
<i>Sphyrna argentea</i>	California barracuda	639
<i>Sphyrna zygaena</i>	smooth hammerhead	1
<i>Squalus acanthias</i>	spiny dogfish	107
<i>Squatina californica</i>	angel shark	2
<i>Stereolepis gigas</i>	giant seabass	5
<i>Strongylura exilis</i>	California needlefish	3
<i>Synodus lucioceps</i>	California lizardfish	171
<i>Tetrapturus audax</i>	striped marlin	2
<i>Thunnus alalunga</i>	albacore	896
<i>T. albacares</i>	yellowfin tuna	22
<i>T. thynnus</i>	bluefin tuna	11
<i>Trachurus symmetricus</i>	jack mackerel	217
<i>Triakus semifasciata</i>	leopard shark	13
<i>Umbrina roncador</i>	yellowfin croaker	129
<i>Urolophus halleri</i>	round stingray	1
<i>Xenistius californiensis</i>	salema	20
<i>Xystreurys liolepis</i>	fantail sole	1
<i>Sebastes</i> spp.	unidentified rockfish fillets	1,146
-----	unidentified fish fillets	225

Molluscs and Crustaceans

Scientific name	Common name	No. sampled
<i>Acmaea</i> spp.	unidentified limpet	400
<i>Astraea undosa</i>	wavy top	2

TABLE 1-cont.

Scientific name	Common name	No. sampled
<i>Cancer anthomyi</i>	yellow crab	21
<i>C. antennarius</i>	rock crab	66
<i>C. productus</i>	red crab	12
<i>Clinocardium nuttali</i>	basket cockle	1
<i>Cypraea spadicea</i>	chestnut cowry	26
<i>Haliotis assimilis</i>	threaded abalone	1
<i>H. corrugata</i>	pink abalone	417
<i>H. cracherodii</i>	black abalone	153
<i>H. fulgens</i>	green abalone	501
<i>H. rufescens</i>	red abalone	1,020
<i>H. sorenseni</i>	white abalone	38
<i>Hinnites multirugosus</i>	rock scallop	937
<i>Kelletia kelletii</i>	kellets whelk	45
<i>Loxorhynchus grandis</i>	sheep crab	14
<i>Megathura crenulata</i>	giant keyhole limpet	8
<i>Mytilus californiensis</i>	California seamussel	550
<i>M. edulis</i>	bay mussel	61
<i>Norrisia norrisii</i>	smooth turban snail	9
<i>Octopus bimaculatus</i>	twospot octopus	7
<i>Panulirus interruptus</i>	California spiny lobster	1
<i>Polinices</i> spp.	moon snail	4
<i>Pugettia gracilis</i>	graceful kelp crab	2
<i>Saxidomus nuttali</i>	common Washington clam	13
<i>Tivela stultorum</i>	pismo clam	128
Brachyura	unclassified spider crab	22
----	unidentified mollusc	10

Echinoderms and Coelenterates

Scientific name	Common name	No. sampled
<i>Dendraster excentricus</i>	sand dollar	36
<i>Pisaster</i> spp.	sea star	33
<i>Renilla kollikeri</i>	sea pansy	3
<i>Strongylocentrotus franciscanus</i>	red urchin	54
<i>S. purpuratus</i>	purple urchin	2
Anthozoa	red coral	1

TABLE 2. Most Commonly Landed Species During July through September, 1977.

Fishes		
Scientific name	Common name	No. sampled
<i>Genyonemus lineatus</i>	white croaker	16,206
<i>Scomber japonicus</i>	Pacific mackerel	5,403
<i>Sebastes serranoides</i>	olive rockfish	4,637
<i>Paralabrax clathratus</i>	kelp bass	3,733
<i>Sebastes mystinus</i>	blue rockfish	2,215
<i>Paralabrax nebulifer</i>	barred sand bass	1,684
<i>Sebastes auriculatus</i>	brown rockfish	1,601
<i>Paralabrax maculatofasciatus</i>	spotted sand bass	1,404
<i>Sebastes rastrelliger</i>	grass rockfish	1,334
<i>Seriophilus politus</i>	queenfish	1,293
<i>Sebastes miniatus</i>	vermilion rockfish	1,186
<i>Caulolatilus princeps</i>	ocean whitefish	1,129
<i>Sebastes caurinus</i>	copper rockfish	1,127
<i>Medialuna californiensis</i>	halfmoon	998
<i>Sarda chiliensis</i>	Pacific bonito	953
<i>Paralichthys californiensis</i>	California halibut	900
<i>Thunnus alalunga</i>	albacore	896
<i>Citharichthys sordidus</i>	Pacific sanddab	842
<i>Embiotoca jacksoni</i>	black surfperch	769
<i>Scorpaena guttata</i>	sculpin	743
<i>Sebastes paucispinis</i>	bocaccio	715
<i>S. atrovirens</i>	kelp rockfish	701
<i>Pimelometopon pulchrum</i>	California sheephead	682
<i>Sebastes chlorostictus</i>	greenspotted rockfish	691
<i>Sphyraena argentea</i>	California barracuda	639
<i>Sebastes carnatus</i>	gopher rockfish	403
<i>S. goodei</i>	chilipepper	350
<i>S. rosenblatti</i>	greenblotched rockfish	349
<i>S. constellatus</i>	starry rockfish	331
<i>S. umbrosus</i>	honeycomb rockfish	309
<i>Scorpaenichthys marmoratus</i>	cabezon	299
<i>Anoplopoma fimbria</i>	sablefish	282
<i>Atractoscion nobilis*</i>	white seabass	280
<i>Girella nigricans</i>	opaleye	261
<i>Heterostichus rostratus</i>	giant kelpfish	261
<i>Sebastes rosaceus</i>	rosy rockfish	235
<i>S. elongatus</i>	greenstriped rockfish	233
<i>Trachurus symmetricus</i>	jack mackerel	217
Molluscs		
Scientific name	Common name	No. sampled
<i>Haliotis rufescens</i>	red abalone	1,020
<i>Hinnites multirugosus</i>	rock scallop	937
<i>Mytilus californianus</i>	California seamussel	550
<i>Haliotis fulgens</i>	green abalone	501
<i>H. corrugata</i>	pink abalone	417
<i>Acmaea</i> spp.	limpet	400

* Formerly *Cynoscion nobilis*

TABLE 3. Ten Most Commonly Landed Species in Each County, July through September 1977.

County	Rank	Scientific name	Common name
Santa Barbara	1.	<i>Sebastes serranoides</i>	olive rockfish
	2.	<i>Paralabrax clathratus</i>	kelp bass
	3.	<i>Sebastes mystinus</i>	blue rockfish
	4.	<i>Haliotis rufescens</i>	red abalone
	5.	<i>Genyonemus lineatus</i>	white croaker
	6.	<i>Sebastes caurinus</i>	copper rockfish
	7.	<i>S. auriculatus</i>	brown rockfish
	8.	<i>S. miniatus</i>	vermilion rockfish
	9.	<i>S. rastrelliger</i>	grass rockfish
	10.	<i>S. atrovirens</i>	kelp rockfish
Ventura	1.	<i>Genyonemus lineatus</i>	white croaker
	2.	<i>Sebastes mystinus</i>	blue rockfish
	3.	<i>S. serranoides</i>	olive rockfish
	4.	<i>Scomber japonicus</i>	Pacific mackerel
	5.	<i>Sebastes caurinus</i>	copper rockfish
	6.	<i>Paralabrax clathratus</i>	kelp bass
	7.	<i>Sebastes auriculatus</i>	brown rockfish
	8.	<i>Sebastes paucispinis</i>	bocaccio
	9.	<i>Citharichthys sordidus</i>	Pacific sanddab
	10.	<i>Sebastes miniatus</i>	vermilion rockfish
Los Angeles	1.	<i>Genyonemus lineatus</i>	white croaker
	2.	<i>Sebastes serranoides</i>	olive rockfish
	3.	<i>Scomber japonicus</i>	Pacific mackerel
	4.	<i>Paralabrax clathratus</i>	kelp bass
	5.	<i>Seriphus politus</i>	queenfish
	6.	<i>Medialuna californiensis</i>	halfmoon
	7.	<i>Caulolatilus princeps</i>	ocean whitefish
	8.	<i>Sebastes rastrelliger</i>	grass rockfish
	9.	<i>S. auriculatus</i>	brown rockfish
	10.	<i>Sarda chiliensis</i>	Pacific bonito
Orange	1.	<i>Genyonemus lineatus</i>	white croaker
	2.	<i>Scomber japonicus</i>	Pacific mackerel
	3.	<i>Paralabrax clathratus</i>	kelp bass
	4.	<i>P. nebulifer</i>	barred sand bass
	5.	<i>Sphyraena argentea</i>	California barracuda
	6.	<i>Paralabrax maculatofasciatus</i>	spotted sand bass
	7.	<i>Sebastes serranoides</i>	olive rockfish
	8.	<i>Seriphus politus</i>	queenfish
	9.	<i>Scorpaena guttata</i>	sculpin
	10.	<i>Medialuna californiensis</i>	halfmoon
San Diego	1.	<i>Genyonemus lineatus</i>	white croaker
	2.	<i>Scomber japonicus</i>	Pacific mackerel
	3.	<i>Paralabrax maculatofasciatus</i>	spotted sand bass
	4.	<i>Thunnus alalunga</i>	albacore
	5.	<i>Sebastes serranoides</i>	olive rockfish
	6.	<i>Paralabrax clathratus</i>	kelp bass
	7.	<i>P. nebulifer</i>	barred sand bass
	8.	<i>Haliotis rufescens</i>	red abalone
	9.	<i>Mytilus californianus</i>	Calif. seamussel
	10.	<i>Haliotis fulgens</i>	green abalone

TABLE 4. Angler Catch-Per-Unit-of-Effort *

Location	County	CPUE
Ventura	Ventura	0.81
Cabrillo Beach	Los Angeles	.75
Gaviota	Santa Barbara	.54
Golden Shore	Los Angeles	.54
Santa Barbara	Santa Barbara	.53
Oxnard	Ventura	.51
Paradise Cove	Los Angeles	.47
Marine Stadium	Los Angeles	.36
National City	San Diego	.36
Ski Beach	San Diego	.33
Gaviota	Santa Barbara	.29
Marina del Rey	Los Angeles	.29
Shelter Island	San Diego	.27
Dana Basin	San Diego	.27
Sunset Aquatic Park	Orange	.25
Glorietta Bay	San Diego	.25
Dana Hoist	Orange	.22
Chula Vista	San Diego	.22
De Anza	San Diego	.21
Oceanside	San Diego	.20
Redondo Hoist	Los Angeles	.20
Dana Launch	Orange	.20
Bayside	Orange	.17
Art's Landing	Orange	.14
Redondo Rental	Los Angeles	.14
Newport Dunes	Orange	.12

* Number of fishes per angler-trip-hour

TABLE 5. Diver Catch-Per-Unit-of-Effort*

Location	County	CPUE
Redondo Hoist	Los Angeles	1.53
Paradise Cove	Los Angeles	1.38
Cabrillo Beach	Los Angeles	1.24
Goleta	Santa Barbara	1.04
Marina del Rey	Los Angeles	0.94
Golden Shore	Los Angeles	.94
Gaviota	Santa Barbara	.85
Glorietta	San Diego	.78
Newport Dunes	Orange	.75
Sunset Aquatic Park	Orange	.72
Bayside	Orange	.68
Marine Stadium	Los Angeles	.66
Santa Barbara	Santa Barbara	.65
Shelter Island	San Diego	.63
Ski Beach	San Diego	.62
Dana Launch	Orange	.58
Dana Basin	Orange	.58
Oxnard	Ventura	.57
Ventura	Ventura	.42
National City	San Diego	.18
Oceanside	San Diego	.10
De Anza	San Diego	.08

* Number of organisms per diver-trip-hour

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

Fishes			
Scientific name	Common name	No. examined	% legal
<i>Atractoscion nobilis</i> *	white seabass	229	8.3**
<i>Paralabrax clathratus</i>	kelp bass	2,967	86.8
<i>P. maculatofasciatus</i>	spotted sand bass	1,133	85.4
<i>P. nebulifer</i>	barred sand bass	1,319	88.8
<i>Paralichthys californicus</i>	California halibut	840	57.5
<i>Sphyraena argentea</i>	California barracuda	476	64.5

Molluscs			
Scientific name	Common name	No. examined	% legal
<i>Haliotis corrugata</i>	pink abalone	398	92.5
<i>H. cracherodii</i>	black abalone	141	95.0
<i>H. fulgens</i>	green abalone	473	99.4
<i>H. rufescens</i>	red abalone	935	91.0
<i>H. sorenseni</i>	white abalone	39	94.9

* Formerly *Cynoscion nobilis*

** Current 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; July through September, 1977.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
Angling Parties				
weekend	4,021	17,442	7,263	28,726
weekday	1,804	8,482	4,824	15,110
total	<u>5,825</u>	<u>25,924</u>	<u>12,087</u>	<u>43,836</u>
Anglers				
weekend	10,875	48,022	19,578	78,475
weekday	3,871	21,337	11,895	37,103
total	<u>14,746</u>	<u>69,359</u>	<u>31,473</u>	<u>115,578</u>
Angler Hours				
weekend	70,577	326,580	152,137	549,294
weekday	23,915	136,894	80,237	241,046
total	<u>94,492</u>	<u>463,474</u>	<u>232,374</u>	<u>790,340</u>
Total Fishes				
weekend	36,655	101,096	41,371	179,122
weekday	24,304	59,627	27,208	111,139
total	<u>60,959</u>	<u>160,723</u>	<u>68,579</u>	<u>290,261</u>
Rockfishes				
weekend	22,193	21,262	7,763	51,218
weekday	6,948	11,344	3,751	22,043
total	<u>29,141</u>	<u>32,606</u>	<u>11,514</u>	<u>73,261</u>
<i>Anoplopoma fimbria</i> (sablefish)	399	446	286	1,131
<i>Atractoscion nobilis</i> * (white seabass)	60	946	367	1,373
<i>Caulolatilus princeps</i> (ocean whitefish)	510	2,629	1,129	4,268
<i>Citharichthys sordidus</i> (Pacific sanddab)	1,493	1,211	331	3,035
<i>Embiotoca jacksoni</i> (black surfperch)	117	3,457	53	3,627
<i>Genyonemus lineatus</i> (white croaker)	19,598	52,562	9,843	82,003
<i>Girella nigricans</i> (opaleye)	12	765	109	886

* Formerly *Cynoscion nobilis*

TABLE 7-cont.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
<i>Medialuna californiensis</i> (halfmoon)	72	4,540	257	4,869
<i>Oncorhynchus tshawytscha</i> (king salmon)	8	0	0	8
<i>Ophiodon elongatus</i> (lingcod)	271	21	143	435
<i>Paralabrax clathratus</i> (kelp bass)	3,600	10,253	3,852	17,705
<i>P. maculatofasciatus</i> (spotted sand bass)	0	1,648	7,054	8,702
<i>P. neublifer</i> (barred sand bass)	161	5,907	3,536	9,604
<i>Paralichthys californicus</i> (California halibut)	551	2,289	780	3,620
<i>Pimelometopon pulchrum</i> (California sheephead)	440	720	427	1,587
<i>Sarda chiliensis</i> (Pacific bonito)	2	5,301	1,797	7,100
<i>Scomber japonicus</i> (Pacific mackerel)	2,061	16,433	8,031	26,525
<i>Scorpaena guttata</i> (sculpin)	148	2,802	518	3,468
<i>Sebastes atrovirens</i> (kelp rockfish)	1,377	798	372	2,547
<i>S. auriculatus</i> (brown rockfish)	2,858	2,925	522	6,305
<i>S. caurinus</i> (copper rockfish)	3,247	464	265	3,976
<i>S. chlorostictus</i> (greenspotted rockfish)	1,391	360	772	2,523
<i>S. miniatus</i> (vermilion rockfish)	1,949	1,127	1,107	4,183
<i>S. mystinus</i> (blue rockfish)	4,694	2,006	889	7,589

TABLE 7-cont.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
<i>S. paucispinis</i> (bocaccio)	1,340	1,218	176	2,734
<i>S. serranoides</i> (olive rockfish)	3,480	12,047	3,211	18,738
<i>S. rastrelliger</i> (grass rockfish)	1,833	3,722	130	5,685
<i>Sphyraena argentea</i> (California barracuda)	8	3,209	545	3,762
<i>Trachurus symmetricus</i> (jack mackerel)	129	821	203	1,153

TABLE 8. Catch and Effort Estimates for Divers; July through September, 1977.

	Santa Barbara and Ventura Co.	Los Angeles and Orange Co.	San Diego County	Total
Diving Parties				
weekend	497	408	817	1,722
weekday	199	101	237	537
total	<u>696</u>	<u>509</u>	<u>1,054</u>	<u>2,259</u>
Divers				
weekend	1,282	981	2,170	4,433
weekday	501	262	546	1,309
total	<u>1,783</u>	<u>1,243</u>	<u>2,716</u>	<u>5,742</u>
Diver Hours				
weekend	8,016	4,188	9,982	22,186
weekday	2,879	1,007	2,359	6,245
total	<u>10,895</u>	<u>5,195</u>	<u>12,341</u>	<u>28,431</u>
Total Organisms				
weekend	5,115	4,321	6,101	15,537
weekday	1,137	634	1,207	2,978
total	<u>6,252</u>	<u>4,955</u>	<u>7,308</u>	<u>18,515</u>
<i>Haliotis corrugata</i> (pink abalone)	969	133	320	1,422
<i>H. cracherodii</i> (black abalone)	258	125	0	383
<i>H. fulgens</i> (green abalone)	101	222	2,708	3,031
<i>H. rufescens</i> (red abalone)	1,290	26	1,817	3,133
<i>Hinnites multirugosus</i> (rock scallop)	1,015	1,709	692	3,416
<i>Panulirus interruptus</i> (Calif. spiny lobster)	0	4	0	4
<i>Paralabrax clathratus</i> (kelp bass)	176	232	155	563
<i>Pimelometopon pulchrum</i> (California sheephead)	450	228	466	1,144

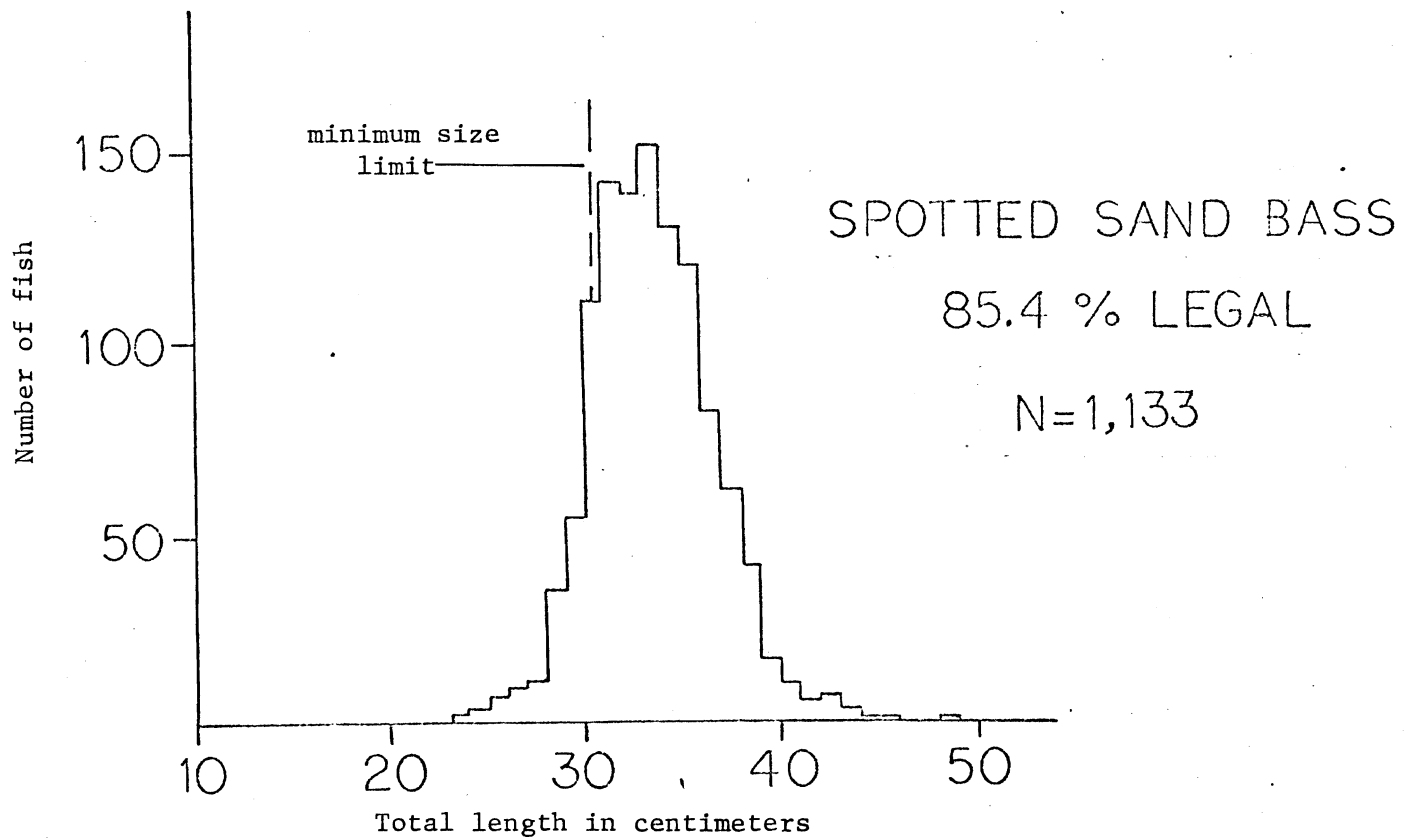
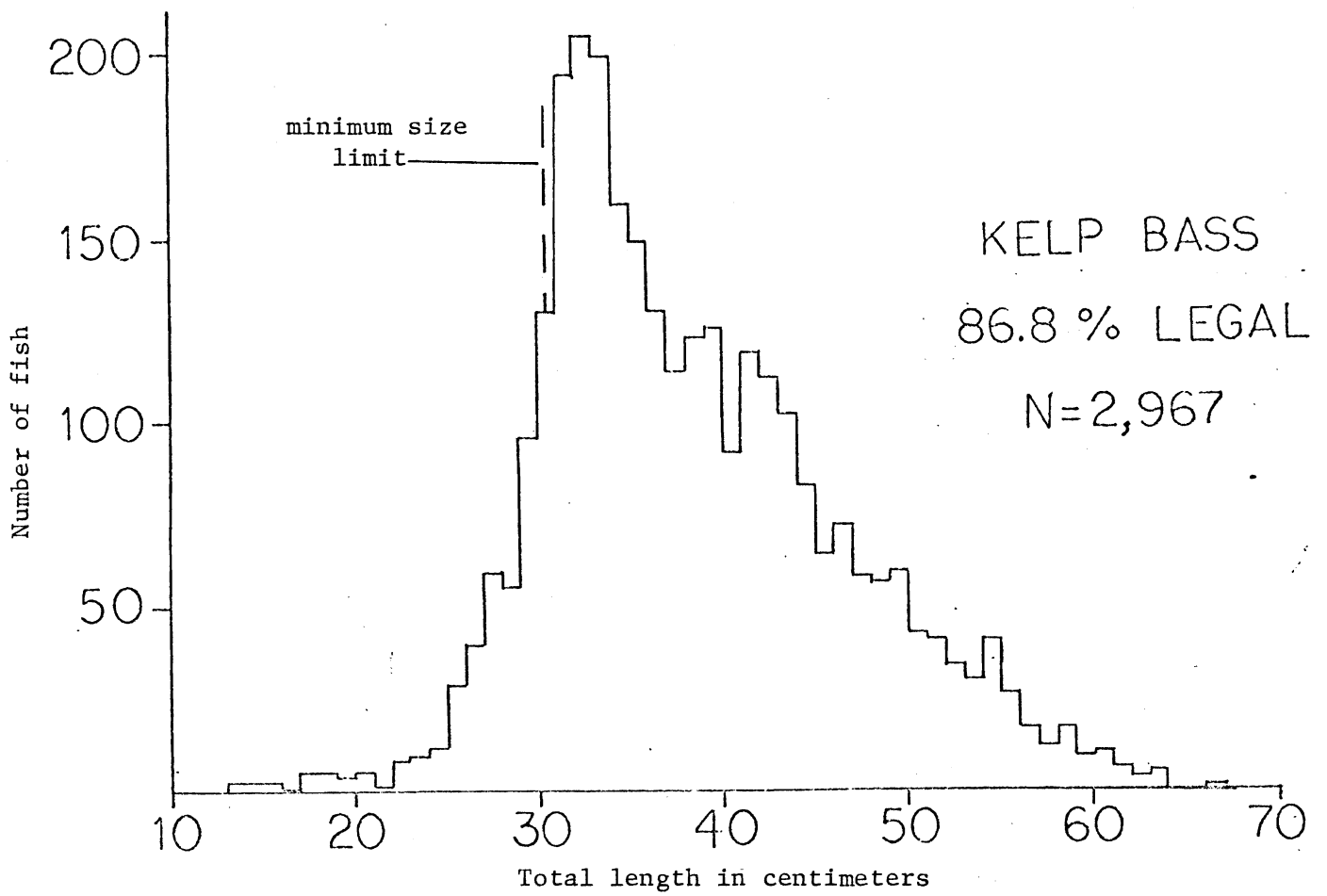


FIGURE 1. Length frequencies of kelp bass and spotted sand bass.

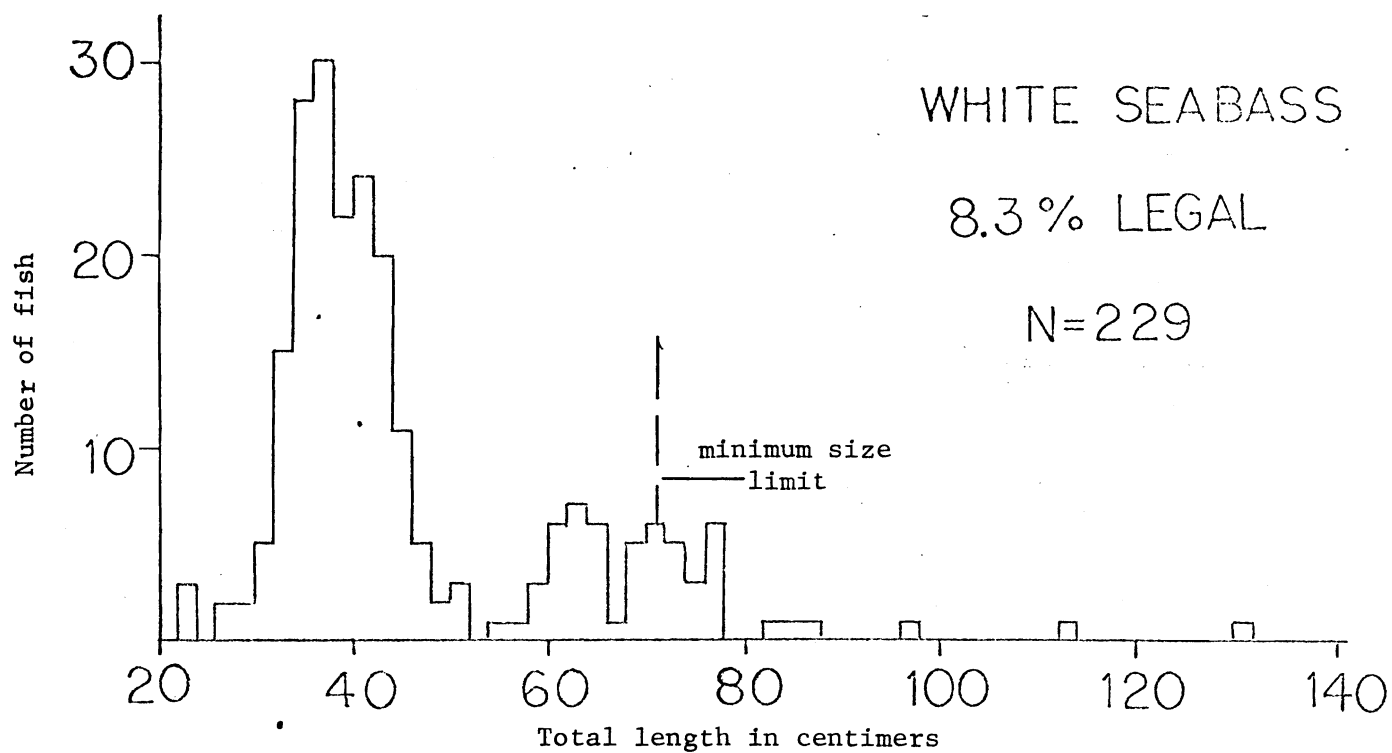
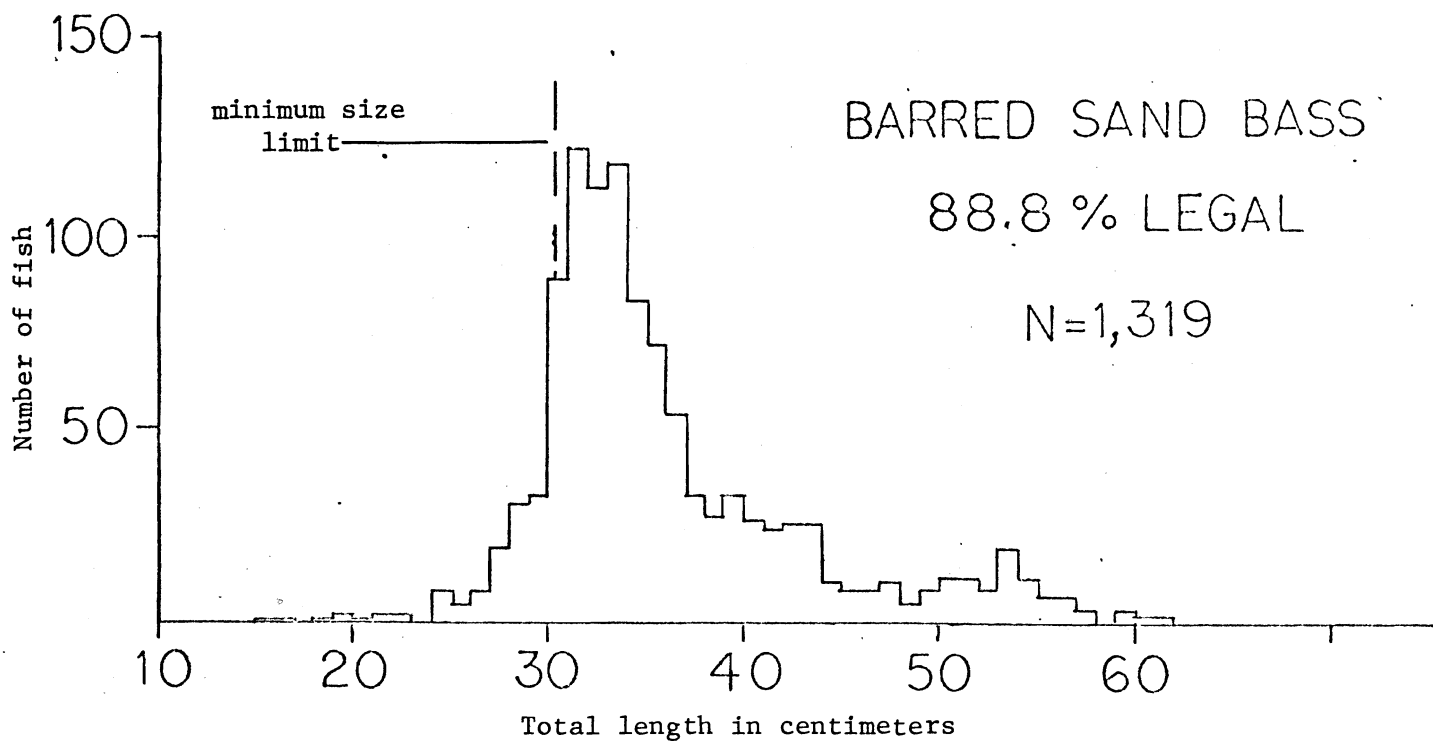


FIGURE 2. Length frequencies of barred sand bass and white seabass.

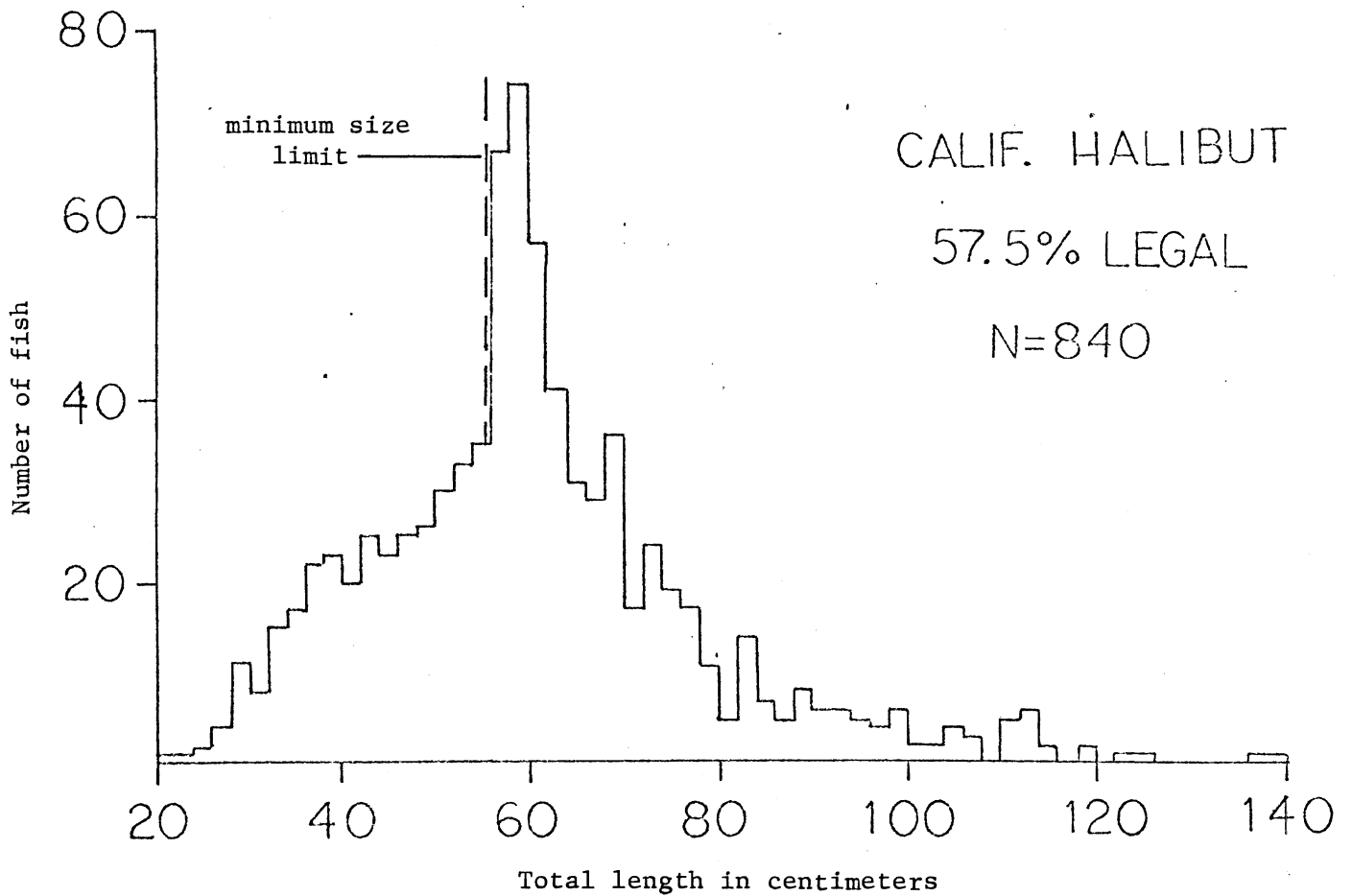
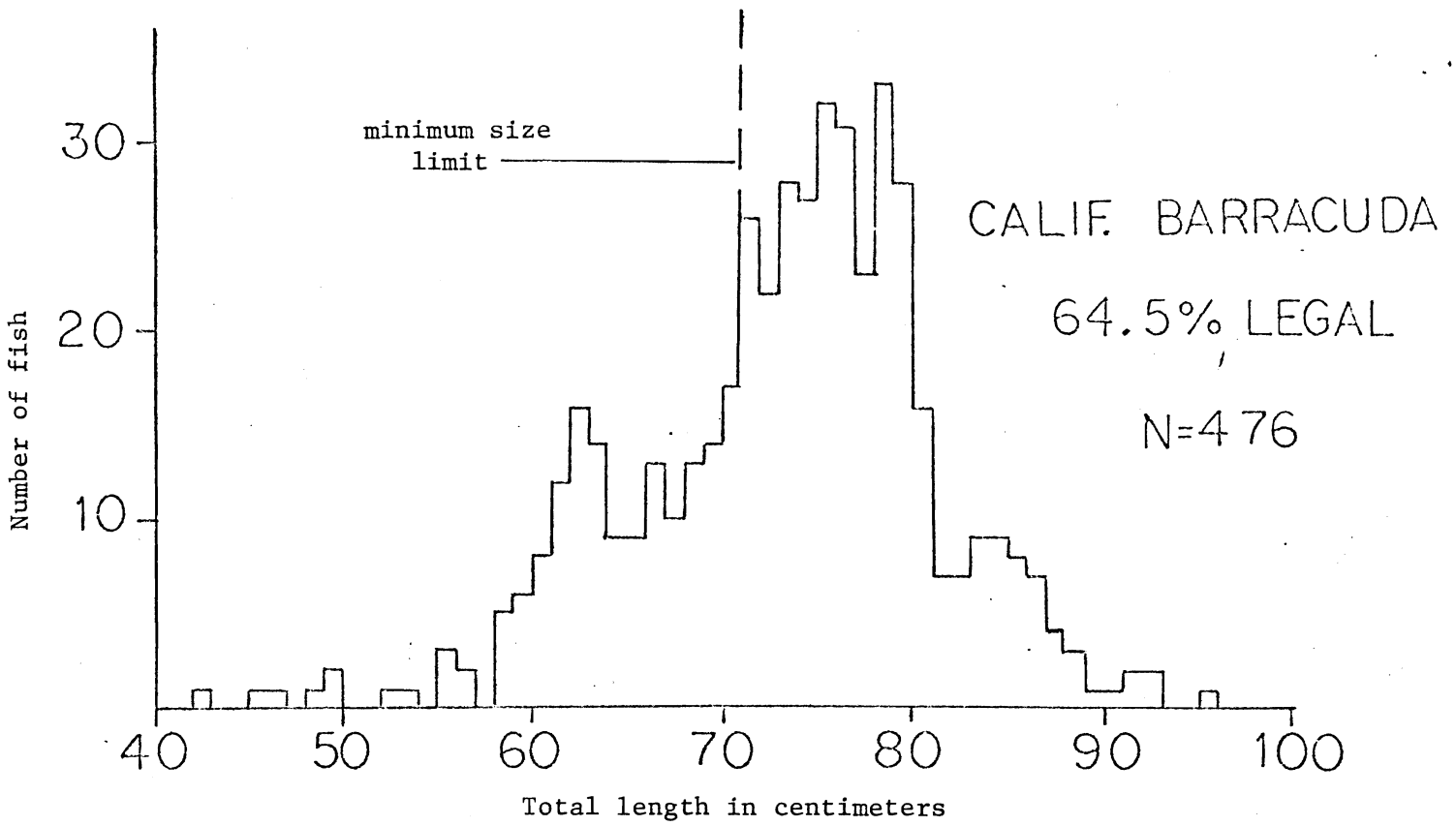


FIGURE 3. Length frequencies of California barracuda and California halibut.

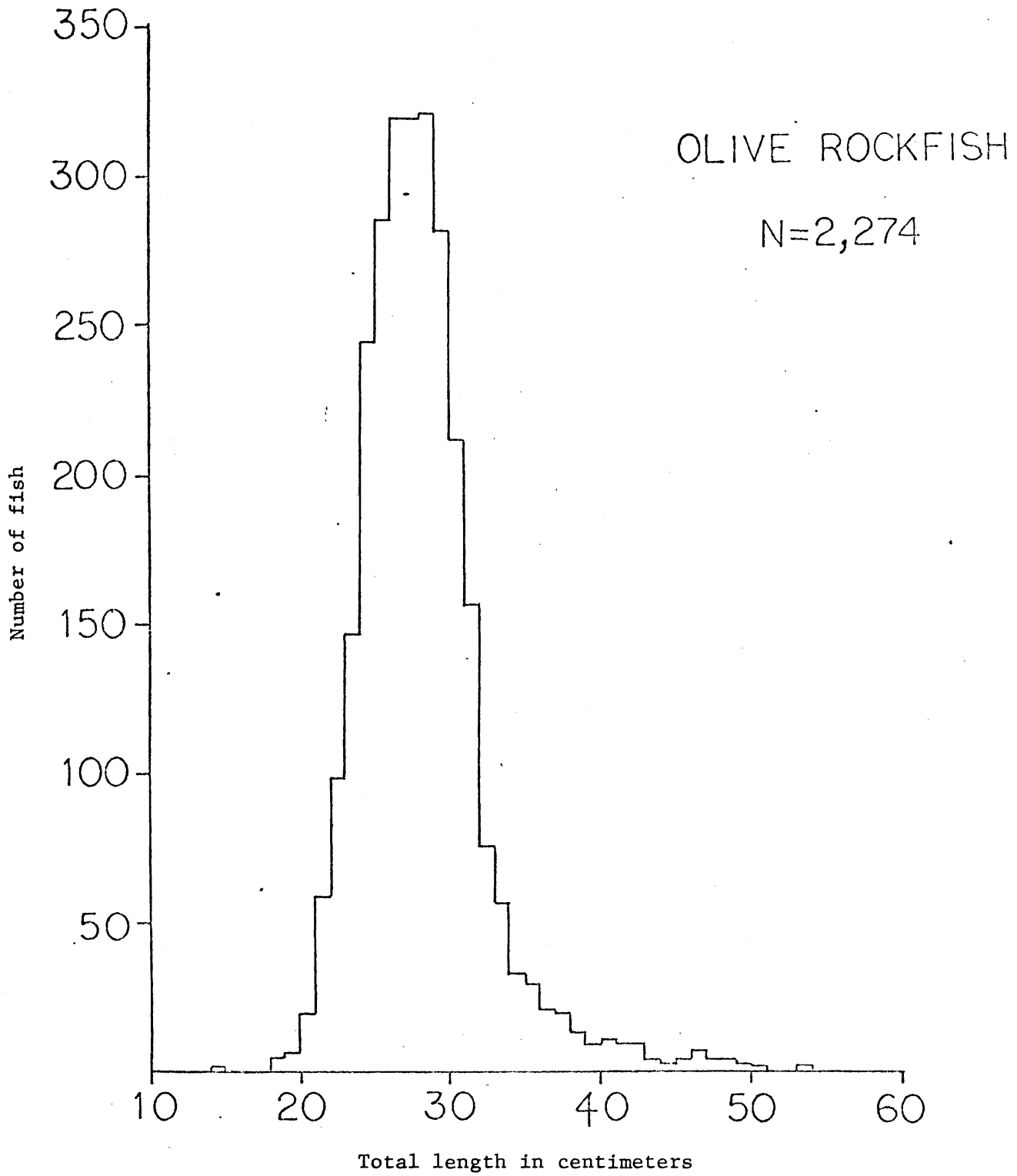


FIGURE 4. Length frequency of olive rockfish.

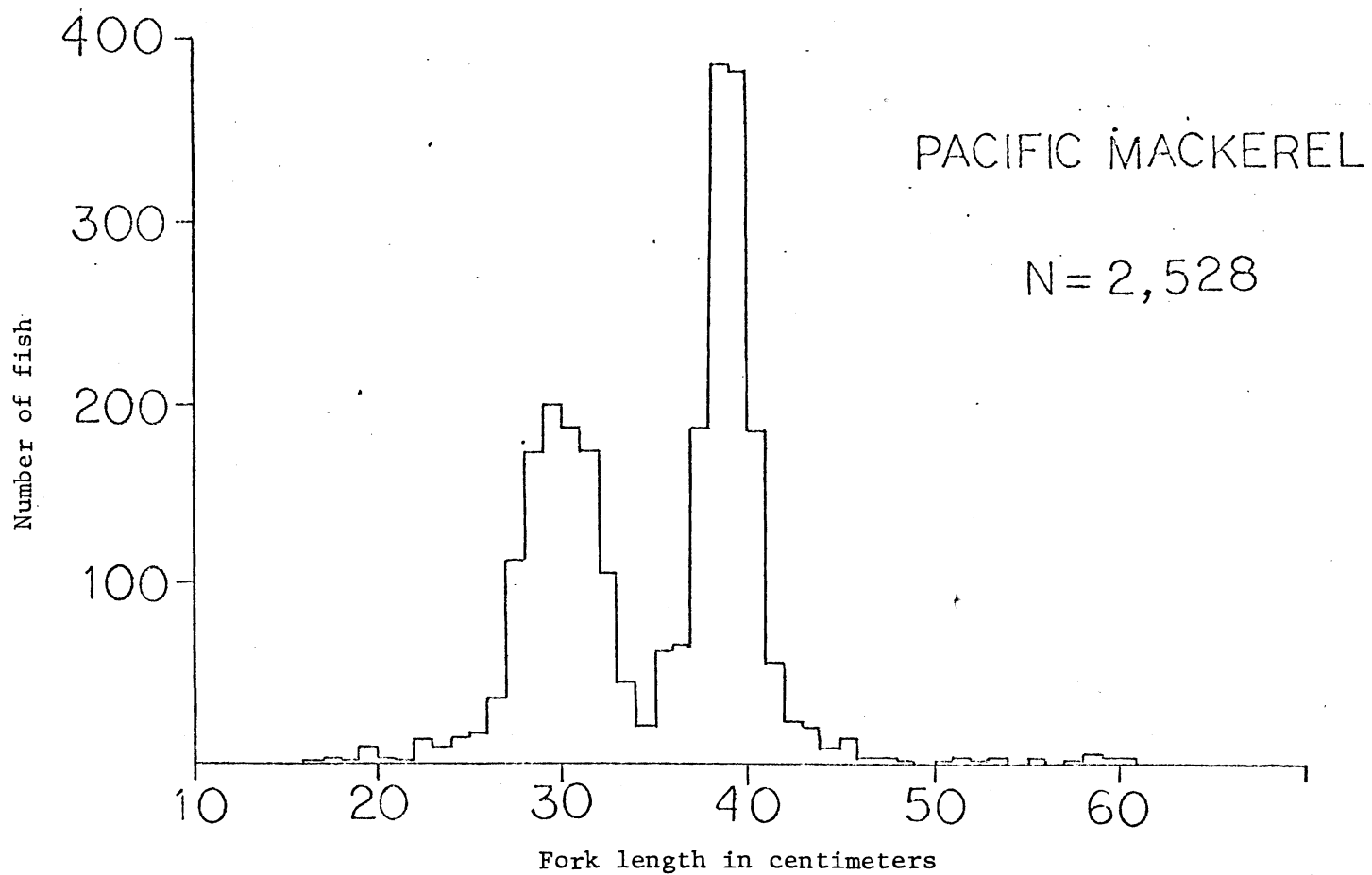
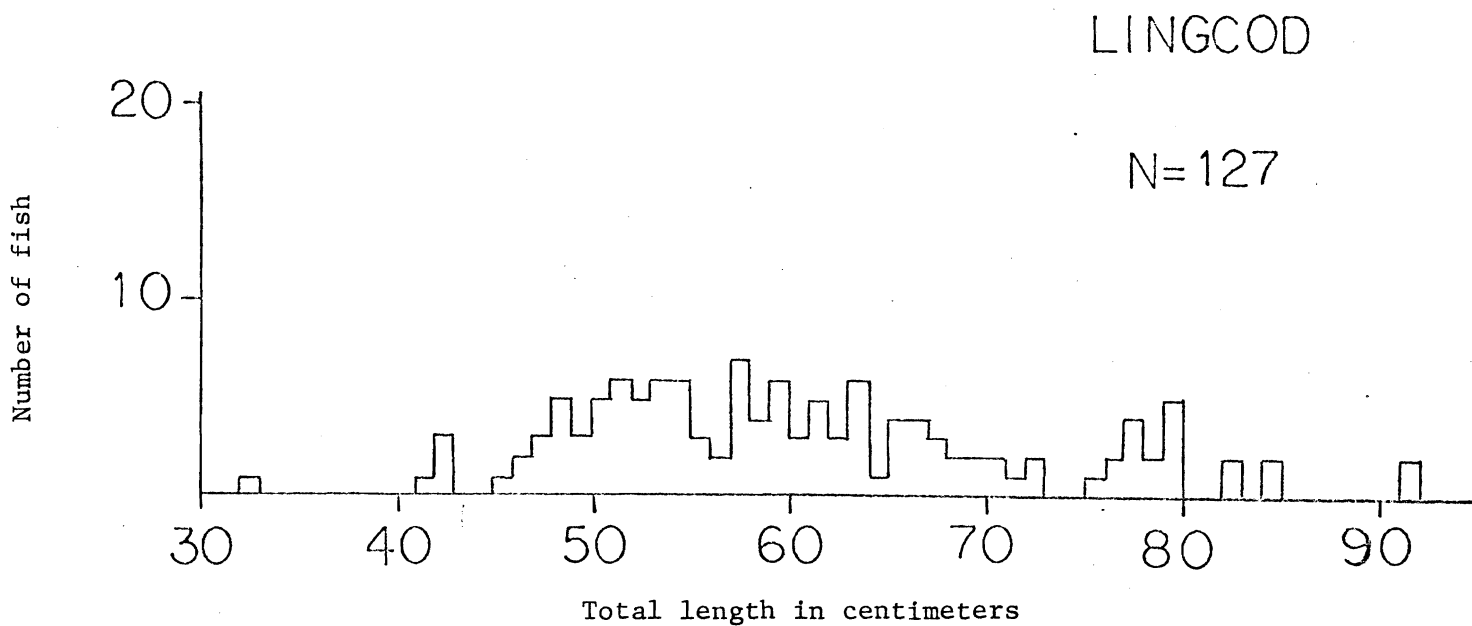


FIGURE 5. Length frequencies of lingcod and Pacific mackerel.

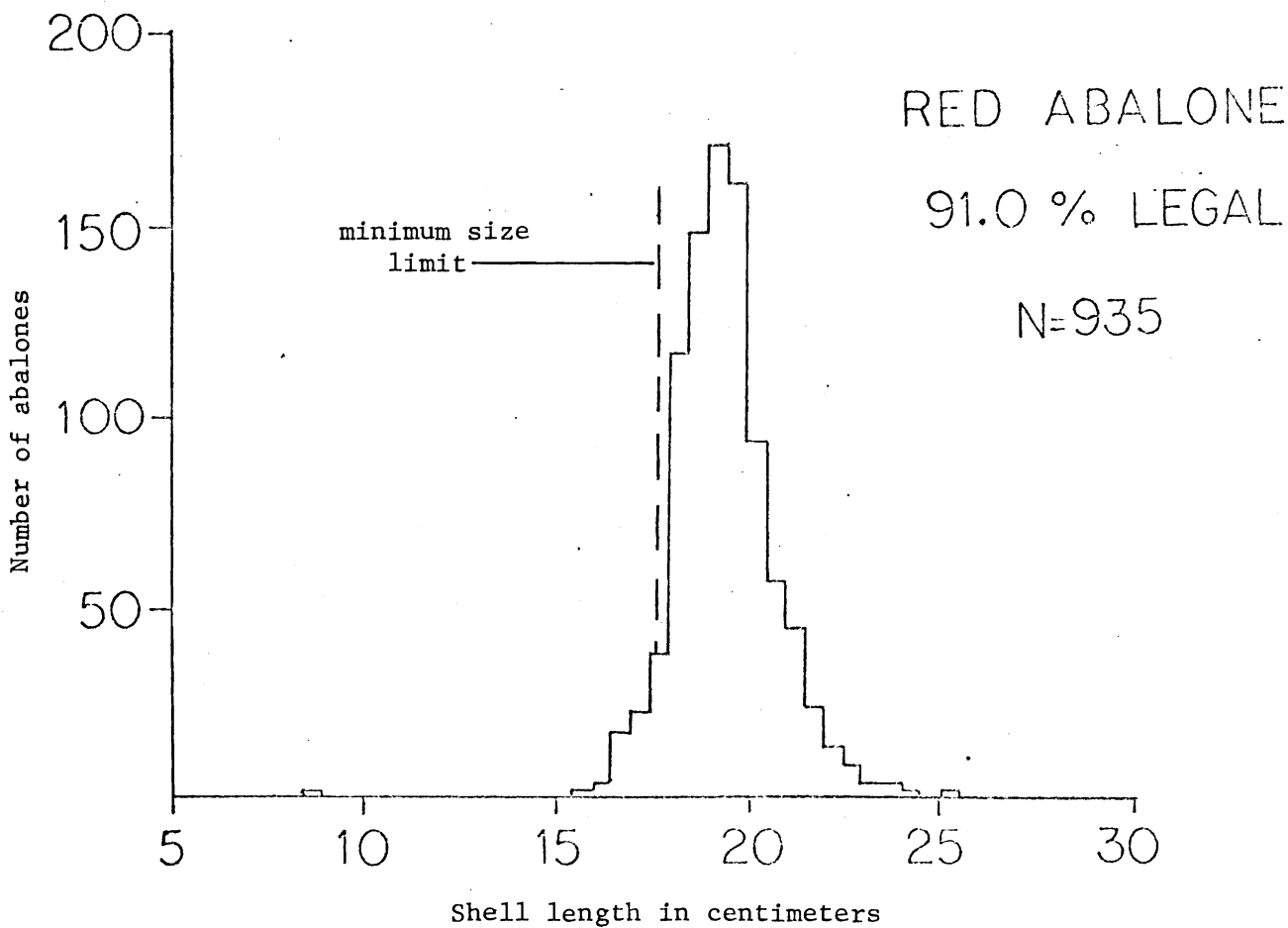
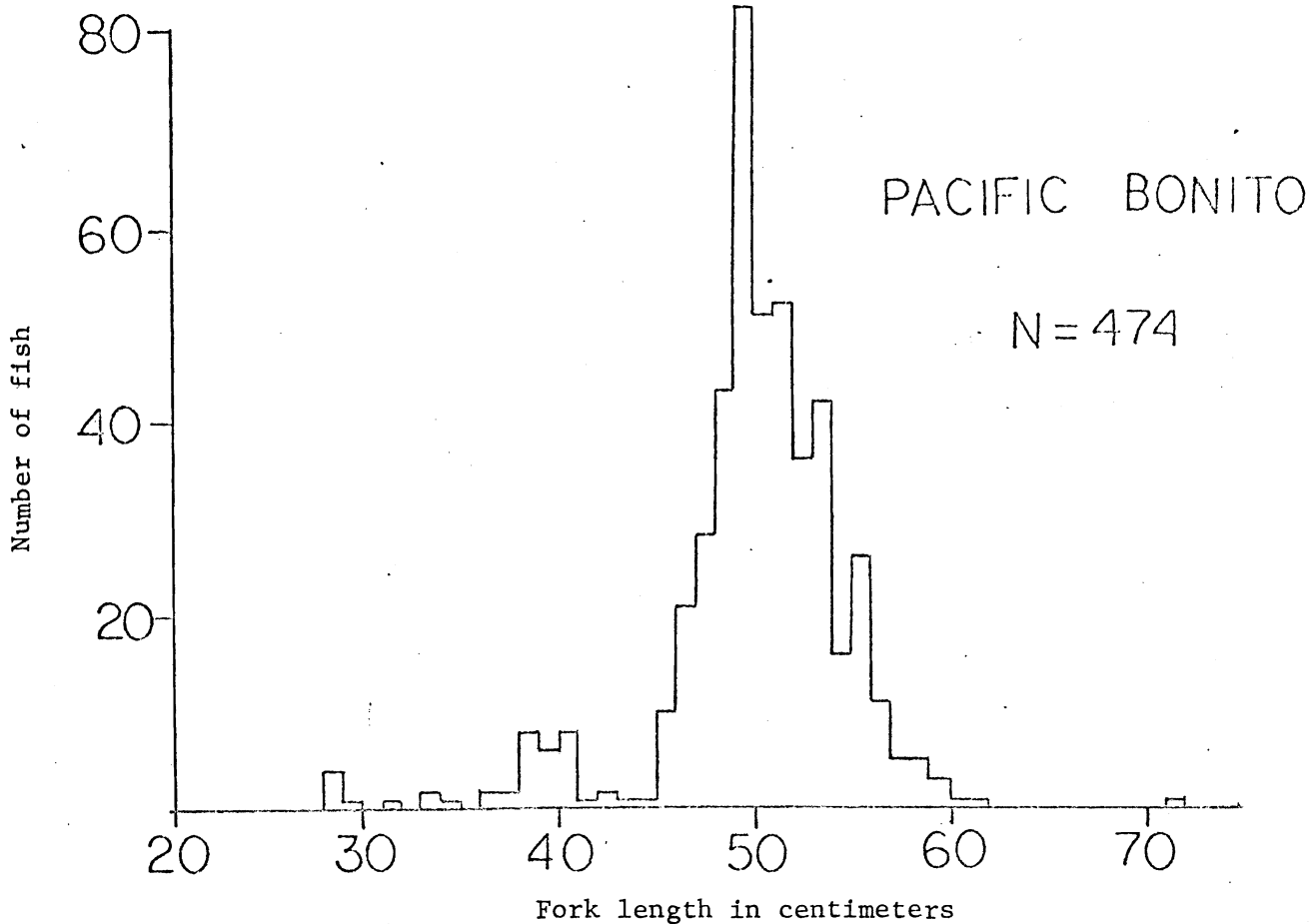


FIGURE 6. Length frequencies of Pacific bonito and red abalone.

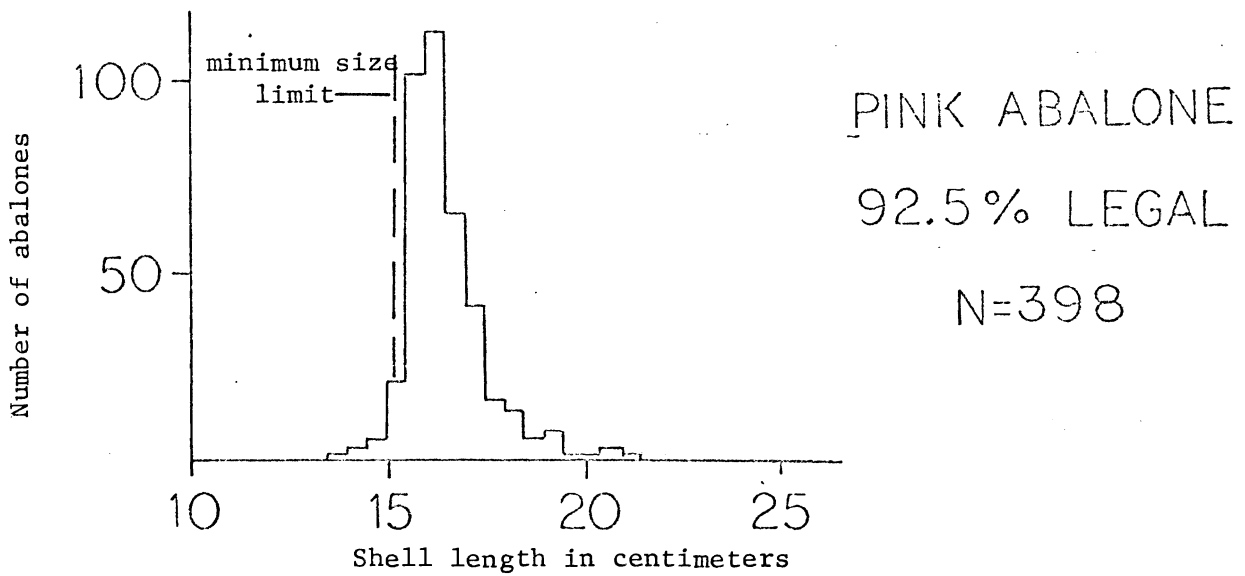
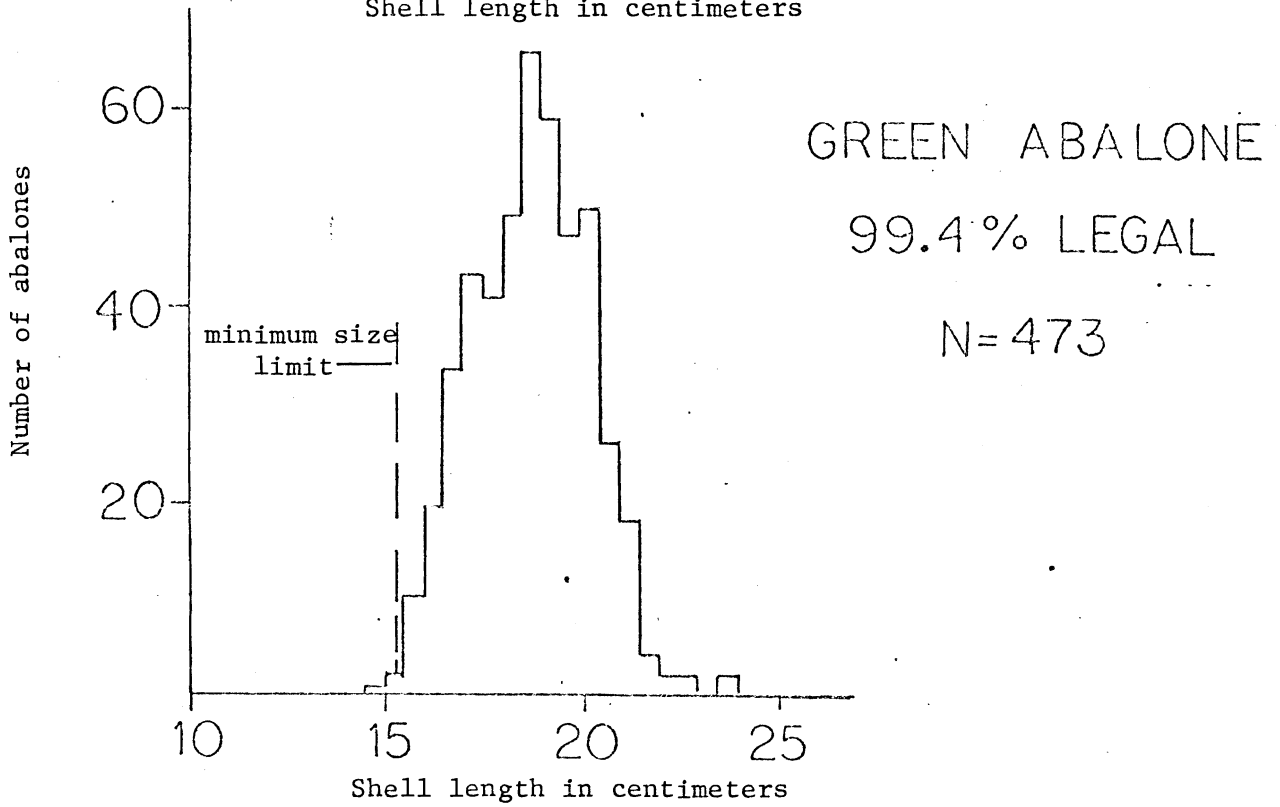
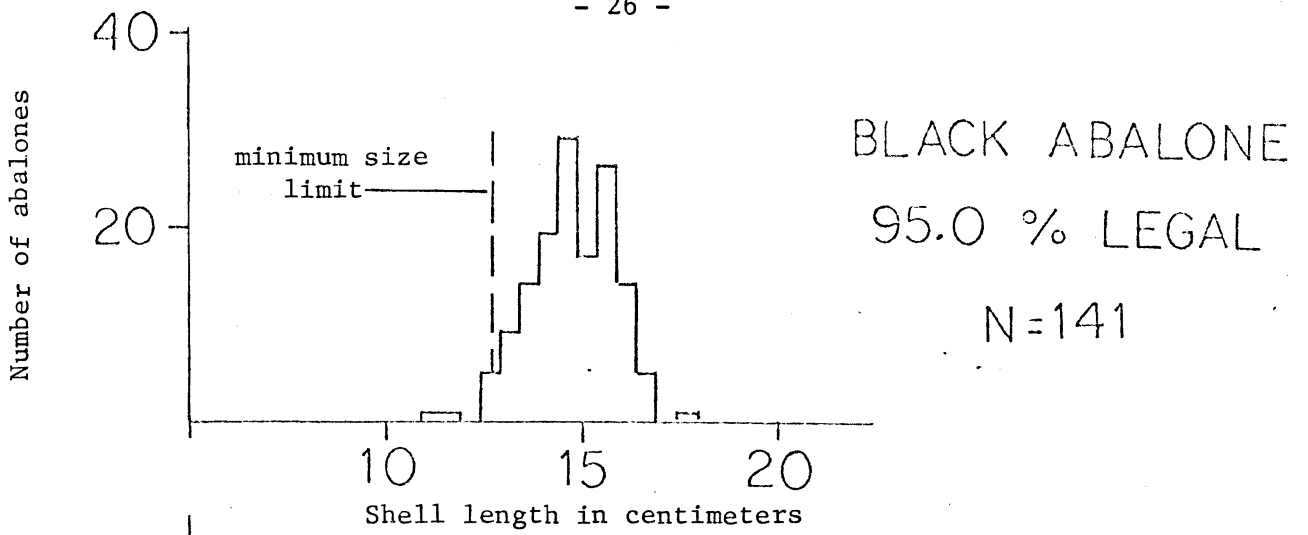


FIGURE 7. Length frequencies of black, green, and pink abalones.