

## REVIEW OF SOME CALIFORNIA FISHERIES FOR 1980 AND 1981<sup>1</sup>

Total California landings for the pelagic wet fisheries in California increased in both 1980 and 1981 (Table 1). There are indications that the condition of the sardine population off the California coast may be improving. The 1981 year class of anchovies appears to be extremely weak. Pacific mackerel landings in 1981 were the highest since 1940.

### *Pacific Sardine*

The moratorium on fishing sardines remained in effect during 1980 and 1981 because the spawning biomass was assessed to remain well below the 20,000 tons necessary to initiate a fishery.

The moratorium law does allow for the incidental catch of sardines (15% by weight tolerance) with mackerel and anchovies, but provides that sardines so caught can only be used for canning or reduction. The intent of these marketing restrictions, enacted in 1972, was to reduce local fishing pressures by cutting off sportfishermen's demand for sardines as dead bait. This demand sustained a lucrative market that insured continued fishing pressure even at extremely low biomass levels. The demand is now met with imported sardines. The incidental catch of sardines during 1980 and 1981 has given fishery managers some hope that a resurgence of the stock is still possible, and maybe even likely during the next decade.

Sardines caught incidental to mackerel fishing jumped from 17 tons in 1979 to 38 tons in 1980. Even though this figure dropped to 31 tons in 1981, the size composition of the catch during late 1981 indicates a minor resurgence is occurring. The majority of samples during this period were fish-of-the-year, and during the last 15-20 years it has been extremely rare to see 4-6-inch sardines. Optimism about resurgence is reinforced by reports from live-bait fishermen from San Diego to Port Hueneme that "fire crackers" (juvenile sardines) frequently occurred mixed with anchovy schools during the fall of 1981.

Whereas most of the incidental catches of these young sardines with mackerel and live bait have been small in quantity, both mackerel fishermen and live-bait fishermen reported sightings, sets, and dumping of "pure" schools of juvenile sardines. These reports increased in frequency during 1981, but most remain unconfirmed. Nevertheless, one mackerel purse-seine fisherman, who said he set and dumped a 50-ton school of sardines, provided the port sampler with approximately 10 pounds of 119-138-mm SL sardines.

### *Northern Anchovy*

The anchovy landings for calendar year 1980 were 46,873 short tons statewide.

The year commenced with approximately 148,000 tons remaining on the 1979-80 season quota of 156,100 tons. Only the Monterey and Port Hueneme-based seiners had expended any fishing effort toward anchovies early in the season. The San Pedro-based boats did not participate in the reduction fishery until the season reopened in April after the February-March closure. During April and May fishing picked up significantly, with the wetfish fleet landing 2,000-3,000 tons per week. In the first week of June many under-size (less than 5 inches in total length) fish began to show up in landings, and a number of San Pedro boats were cited for illegal catches. Rather than risk further citations, the San Pedro fleet stopped fishing anchovies for the remainder of the season.

In Monterey, only 47 tons were landed after January 1, in part because of a lack of anchovy availability in Monterey Bay and because more effort was expended on the lucrative squid and herring fisheries.

Quotas for the 1980-81 reduction season were established by the U.S. Department of Commerce in July at 10,000 and 156,400 tons for the Northern and Southern Areas, respectively. The California Fish and Game Commission chose to take more restrictive measures when it established a 15,000-ton reduction processing quota for the season on August 28, 1980. This was revised upward to 80,000 tons on November 8.

The 1980-81 season opened on August 1 in the Northern Area, and the Monterey fleet began fishing at a brisk pace. By the end of October, 2,700 tons of anchovies had been landed. The fleet had difficulty finding legal-size fish in early November, and fishing stopped temporarily when one vessel was cited for having undersized fish. Good schools of legal-size anchovies were found again in mid-December, and fishing resumed at a slower pace until year's end, when some 3,200 tons had been landed.

The Southern Area season opened September 15, with Port Hueneme boats ready to fish. However, legal-size fish were difficult to find, and only 112 tons were landed through November. Meanwhile, San Pedro fishermen had not settled on an anchovy price with the canneries, and concentrated their efforts on mackerel and squid. In late November, when good legal-size schools of anchovies were found, a price agreement was reached and fishing began. At the year's end 13,700 tons had been landed in the South-

<sup>1</sup>Includes review of the pelagic wet fisheries.

TABLE 1  
**Landings of Pelagic Wet Fishes in California in Short Tons in 1964-81**

Year	Pacific sardine	Northern anchovy	Pacific mackerel	Jack mackerel	Pacific herring	Market squid	Total
1964	6,569	2,488	13,414	44,846	175	8,217	75,709
1965	962	2,866	3,525	33,333	258	9,310	50,254
1966	439	31,140	2,315	20,431	121	9,512	63,958
1967	74	34,805	583	19,090	136	9,801	64,489
1968	62	15,538	1,567	27,834	179	12,466	57,646
1969	53	67,639	1,179	26,961	85	10,390	105,307
1970	221	96,243	311	23,873	158	12,295	133,101
1971	149	44,853	78	29,941	120	15,756	90,947
1972	186	69,101	54	25,559	63	10,303	104,993
1973	76	132,636	28	10,308	1,410	6,031	150,489
1974	7	82,691	67	12,729	2,630	14,452	112,576
1975	3	158,510	144	18,390	1,217	11,811	190,075
1976	27	124,919	328	22,274	2,410	10,153	160,115
1977	6	111,477	5,975	50,163	5,827	14,122	187,570
1978*	5	12,607	12,540	34,456	4,930	18,898	83,436
1979*	17	52,768	29,392	17,562	4,651	18,954	123,434
1980*	38	46,873	32,349	22,225	7,109	16,021	124,615
1981*	31	57,355	42,477	15,513	6,444	24,840	146,660

\*Preliminary

ern Area. During 1980 the price for anchovy ranged from \$49-\$56 per ton in southern California.

Sampling indicated the age composition of anchovies taken by the Southern Area spring fishery was 94% 1979 and 1978 year-class fish, with very few older fish.

During 1980 an estimated 4,600 tons of anchovies were used for live bait and 1,300 tons for other non-reduction purposes.

Calendar year 1981 began with approximately 18,000 tons of the 1980-81 season quota having been taken.

Monterey area boats did not actively fish for anchovies until April. In early May effort toward anchovies stopped for the remainder of the season when market squid appeared in Monterey Bay, and this more lucrative fishery began.

The season closed with 4,736 tons (Table 2) having been landed in the Northern Area.

In the Southern Area the wetfish fleet began fishing immediately after the holiday season. With a price of \$60.50 per ton, interest was high; some 27,000 tons of anchovies were landed prior to the February-March closure.

When the season resumed on April 1, fishing effort once again was brisk, even though the price had fallen to \$55 per ton. Landings averaged 3,000 to 6,000 tons per week into May. As the landings approached the Southern Area reduction processing quota, on May 26 the California Fish and Game Commission authorized the California Department of Fish and Game to increase this quota to 90,000 tons, if necessary. This action was never taken, since landings dropped off dramatically the second week of June. Anchovy re-

TABLE 2  
**Anchovy Landings for Reduction in the Southern and Northern Areas from 1966 to 1981, in Short Tons**

Season	Southern Area	Northern Area	Total
1966-67	29,589	8,021	37,610
1967-68	852	5,651	6,503
1968-69	25,314	2,736	28,050
1969-70	81,453	2,020	83,473
1970-71	80,095	657	80,752
1971-72	52,052	1,314	53,426
1972-73	73,167	2,352	75,519
1973-74	109,207	11,380	120,587
1974-75	109,918	6,669	116,587
1975-76	135,619	5,291	140,906
1976-77	101,434	5,007	106,441
1977-78	68,476	7,212	75,688
1978-79	52,696	1,174	53,870
1979-80*	33,383	2,365	35,748
1980-81*	62,161	4,736	66,897

\*Preliminary

mained largely unavailable until the season closed June 30 with a total catch of 62,161 tons.

On July 1, the U.S. Department of Commerce established a reduction quota for the 1981-82 season at 408,100 tons. However, the Fish and Game Commission again set a lower reduction processing quota at 150,000 tons.

In the Northern Area the season opened on August 1, with Monterey fishermen showing little interest in fishing for anchovies. On September 22, two boats landed fish, and they were later joined by a third boat in November. Fishing was moderately successful, and by the end of December 3,500 tons had been landed.

In the Southern Area the 1981-82 season opened on September 15, but the wetfish fleet showed no interest

in fishing for anchovies. Negotiations between fishermen, boat owners, and canneries over price and unloading rules for anchovy and mackerel continued from September through October in San Pedro; there was little fishing effort. A full strike idled the fleet for 3 weeks. It wasn't until November 7 that Port Hueneme boats began to fish for anchovy, and several weeks later they were joined by four San Pedro boats. The majority of the San Pedro fleet were unable to reach a price agreement for anchovy with their cannery, and concentrated on fishing for mackerel. By the end of December only 4,700 tons of anchovies had been landed in the Southern Area.

Sampling indicates Southern Area 1981 spring fishery landings comprised 43% 1980 year-class fish, 33% 1979 year-class fish, 22% 1978 year-class fish, with less than 3% older fish. The California Department of Fish and Game 1981 fall prerecruit sea survey indicated a weak 1981 year class.

The total reduction landings for 1981 statewide were 57,355 short tons. An estimated 6,000 tons were used for live bait and 800 tons for other nonreduction purposes. During 1981 the price for anchovy ranged from \$60.50 to \$46 per ton in southern California.

### *Jack Mackerel*

In the 35 years since jack mackerel began supporting a viable fishery in 1947, it has been the dominant of the two "mackerels" in landings in all but 5 years. The years 1980 and 1981 represent the second and third year in a row that jack mackerel has contributed less than Pacific mackerel to California's "mackerel" fishery (Table 1).

During 1980, landings of jack mackerel were estimated at 22,225 tons. It dominated "mackerel" landings in only 4 months during the year, and these were the months when the California Department of Fish and Game imposed catch restrictions on Pacific mackerel. In 1981 this trend continued, with landings estimated at 15,513 tons and jack mackerel dominating the catch in only 3 months of the year.

It seems unlikely that the dominance of Pacific mackerel in recent years is related to any changes in marketability that may have caused a preference for this species by processors or fishermen. Both species are canned for human consumption and pet food production, and fishermen receive the same price for both: a price that jumped from \$150 per ton in December 1979 to \$190 per ton by the spring of 1981. The diminishing importance of jack mackerel recently is probably more closely associated with an extremely strong resurgence by the Pacific mackerel population, which has increased the availability of these fish to a level not evidenced since the early 1940s.

### *Pacific Mackerel*

The year 1980 began with approximately 14,000 tons left on the 1979-80 season (October 1-September 30) quota of 25,000 tons, and with fishermen continuing to fish with no permit restrictions. On February 11, Pacific mackerel permits were amended for the purpose of slowing catch rates. Boatloads containing more than 18% by number Pacific mackerel (incidental catch tolerance) could only be possessed from 0001 hours Monday to 2400 hours Thursday and could not exceed 25 tons. The 1979-80 season was closed on May 15 when the landings reached 25,000 tons.

On May 22, 1980, the California Legislature passed Assembly Bill 2194. It established that future seasons would open on July 1 of each year, allowed the California Department of Fish and Game more flexibility in establishing interseason incidental catch tolerance levels, provided for a seasonal size limit of 10 inches fork length from January 1 to June 30, and dictated that within-season quota adjustments could only be made prior to February 1 of each year.

On July 1, the 1980-81 season opened with a 15,000-ton quota. This lower quota level was necessitated by an almost total lack of recruitment of 1-year-old fish (1979 year class). This cohort remained virtually unrepresented in samples, even though fishing was excellent during the first few months of the season. On September 19 the season was closed, with interseason restrictions allowing for 50% by number incidental catch tolerance for Pacific mackerel. Even though effort was substantially diverted from Pacific mackerel to jack mackerel for the remainder of the year, the estimated landings for 1980 of 32,349 tons are the highest annual landings since 1944.

Early in 1981 the California Department of Fish and Game, after a review of historical biomass estimates, aerial spotter relative abundance indices, and sport fishery catch-per-unit-of-effort, increased the 1980-81 season allowable catch from 15,000 to 20,000 tons, and on January 20, 1981, the "season" was reopened without permit restrictions. The additional 5,000 tons was caught in a little over a month, and on February 26 the interseason incidental catch tolerance was again set at 50% by number.

The 1981-82 season was opened on July 1, 1981, with a 33,000-ton quota amidst predictions that the 1980 year class would be the strongest since the resurgence of Pacific mackerel fishery during the mid-1970s. Although fishing was slow during the first few weeks, landings picked up dramatically in late July and fishing was excellent for the remainder of the year. Pacific mackerel were even readily available in Monterey Bay, where annual landings exceeded 1,000

tons for the first time since 1959.

By year's end, the "seasonal" catch was approaching 30,000 tons, despite a weak showing by the 1980 year class and almost no contribution by the 1979 year class. The 1978 year class was literally carrying the fishery, accounting for approximately 71%, 72%, and 46% of the tonnage landed in 1981, 1980, and 1979, respectively.

The estimated landings of 42,477 tons for 1981 are the largest since 1940, and mark the fourth straight year of an increase in catch under quota management.

### ***Market Squid***

After two excellent years the Monterey Squid fishery declined in 1980 to 6,900 tons. The fishery began in May but didn't peak until September. Over half of the annual catch was taken in August and September; normally the peak months are May and June.

The negotiated price to fishermen increased from \$260 to \$265 per ton for freezing, while the canning price remained \$90 per ton. Santa Cruz Cannery at Moss Landing was unable to buy squid locally because fishermen would not sell their catch for the lower canning price. Consequently, the cannery trucked squid from Port Hueneme, as in previous years.

The southern California squid fishery continued to be primarily a late fall-early winter fishery during 1980, with 95% of the annual landings occurring during the months of January, February, November, and December. The estimated landings were 9,121 tons.

In 1981, the Monterey fishery rebounded, and landings increased to 13,900 tons, the second highest year on record. Thirty-five lampara boats participated in the fishery, also believed to be a record. Monterey undoubtedly had an excellent squid fishery in 1981; however, other factors must be mentioned.

Marine Patrol at Monterey found more squid in freezing plants than could be accounted for on fish receipts after the 1980 season. This case is far from going to trial, but all the squid buyers at Monterey are aware of the situation, and it is just possible that more accurate landing weights were reported this season. This may account for at least part of the record 1981 landings at Monterey. The fishery began in May and peaked in June. The fall fishery was also very good, with 6,000 tons taken from September to November. The negotiated price for freezing squid and canning increased in 1981 to \$285 and \$115 per ton, respectively.

Santa Cruz Cannery once again attempted to buy local squid. There were a few boats that would have fished for the cannery but were prevented from doing so by pressures exerted on them by buyers at Monterey. As the season progressed the cannery began to

purchase local squid for freezing and canned at least 200 tons that it had acquired at the freezing price. Monterey Packing Company also canned some local squid this season.

Again the southern California fishery occurred primarily in early fall-late winter. The 1981 landings of 10,918 tons represent only the second time in history that southern California's landings were above 10,000 tons. The fishery seems to be continuing the very gradual growth trend that has characterized its history.

While the price for squid in Monterey has jumped considerably in recent years, prices at San Pedro have remained about the same. Generally, the ex-vessel price in southern California starts around \$140-\$160 per ton at the beginning of the season and declines during the season to as low as \$40 per ton.

### ***Pacific Herring***

The 1979-80 and 1980-81 seasonal herring roe fishery landings were 6,430 tons and 5,826 tons, respectively. The annual herring landings encompass part of two fishing seasons and totaled a record high 7,969 tons in 1980, and then dropped to 6,198 tons in 1981. Landings declined in 1981 because of a strike by fishermen.

A system of quotas by area and gear was employed in previous seasons to regulate the fishery; it remains in effect. Quotas during the 1979-80 season were set for four areas: San Francisco Bay, 6,020 tons; Tomales and Bodega bays, 1,210 tons; Humboldt Bay, 50 tons; and Crescent City Harbor, 30 tons. The 1980-81 quota for San Francisco Bay was increased to 7,270 tons; quotas for other areas were not changed.

The roe fishery is limited to gill nets only in all areas except San Francisco Bay, where purse seines and lamparas also are used to take herring. The quotas are allocated by gear in order to eliminate competition between different gear types. Gill net boats were divided into two platoons that fished alternate weeks in order to alleviate congestion on the fishing grounds. Allocation of larger quotas and increased number of permits issued for the 1979-80 season (Table 3) and the 1980-81 season (Table 4) reflect the viability of this lucrative fishery.

When the quota for San Francisco Bay was increased in 1980, another platoon of gill net boats was allowed into the fishery. This experimental or "X" platoon is allowed to fish 3 weeks in December. The success of this early fishery was in doubt because fishermen were unsure if sufficient mature herring would be in San Francisco Bay in December. But December catch rates have been very good.

In the 1980 roe fishery, quotas were nearly taken or

TABLE 3  
Permits Issued and Quotas by Gear and Area for the  
1979-80 Herring Roe Fishery

Area	Gear	Permits	Quota (short tons)
San Francisco Bay	Gill net (odd)	109	1,500
	Gill net (even)	109	1,500
	Purse seine	27	1,500
	Lampara	27	1,500
Tomales and Bodega bays	Gill net (odd)	34	605
	Gill net (even)	34	605
	Beach seine	1	—
Humboldt Bay	Gill net	4	50
Crescent City	Gill net	3	30
Total		347	7,280

were exceeded in all areas except Tomales Bay, where only one-half the 1,210-ton quota was taken. The platoon system in Tomales Bay tends to keep the catch down because the off-week platoon is unable to fish during periods of peak spawning activity.

The 1981 roe fishery catch declined for two reasons. Herring spawned earlier in 1981, and by the time the regular season opened on January 5, over half the season's spawning had occurred. Fishing did not begin until January 16 because fishermen went on strike when herring prices were lowered. During the strike the season's largest spawn occurred simultaneously in Tomales and San Francisco bays. When fishing began after the strike, over 80% of the spawning activity had ended in San Francisco Bay, and only one large spawn occurred in Tomales Bay during the remainder of the season.

The herring spawning biomass was estimated in 1980 and 1981 for Tomales and San Francisco bays. The Tomales Bay population was estimated at 6,023 tons and 5,576 tons in 1980 and 1981. The decline in 1981 reflects normal variation around a long-term average population size of 6,000 tons. The San Francisco Bay population estimates have increased recently because of improved survey techniques, which now emphasize surveying subtidal rather than intertidal spawning areas. San Francisco Bay spawning biomass estimates were 52,900 tons in 1980 and 65,400 tons in 1981.

The base price paid to fishermen peaked in 1980 at \$2,000 per ton for 10% roe recovery and ranged from \$1,000 to over \$3,000. Gill net catches generally have a higher roe recovery than roundhaul landings.

Japanese consumers balked at retail prices for herring roe that reached \$60 a pound in 1980, and the base price for herring was dropped to \$1,200 per ton at the start of the 1980 season in December. When the regular season opened in January 1981, the base price

TABLE 4  
Permits Issued and Quotas by Gear and Area for the  
1980-81 Herring Roe Fishery

Area	Gear	Permits	Quota (short tons)
San Francisco Bay	Gill net (x)	100	1,250
	Gill net (even)	110	1,500
	Gill net (odd)	110	1,500
	Purse seine	23	1,500
	Lampara	29	1,500
Tomales and Bodega bays	Gill net (even)	34	600
	Gill net (odd)	34	600
	Beach seine	1	—
Humboldt Bay	Gill net	4	50
Crescent City	Gill net	3	30
Total		448	8,530

for herring was dropped again to \$600 per ton. Fishermen struck, and later settled on a base price of \$800 per ton; this was eventually raised to \$1,000 late in the season after catches declined. The roe fishery may never be as lucrative as it once was, but prices remain at a level where it is still a viable fishery, with an ex-vessel value of \$6 million in 1981.

### Groundfish

California commercial and recreational fishermen landed 45,309 tons of groundfish in 1980. Rockfish, Dover sole, and sablefish were the leading species in the catch, with respective landings of 16,868 tons, 8,538 tons, and 4,628 tons.

The trawler fleet landed 36,509 tons, the majority of the catch. Of this total, midwater trawlers landed 713 tons of Pacific whiting and 4,078 tons of widow rockfish. Fishermen using line, trap, and gill nets landed an estimated 5,500 tons of groundfish. This catch was predominated by rockfish and sablefish. Recreational fishermen caught an estimated total of 3,300 tons of groundfish, most of which were rockfish.

The 1980 landings were the result of increased effort by a larger fleet. Significant events in 1980 were the further development of the midwater trawl fishery and the decline in the trap fishery for sablefish.

Groundfish landings continued to increase in 1981. Landings by commercial and recreational fishermen were 48,797 tons. The major species in the catch were several species of rockfish (20,710 tons), Dover sole (10,143 tons), and sablefish (7,283 tons). Other flounders, lingcod, and Pacific whiting were also important in the catch.

The trawler fleet increased to 193 vessels; the additions were new, larger, more mobile vessels, and many were from Oregon or Washington.

The midwater trawl fishery for widow rockfish expanded in 1981. The fleet extended its operations from off Eureka to the San Francisco area. The annual catch of widow rockfish was 4,129 tons. The Pacific whiting catch declined to 2,674 tons concurrent with the increase in widow rockfish.

Sablefish landings increased to 7,283 tons, as catches by all gears increased.

The increasing trend of the groundfish fishery continued. Innovative harvesting, processing, and marketing technology contributed to its development.

Groundfish continued to be important to recreational fishermen. Rockfish and lingcod were the major species in the recreational catch.

### ***Dungeness Crab***

Statewide landings of Dungeness crab (*Cancer magister*) totalled 13.6 million pounds during the 1979-80 season, compared to 8.3 million pounds landed during the 1978-79 season.

Landings for Crescent City, Trinidad, Eureka, and Fort Bragg were 5.7, 1.1, 5.5, and 0.7 million pounds, respectively. The northern California season opened December 1, 1979, but price disputes slowed effort until December 13, when a price of 50¢ per pound was agreed upon. On February 5, 1980, the price jumped to 75¢ and remained at that level the rest of the season. Crab condition at the start of the season was good, and 85% of the season's catch came across the docks by the end of January. Only 46,000 pounds were landed during the season extension from July 16 to August 31. Approximately 380 vessels engaged in the north coast fishery.

San Francisco area landings totalled 633,000 pounds. The 1979-80 season opened on the second Tuesday in November, and price was settled the same day at \$1.05 per pound. In December the price dropped to 60¢ but climbed back to \$1.15 by the end of the season. Only 2,700 pounds were landed during the season extension from July 1 to 31. The season extension excluded the Bodega Bay area where soft and filling crabs were dominant during May and June.

Landings in the Monterey and Morro Bay areas totalled only 11,500 pounds.

The statewide Dungeness crab landings during the 1980-81 season totalled 12.0 million pounds.

In northern California, total landings for Crescent City, Trinidad, Eureka, and Fort Bragg were 6.4, 0.8, 3.3, and 1.0 million pounds, respectively. The season opened December 1, but gear was not set until December 2, when fishermen agreed to 59¢ per pound. Exceptionally good weather and open markets contributed to record landings of 8.2 million pounds during December. The previous high for any monthly

period was 7.3 million pounds landed during December 1977. The price jumped to 75¢ in January, \$1.00 in February, and leveled out at \$1.25 in March. Only 1,600 pounds were landed during the season extension from July 15 to August 31. Approximately 400 boats participated in the fishery.

The central California fishery opened the second Tuesday of November, and fishermen received \$1.10 per pound for crab. The price dropped to 68¢ when the northern California season opened, but reached \$1.30 in February and remained there to the end of the season. Total landings for the San Francisco area were 515,000 pounds. Only 6,000 pounds were landed in the Monterey-Morro Bay areas.

### ***Pelagic Shark and Swordfish***

The number of vessels engaged in the drift gill net fishery for shark grew rapidly in 1980 to 116 from 30-40 the previous year. As a result, total shark landings in southern California climbed from 2.3 million pounds in 1979 to 3.2 million pounds in 1980. Peak shark catches occurred in August and September.

The composition of the catch was 58% thresher shark, 10% swordfish, 3% bonito shark, and 29% blue shark. The blue shark catch prompted most drift gill netters to increase mesh size of their nets: some to as large as 20 inches stretched mesh, from an initial size of only 8 inches. The most popular sizes appear to be 14 and 16 inches.

Harpoon swordfish landings reached 1.2 million pounds in 1980, about one-third higher than the previous 10-year average.

Harpoon success, which is associated with the "finning" behavior of swordfish, was greatest during the months of July through November, with peak success in September.

Gill net swordfish landings occurred somewhat later, with peak success in November. Prior to the drift gill net fishery, it had been assumed that when swordfish were no longer seen "finning," they had left local waters. It now appears that swordfish may remain in local waters in large numbers as much as 2 months longer than was previously believed.

In September 1980 California Assembly Bill 2564 passed, restricting the number of drift gill net permits that could be issued. By the end of the 1981 fishing season 150 vessels had participated in this fishery.

Shark landings declined in 1981. The southern California season total amounted to 1.9 million pounds. The season looked promising in April through June, with a good showing of fish; however, beginning in July catches slowed to the point where most boats discontinued fishing.

Very few fish "finned" for the harpoon fleet in

1981. There were only 2,200 swordfish harpooned during the entire season. If the harpoon fleet's success was the only indicator of seasonal abundance of swordfish in local waters, then one might conclude that few fish migrated into California waters in 1981. However, beginning in September, the drift gill net fleet began catching subsurface swordfish in large numbers. By the end of October swordfish landings by drift gill nets had exceeded the entire season harpoon catch by a factor of two. November, which normally represents the peak in gill net landings, would likely have doubled the catch again, but the Director of the Department of Fish and Game closed the season in response to a quota established by Assembly Bill 2564. This quota is based upon the success of the harpoon fishery and not upon the condition of the swordfish resource.

### ***Southern California Recreational Fishery***

Commercial Passenger Fishing Vessel (CPFV) anglers in southern California enjoyed good fishing for surface species during 1980. Pacific bonito contributed heavily to landings, with over 561,000 taken. The moderately strong 1979 year class made up most of the catch and enabled bonito landings to reach a 5-year high. Fishing for kelp bass and sand bass improved over the previous 5-year average (498,000), with 585,000 landed. Improved sand bass catches were responsible for most of the increase; kelp bass catches remained relatively stable. Pacific mackerel landings continued to increase from a low point of 51,000 in 1976. By year's end, they had reached 1,315,000 because of large landings of 1976 and 1978 year-class fish.

Fishing for albacore improved from the previous year, with 21,000 landed—double the 1979 catch. Albacore catches were depressed because of warm water conditions, the same phenomenon that accounted for good fishing on other surface species.

Catches of two species with low population levels continued to decline. California barracuda landings tumbled to a 4-year low of 28,000 fish. White seabass catches were also depressed, with 1,000 landed. Only 1978 produced fewer fish for CPFV anglers. Rockfish catches also were down in 1980, with 3,300,000 landed, well below the previous year's mean of 3,700,000.

Throughout the year the California Department of Fish and Game, under a contract with the National Marine Fisheries Service, conducted the California segment of the National Marine Fisheries Statistics Survey. The study was designed to estimate catch and effort for ocean anglers. Preliminary estimates of angler effort showed there were between 8.18 and

9.08 million angler-trips in southern California during 1980. Catch data were not available.

Partyboat anglers continued to do well as 1981 turned into a near repeat of 1980. Surface fish were still abundant, and anglers' catches reflected that fact. Most 1981 partyboat data have been processed and are available for analysis, but information for several months is still unprocessed and not available in a usable form. Preliminary data from CPFV showed bonito landings were down 20% from the previous year but were still expected to reach 454,000. Fishing for kelp bass and sand bass improved by 21%, with the catch expected to reach 702,000 fish. The entire increase can be attributed to improved kelp bass landings. Landings of Pacific mackerel declined significantly, with only 1,004,000 fish taken, 21% below the 1980 take. Lack of a strong incoming year class to replace the 1976 and 1978 year classes is responsible for this.

California halibut catches doubled from the previous year, with over 13,000 expected to have been landed. Strict enforcement of the 22" size limit is apparently adding substantially to catches in the fishery. Landings of California barracuda increased dramatically, with the catch projected to reach 77,000 for the year. Increased catches can be attributed to an influx of adult fish from Mexico, because of warm water, rather than to an increase in the local population. White seabass landings also benefited from warm water, with an anticipated 1,600 fish taken, up 60% from the previous year.

Albacore fishing improved slightly, with approximately 22,000 fish landed. The season was short; most fish were taken during July and August. Anglers who sought rockfishes were rewarded with improved catches. The 1981 catch should approach the previous 5-year mean of 3.7 million fish.

Marlin fishing off southern California was exceptionally good during 1981. The season started the earliest on record (June 27) and ran through November. In total, 1,540 marlin were taken, with the month of September producing 790 fish, a normal season's catch under average conditions. Offshore anglers also were rewarded with exceptional bigeye tuna fishing during the summer. Although the number of fish landed was small (approximately 500), their large size (50 to 250 pounds) made most fishermen happy.

*Dennis Bedford  
Steven Crooke  
Tom Jow  
Richard Klingbeil  
Robert Read  
Jerome Spratt  
Ronald Warner*