

which indicates that the large anchovies moved offshore, comes from examination of stomachs of bluefin tuna caught in purse seines between Santa Catalina and San Clemente Islands. These stomachs were gorged with freshly ingested large (7 inch) anchovies.

Therefore it is apparent that the low commercial anchovy catch was due to a lack of demand, and the scarcity of "hook size" anchovies in live bait catches was a result of an offshore movement of the larger fish.

MACKEREL

Commercial landings of Pacific mackerel during the 1959-60 season rose to 21,000 tons from 12,000 tons in 1958-59, while the jack mackerel catch of 33,000 tons tripled that of the previous year.

The higher price paid for both species of mackerel in 1959 (\$50.00 per ton compared with \$35.00 per ton for sardines) reflected a better market, and undoubtedly contributed to the increased mackerel catches in 1959-60, augmented by the scarcity of sardines causing more fishing effort to be directed toward the higher priced mackerel.

Pacific mackerel less than one-year-old dominated the catch with fair numbers of one- and two-year-olds, also present.

TABLE 4

ANNUAL COMMERCIAL LANDINGS IN TONS OF THE PELAGIC WET FISH IN CALIFORNIA FROM 1926 THROUGH 1959

Year	Sardines	Anchovies	Pacific Mackerel	Jack Mackerel	Herring	Squid	Total
1926	143,371	30	1,805	118	227	1,568	147,119
1927	171,138	184	2,364	231	584	3,007	177,508
1928	210,135	179	17,626	269	570	676	229,455
1929	325,886	191	28,987	349	479	2,330	358,222
1930	251,031	160	8,266	184	359	5,485	265,485
1931	182,176	154	7,127	282	343	869	190,951
1932	211,305	150	6,237	268	383	2,115	220,458
1933	313,199	159	34,807	505	301	412	349,383
1934	559,966	129	56,924	791	401	765	618,976
1935	547,879	90	73,214	4,992	464	408	627,047
1936	731,772	98	50,271	2,300	420	473	785,334
1937	535,745	113	30,468	3,270	316	251	570,163
1938	511,695	368	39,924	2,067	252	800	555,106
1939	580,397	1,074	40,455	1,880	151	581	624,538
1940	452,987	3,159	60,252	716	227	900	518,241
1941	631,240	2,053	39,084	1,034	395	716	674,522
1942	484,874	847	26,277	2,674	95	476	515,239
1943	486,135	785	37,607	6,350	315	4,582	535,774
1944	573,604	1,946	41,828	6,388	211	5,468	629,445
1945	422,531	808	26,858	4,516	230	7,613	462,556
1946	255,380	961	26,938	7,547	241	19,012	310,079
1947	127,757	9,470	23,239	64,524	827	7,271	233,088
1948	181,018	5,418	19,693	36,449	4,001	9,628	256,207
1949	316,690	1,661	24,886	25,625	190	3,430	372,482
1950	357,261	2,439	16,325	66,628	713	2,998	446,364
1951	164,450	3,477	16,759	44,919	2,462	6,191	238,258
1952	7,165	27,891	10,302	73,261	4,748	1,836	125,203
1953	4,734	42,918	3,751	27,875	3,901	4,459	87,638
1954	68,252	21,205	12,696	8,667	456	4,078	115,354
1955	72,804	22,346	11,655	17,877	973	7,136	132,791
1956	34,777	28,460	25,006	37,881	868	9,742	136,734
1957	22,931	20,274	31,022	41,006	594	6,225	122,052
1958	103,723	5,801	13,824	11,033	1,200	3,729	139,310
1959*	37,183	3,587	18,801	18,754	864	9,826	89,015

* Preliminary estimate.

PUBLICATIONS

1 July 1959 - 30 June 1960

Ahlstrom, E. H., 1959. Vertical distribution of pelagic fish eggs and larvae off California and Baja California, *U.S. Fish and Wildlife Service, Fishery Bulletin 161*, 60: 107-146.

Vertical distribution of 46 kinds of pelagic fish larvae and 8 kinds of eggs are discussed. Most fish eggs and larvae were found to occur in the upper mixed layer and the upper part of the thermocline, between the surface and approximately 125 meters deep. All the more common kinds of larvae showed marked differences in vertical distribution from series to series. Information is given on differences between day and night catches.

Ahlstrom, E. H., 1959. Distribution and abundance of eggs of the Pacific sardine, 1952-1956. *U.S. Fish and Wildlife Service, Fishery Bulletin 165*, 60: 185-213.

During the period covered, a major change occurred in the distribution of sardine spawning. In 1952 and 1953 sardine spawning was mostly confined to the waters off central Baja California. In 1954, sardine spawning spread northward to waters off southern California, and this distribution has continued through 1955 and 1956. Estimates of total eggs spawned during these years ranged from 136×10^{12} to 436×10^{12} .

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