

COMMERCIAL FISH CATCHES

The fishing industry exerts one of man's greatest selective pressures on the larger marine organisms of the Southern California Bight. In 1975, the commercial fishing industry removed 178,040 metric tons of fish from the Bight. This represents 6.5 percent of the United States catch (2,798,703 metric tons). Although commercial fisheries statistics are compiled yearly for California and for sub-regions within the state, summaries of temporal and regional trends in southern California fisheries are seldom published. Here we update our previous summarization of these data and identify recent trends in the southern California commercial fish and shellfish catches. (Trends in sport-fishing catches are described in another article in this report.)

Annual yields of commercially caught fish and shellfish have shown a 50 percent decrease since 1953 as a result of the collapse of the sardine fishery. However, excluding data on the sardine, commercial yields are showing a moderate yearly increase; in fact, the 1975 catch of species other than sardine is the largest on record. Pelagic wetfish (small schooling species) compose the greatest proportion, by weight, of the southern California catch; most of this catch is taken from the San Pedro Channel. Although Heimann and Carlisle (1970), Frey (1971), and others have published summaries of statewide trends, there have been few statistical examinations of trends in southern California fisheries. Our previous data summaries (Coastal Water Research Project 1973) showed a decrease in commercial landings in Los Angeles as a result of the demise of the sardine fishery and noted the emphasis on pelagic species in southern California and bottom species in northern California. Horn (1974) noted the relative importance of the pelagic wetfish and tuna fishing interests in the Bight—most of the pelagic wetfish industry's catch is taken from the Bight, whereas most of the southern California tuna industry's catch is taken outside of the Bight.

The landings statistics used in this study were compiled and summarized from two sources of California Department of Fish and Game data:

- The *Fish Bulletin* (1930-1974), which contains tabular summaries of regional monthly catches for each year.
- Unpublished data on the monthly catch in each of 217 statistical blocks (most of which are 10 minutes latitude by 10 minutes longitude) in the Bight. The unpublished 1975 data was supplied by Leo Pinkas, California Department of Fish and Game. The original source of these data are delivery receipts given to the fisherman by fish dealers and processors; these receipts include the weight of each species and the price paid to the fisherman.

We have summarized temporal trends in total fish and shell-fish catch from 1930 to 1975 and distributional trends in top-ranking species or species groups for the years 1969 to 1973.

Between 1930 and 1975, the commercial fishing industry removed 6.9 million metric tons of fish and shellfish from southern California waters: For comparison, China recently had the same catch in a single year (1975), when its fishing industry ranked third in the world (Fishing News International 1977). Southern California catches during this 46-year period have ranged from a high of 368,067 metric tons in 1950 to a low of 55,407 metric tons in 1965 (Figure 1). Los Angeles fisheries have harvested a yearly average of 84.3 percent of the commercial catch in the Bight during this time, and Santa Barbara and San Diego have averaged 11.1 and 4.5 percent, respectively.

Southern California catches and those at Los Angeles have shown a step-wise decrease with the end of the fishery for the Pacific sardine (*Sardinops sagax*) in 1952 (Figure 1); average yearly catches in the Bight and in the Los Angeles subregion from 1952 to 1975 are 52.2 and 46.3 percent, respectively, of the average catches from 1930 to 1951. Excluding the sardine, however, fishery yields have been increasing at a rate of 1,200 metric tons per year (Figure 2); in fact, the highest catch on record was taken in 1975 (the most recent year for which we have data).

The pelagic wetfish fishery is the major fishery in southern California waters. Four species, the Pacific sardine, northern anchovy (*Engraulis mordax*), Pacific (or chub) mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*), have accounted for an average of 80.7 percent of the catch per year from southern California waters since 1930; in fact, from 1930 to 1951, the Pacific sardine alone accounted for an average of 66.9 percent of each year's catch. The fishery shifted to jack mackerel when the sardine fishery collapsed and, since 1969, to northern anchovy. Northern anchovy catches have increased at a rate of 11,297 metric tons per year since 1965, when the California Fish and Game Commission authorized an increased yearly harvest for reduction purposes (Frey 1971); in 1975, the northern anchovy accounted for 77.1 percent of the southern California catch. At present, there is a moratorium on fishing for Pacific sardine and Pacific mackerel because of a long-term decrease in the catch of these species.

Most of the fish and shellfish catch (by weight) is taken in San Pedro Channel, although Santa Barbara Channel and Cortes Bank make substantial contributions to the total catch (Figure 3). In 1973, seventeen statistical block areas in San Pedro Channel (representing about 4,700 sq km of surface area) yielded 72.9 percent of the catch; four of these blocks (representing 1,100 sq km of surface area) yielded 44.5 percent of the catch.

High and low yields are of course in part dependent upon the amount of fishing effort applied to a given area. As the data available does not include information on fishing effort other than numbers of licensed fishermen, the catch data presented here do not necessarily reflect the actual size of commercially important fish and shellfish populations in the Bight. (Most estimates of standing crops of pelagic fishes are based upon abundance of

their eggs and larvae in the California current.) The data on the catch of Pacific sardine before the 1967 moratorium, nevertheless, do reflect a real decrease in sardine abundance in the Bight. However, large-scale fluctuations in the abundance of this species have occurred in southern California for at least 2,000 years (Soutar and Isaacs 1969, 1974).

We thank Leo Pinkas of the California Department of Fish and Game and Thomas Petrich of Southern California Edison Company for providing access to the commercial fish and shellfish landings data. A more detailed summary of these data will be assembled in a Coastal Water Research Project technical memorandum.

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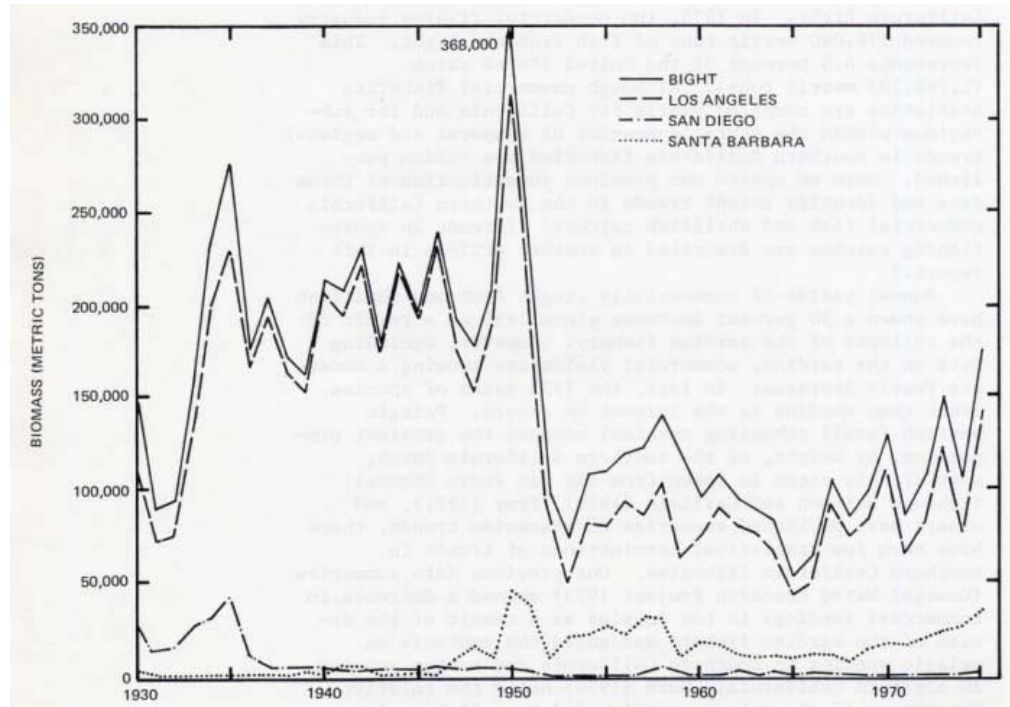


Figure 1. Total biomass of fish landed by the commercial fishing industry in southern California from 1930 to 1975.

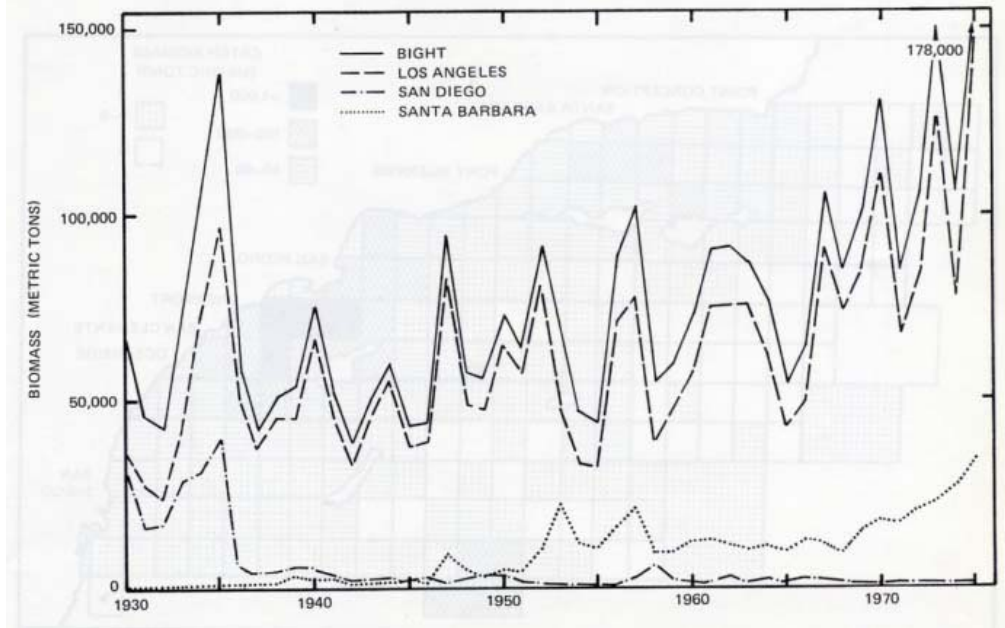


Figure 2. Total biomass of fish and shellfish excluding the Pacific (*Sardinops sagax*) landed by the commercial fishing industry in southern California from 1930 to 1975.

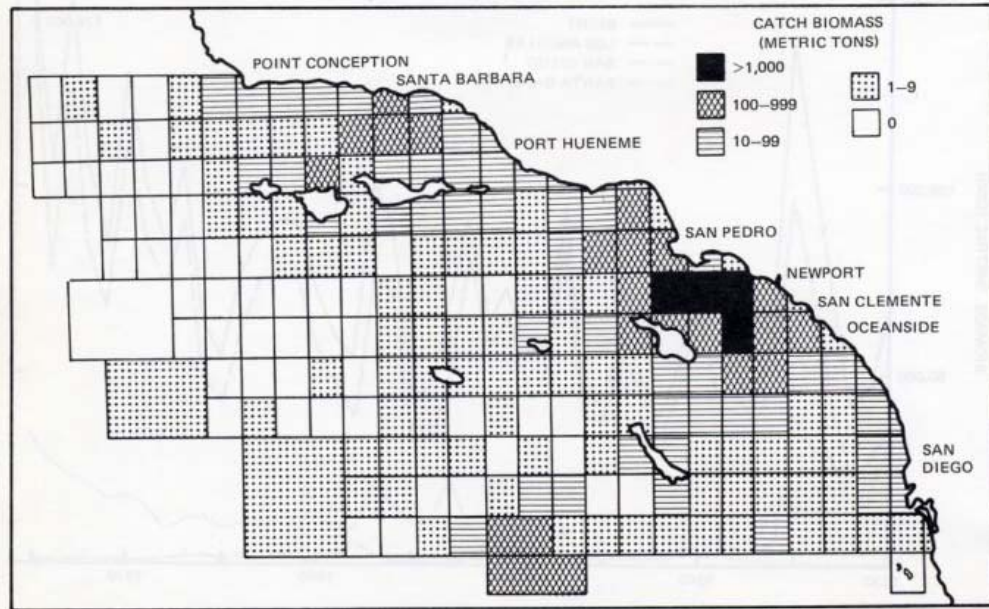


Figure 3. Distribution of commercial fish and shellfish catch in southern California in 1973.