

# Pacific Northern Bluefin Tuna

## History of the Fishery

Fishing for Pacific northern bluefin tuna (*Thunnus orientalis*) began in California as a sport in 1898. Prior to World War I, many large fish were taken, particularly by vessels based at Santa Catalina Island. The largest of these fish weighed 251 pounds. More recently, the average size of the sport-caught fish has been roughly 50 pounds, although large fish are still taken. A large portion of the sport-caught fish is taken by fishermen who are directing their efforts primarily toward albacore.

The commercial fishery for Pacific northern bluefin began in 1918. Since bluefin are rarely caught by the troll, bait boat, or gillnet fisheries, the catches by purse seiners have far exceeded those by any other type of gear. From 1918 until about 1960, most of the vessels were relatively small, with fish-carrying capacities less than about 200 short tons. None of them fished exclusively for bluefin. The smaller ones, sometimes referred to as wetfish vessels, fished chiefly for sardines, mackerel, and pelagic fish other than tropical tunas, and the larger ones fished mostly for yellowfin and skipjack. During 1959 and 1960, most of the larger tuna bait boats were converted to purse seiners and, during the ensuing years, many new purse seiners were built. During the 1960s, 1970s, 1980s, and 1990s, many of the smaller, older vessels sank or dropped out of the fishery, and the new vessels that replaced them tended to be larger. As a result, there are now more large purse seiners and fewer small ones than there were during the early 1960s.

Bluefin are now taken by vessels of all sizes, but the smaller ones (capacities less than about 400 tons) account for a proportionally larger share of the catch. The proportion of the bluefin catch made by the wetfish fleet is less now than it was during the early years of the fishery because there are now fewer wetfish vessels and because many of the fish are intercepted by larger vessels fishing off Baja California before they reach the area where these vessels normally fish. Most of the fish caught by purse seiners weigh less than 50 pounds, but larger ones have sometimes been caught, including one weighing 1,009 pounds.

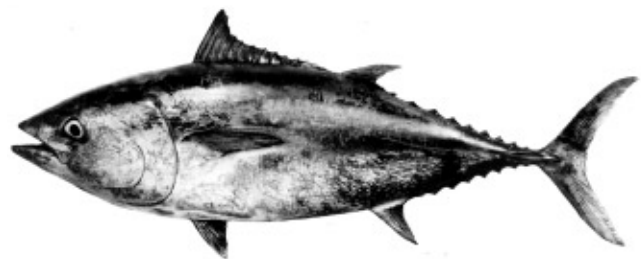
Most of the information regarding distribution of the catches of Pacific northern bluefin by tuna purse seiners has been obtained from the logbook records of these vessels. Bluefin are rarely encountered south of Cabo San Lucas, Baja California, or north of Point Conception, California. Within this area, a considerable change has taken place during the 20th century. Until 1930, fishing was conducted only off California. During that year, bluefin were

discovered off Isla Guadalupe, Baja California, and about 40 percent of the catch was made in that area. From 1930 through 1947, fishing was conducted off California and Baja California, but in most years the majority of the catch came from off California. From 1948 to the present, however, most of the catch has been made off Baja California. The average annual catches made off California during the 1960s, 1970s, 1980s and 1990s have been considerably less than the average annual catches made in the same area from 1918 to 1929.

From January through April, there are typically only light and sporadic catches. Most of these are made off the coast of Baja California between 24° N and 26° N and in the vicinity of Isla Guadalupe. In May and June, the catches increase, and most of them are made between 24° N and 27° N. In July, the fishing area expands to the north and is at its broadest distribution of the year; most of the catch is made between 25° N and 33° N. In August, there are usually only light catches at the southern end of the fishing area, most of the catch is being made between 28° N and 33° N. In September, most of the catch is made in the same area as in August, but the amount of catch is usually considerably less. In October, the catches continue to decline, and most of them are made north of 30° N. In November and December, as in the first months of the year, the catches are light and sporadic.

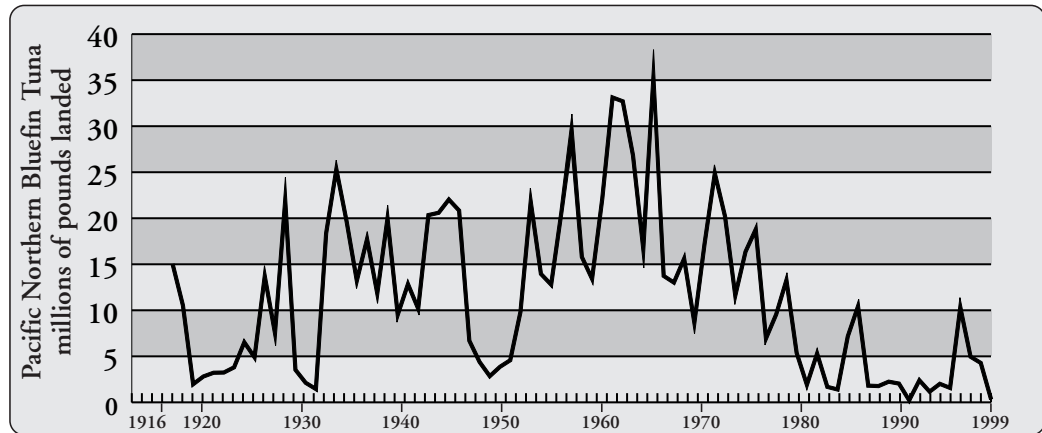
Small amounts of Pacific northern bluefin are caught off the California coast by drift gillnets and further offshore by longline vessels. Extremely large bluefin are caught in some years off southern California, principally during November and December. Nearly 1,000 such fish were caught during the period between October 31, 1988, and January 3, 1989. Most of these were flown to Japan, where they brought high prices.

The total annual catches of Pacific northern bluefin by commercial and sport vessels in the eastern Pacific Ocean, prior to 1918, were negligible. The data for 1918 through 1960 include only the catches landed in California, but it is believed that the catches landed elsewhere, prior



Pacific Northern Bluefin Tuna, *Thunnus orientalis*  
Credit: DFG

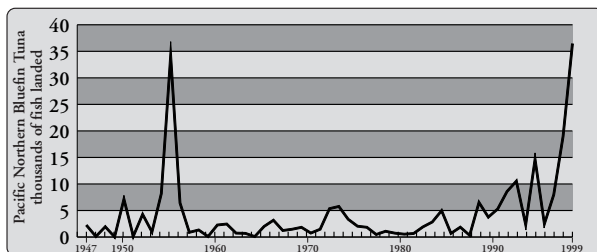
**Commercial Landings  
1916-1999,  
Pacific Northern Bluefin Tuna**  
Data Source: DFG Catch Bulletins  
and commercial landing receipts.  
Data includes shipments and  
landings from areas north and  
south of the state between 1916  
and 1969.



to 1961, were inconsequential. The catches tended to be greater during the 1960s and 1970s than during the previous period, probably because of the conversion during 1959 and 1960 of most of the tuna bait boats to purse seiners, and the addition of many new purse seiners to the fleet.

### Status of Biological Knowledge

Spawning of Pacific northern bluefin occurs between Japan and the Philippines in April, May, and June, off southern Honshu in July, and in the Sea of Japan in August. The larvae, postlarvae, and juveniles produced south of Japan are carried northward by the Kuroshio Current toward Japan. Fish in their first year of life, about six to 24 inches in length, are caught in the vicinity of Japan during the summer, fall, and winter. The results of tagging experiments indicate that some of these remain in the western Pacific Ocean and others depart for the eastern Pacific during the fall or winter of their first year of life or the summer, fall, or winter of their second year of life. The journey from the western to the eastern Pacific takes as little as two months, or perhaps even less. The fish that migrate from the western to the eastern Pacific form the basis for the fishery in the eastern Pacific.



**Recreational Catch 1947-1999 , Pacific Northern Bluefin Tuna**  
Data Source: DFG, commercial passenger fishing vessel (CPFV) logbooks.

Most of the fish caught are in their second or third year of life, but some older, larger fish are also taken. After a sojourn in the eastern Pacific, which may or may not be interrupted by temporary visits to the central or western Pacific, the survivors return to the western Pacific, where they eventually spawn. Spawning probably first occurs at about five or six years of age.

The approximate lengths and weights attained by Pacific northern bluefin at various ages are: age one, 23 inches and 10 pounds; age two, 33 inches and 28 pounds; age three, 43 inches and 60 pounds; age four, 53 inches and 109 pounds; and age five, 63 inches and 177 pounds.

Pacific northern bluefin consume many species of fish and invertebrates in the eastern Pacific, including anchovies, red crabs, sauries, squid, and hake. Red crabs are a significant part of the diet only south of 29° N. "Boiling" and jumping schools of fish are much more common north of that latitude, where fish are the principal item of the diet. The differences in behavior in the two areas could be due to differences in the food, i.e., filter feeding might be employed for feeding on red crabs, while pursuit of individual fish would be required for feeding on fish. Japanese scientists have reported that bluefin are heavily dependent upon sardines for food in the western Pacific. Albacore, yellowtail, barracuda, and mackerel compete with bluefin for food in the eastern Pacific.

### Status of the Population

The catches of Pacific northern bluefin in the eastern Pacific have been less, on average, during the 1980s and 1990s than during the 1960s and 1970s. Catch data, length-frequency data, and data on fish tagged in the western Pacific and recaptured in the eastern Pacific suggest that this decline is due to a decrease in the avail-

ability of bluefin in the eastern Pacific (i.e., a decrease in the proportion of the population which has migrated to the eastern Pacific) and a decrease in the number of boats which direct their effort at bluefin.

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## References

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