

Kelp Greenling

History of the Fishery

Kelp greenling (*Hexagrammos decagrammus*) are fished primarily for sport. The commercial fishery has historically been based largely on catch incidental to the lingcod or nearshore rockfish fisheries, although their importance in the commercial catch has increased since 1997 with the emergence of a nearshore "live" fish fishery. Because of their abundance in nearshore rocky areas, they are frequently caught by people fishing from shore or small boats and are a common target for spear fishermen underwater. Sport fishing surveys made from 1958 to 1961 showed that kelp greenling were the most frequent catch of shore fishermen north of San Francisco, where in some areas they made up more than 30 percent of the total catch. In California, during those years, an average of 54,000 kelp greenling were caught by hook-and-line fishermen and another 2,000 by spear fishermen. In later surveys conducted from 1980 to 1999, the estimated sport catch averaged 106,650 fish per year, with 103,000 of those taken between Monterey County and the Oregon border. It should be noted that the two sport fishing surveys used different sampling designs, so results may not be comparable. By comparison, the commercial catch reported from 1981 to 1999 averaged about 8,500 fish per year. This average is somewhat exaggerated by exceptionally large numbers of fish landed commercially in recent years by the nearshore live fish fishery mentioned above. From 1981 to 1996 average commercial catch was only around 5,500 fish per year, while from 1997 to 1999 that average increased to 27,400 fish per year. Until recently most of these fish were sold in the fresh-fish market, although now many are sold live to restaurants. Though fillets from kelp greenling are not as large as those from their more popular relative, the lingcod, texture and taste are comparable.

Status of Biological Knowledge

Kelp greenling range from San Diego to the Aleutian Islands, but are common only north of Morro Bay. Here they are one of the most conspicuous fishes in rocky nearshore habitats occurring often in and around kelp beds. The male and female look so different that they were first described as separate species. The body color is variable in both sexes, ranging from light gray to brown. Males, however, have large irregular blue patches anteriorly, while females are uniformly covered with smaller dark spots.

These solitary fish are common at depths between 10 and 60 feet, and range down to 150 feet. Sport catches indicate that larger fish live in deeper water. For example, fish caught at 80 to 100 feet range from 12 to 18 inches

long while those caught at 20 to 40 feet tend to be eight to 13 inches long. Kelp greenling grow faster than most nearshore fishes during their first three years. After the third year, growth slows, especially in males (as it does in lingcod), so that by the fifth or sixth year males are smaller than females. The maximum reported age and size is 16 years and 21 inches. At age three, males average 10.6 inches and females 9.1 inches. By age five, the males average 12.6 inches while females are 14.7 inches. Ten-year-olds average 15.5 and 16.4 inches, respectively. These data are from Puget Sound, Washington.

The reproductive behavior of greenling is similar to that of the lingcod. Females are mature by their fourth year and spawn adhesive egg masses on the sea bed and encrusting biota within the territories of courting males. In Puget Sound, females deposit egg masses that range from golf-ball to tennis-ball size, with an average of about 4,000 eggs per cluster. Females are batch spawners, capable of producing multiple clutches of eggs per spawning season. Males fertilize the eggs and guard the nests until larvae about one third of an inch long emerge four to five weeks later. Often, males guard more than one egg mass at a time, each possibly produced by a different female. Studies done in British Columbia and California showed some nests did contain egg masses from multiple females. Hatching occurs from December through February in northern California and gets progressively earlier to the north, November through January in Puget Sound and August through September in Alaska. Larvae and early juveniles feed on small copepods and spend about one year in the pelagic environment before entering the nearshore benthic community.

After they settle in the nearshore environment, kelp greenling have flexible food habits. During most of the year, they consume a variety of prey that are consistently available in the habitat, including crabs, amphipods, polychaetes and ascidians. There are brief periods when organisms such as juvenile fishes or herring spawn become exceptionally abundant, and kelp greenling shift their food habits to take advantage of these opportunities.



Kelp Greenling, *Hexagrammos decagrammus*
Credit: DFG

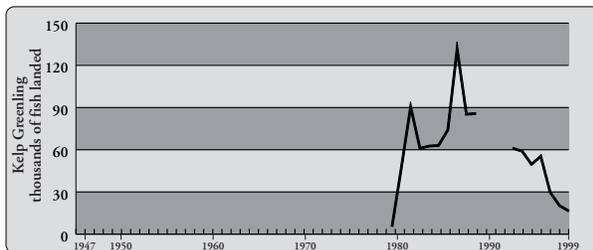
The primary predators of adult greenling are lingcod and harbor seals. As juveniles they are probably prey to many nearshore predators.

Status of the Population

There are no estimates of abundance for kelp greenling in California. The yearly sport catch remained relatively constant during the first ten years (1980-1989) it was surveyed, but has declined steadily from 1993 to 1999. Since decline in catch is one symptom of overfishing, this may be an indication that current levels of fishing are having adverse effects on the population, although no population data are available at present to confirm this. Spear fishermen could overfish local populations, however, because they can select individual targets, and greenling are particularly vulnerable to spears when guarding their nests. Also, although commercial catch has been traditionally very low compared to recreational catch, the increased fishing pressure in recent years by the nearshore live fish fishery could have a much broader impact on the kelp greenling population in California.

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Recreational Catch 1947-1999, Kelp Greenling
Data Source: RecFin data base for all gear types; data not available for 1990-1992

References

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