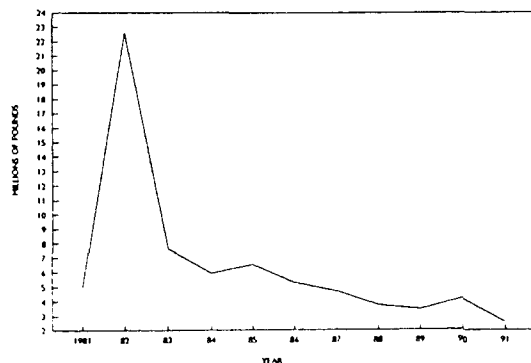


WIDOW ROCKFISH

History of the Fishery

The widow rockfish (*Sebastes entomelas*) is one of the top three species in commercial landings of rockfish in California and is a minor component of recreational landings. Although there were reports of occasional large trawl catches made incidental to fishing for other species, commercial landings were minor until markets improved in 1979 and midwater trawl fishing began. At this time, fishermen began targeting on the species, and California landings exceeded 10,000 tons by 1982. Since 1983, strict regulations have limited commercial landings. Recent landings are about 1,500 tons. Annual landings are restrained by a quota that applies to the fisheries of California, Oregon and Washington. Trip landings and frequency are also regulated in order to maintain a long open season. Widow rockfish comprise about 60 percent of the commercial rockfish landings in Eureka, 35 percent in Crescent City, and 25 percent in Bodega Bay; they occur as smaller proportions of landings as far south as Santa Barbara. Most widow rockfish are filleted and marketed as Pacific red snapper or rockcod. The landed value approach \$1,000,000 in 1989. Widow rockfish are mostly caught by trawlers. Before the advent of restrictive trip landing limits, most of the fish were caught with large midwater trawls. It can be difficult to avoid capturing more widow rockfish in a single tow with a midwater trawl than trip limits allow, and many vessels are now using only the less efficient bottom trawls. Widow rockfish are also captured with gill nets and longlines.



California commercial landings of widow rockfish, 1981-1991.

Status of Biological Knowledge

Widow rockfish are found from Todos Santos Bay, Baja California, to Kodiak Island, Alaska. Peak abundance is off northern Oregon and southern Washington, with significant aggregations occurring south to central California. While many commercial catches occur at bottom depths between 450 and 750 feet, young fish occur near the surface in shallow waters, and adults have been caught over bottom depths to 1,200 feet. Widow rockfish often form midwater schools, usually at night, over bottom features such as ridges or large mounds near the shelf break. The schooling behavior of widow rockfish is quite

dynamic and probably related to feeding and oceanographic conditions. There appears to be some seasonal movement of fish among adjacent grounds, and there is evidence that fish move from area to area as they age, with fish of the same size staying together.



Widow rockfish, *Sebastes entomelas*.

The maximum recorded age for widow rockfish is 59 years, but fish older than 30 years are uncommon. Most are less than 21 inches in length, which corresponds to a weight of about 4.7 pounds. The maximum size is 24 inches or about 7.3 pounds. At first, growth is fairly rapid and by age five widow rockfish average 13.4 inches. By age 15 growth has slowed, and the average size is 18.7 inches for females and 17.6 inches for males. About 50 percent of widow rockfish are mature by age five, and almost all are mature by age eight when they are 16.6 inches. Off California, fecundity ranged from 55,600 eggs for a 12.8-inch female to 915,200 eggs for a 18.8-inch fish. The release of larvae by widow rockfish peaks in January-February and appears to occur in the same areas where they are caught during that season. The larvae are about 0.2 inch when released. The young fish lead a pelagic existence until they are about five months old. During the latter part of the pelagic stage, the two-inch fish feed mostly on copepods and small stages of euphausiids. Adult widow rockfish feed on midwater prey such as lantern fish, small Pacific whiting, euphausiids, sergestid (deep water) shrimp, and salps. Juvenile rockfish, including widow rockfish, are important prey items for sea birds and chinook salmon in May and June. Little is known about predation on adult widow rockfish.

Status of Population

The population was virtually unfished prior to 1979. By 1982, it became obvious that the population was being rapidly fished down and would soon be overfished, if catches were not restricted. The fishery was placed under stringent regulations in 1983. The population is now estimated to be at about the level chosen by management to maintain a viable spawning stock. The 1991 quota is 7,700 tons for the combined landings of California, Oregon and Washington. While the annual quota is likely to change as weak or strong year classes pass through the fishable stock, the long-term average is expected to be at about the 1991 level.

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