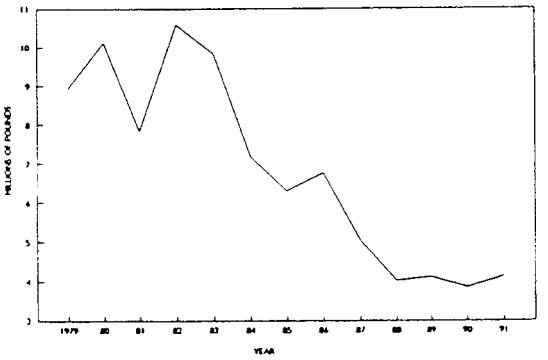
BOCACCIO

History of the Fishery

Bocaccio (*Sebastes paucispinis*), sometimes called red snapper, rockcod, grouper, salmon grouper, or tomcod (as juveniles), was the dominant rockfish in California's early longline fishery. It was the most abundant rockfish in the otter trawl fishery from Morro Bay to Fort Bragg until the mid-1980's. By 1989 two-thirds of the bocaccio landed were taken by otter trawl, with the remainder being taken by set net, longline, and the recreational fishery.

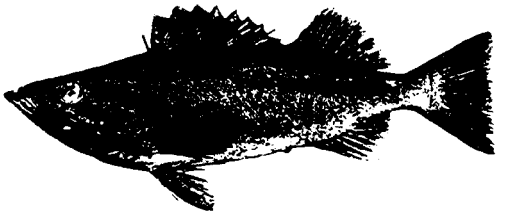
Accurate estimation of commercial bocaccio landings began in 1978. In the late 1970's, trawl landings averaged approximately four million pounds per year. Landings increased sharply, peaking in 1981 at about 10 million pounds, then gradually fell to about eight million pounds in 1984. Landings plummeted to near 2.5 million pounds by 1985 and have remained near this lower level. In 1978, nearly 40 percent of the sampled trawl landings contained half or more by weight bocaccio, but by 1990 less than 15 percent did. Since 1985, chilipepper has replaced bocaccio as the dominant rockfish in trawl landings.



California commercial landings of the bocaccio-chilipepper rockfish group, 1979-1991.

Recreational catches of bocaccio are generally made on rocky reefs by partyboat fishermen at depths of 250 to 750 feet. In some years, however, juveniles concentrate in shallow sandy areas near piers off central and southern California, where they are easily taken on small baited hooks. Estimated catches for the recreational fishery are available from 1980 onward and averaged 27 percent of the trawl landings over the same period. Recreational catches since 1984 have showed the same decline as the trawl fishery. In general, the recent recreational catches have been greater in southern California than in northern California.

Since 1982, bocaccio have been managed under the Groundfish Management Plan of the Pacific Fishery Management Council. In response to concerns about stock condition, the Council established for the first time, a harvest guideline of 2.4 million pounds for 1991.



Bocaccio rockfish, *Sebastes paucispinis*.

Status of Biological Knowledge

Bocaccio range from central Baja California to Kodiak Island, Alaska and are common from northern Baja California to the Washington-British Columbia border. Migration and movements of bocaccio are not understood.

Among rockfishes, bocaccio are noted for their relatively rapid growth, large adult size, and high variation in year-class strength. They are known to attain a length of 36 inches, a weight of 15 pounds, and a maximum age of about 50 years. Some fast growing individuals are caught with trawl gear at age one, and substantial numbers are landed by age two at lengths of about 16 inches.

Bocaccio are live-bearing fish. At extrusion (release), larvae are about 0.25 inch in length and absorb yolk from the egg stage during the first eight to 12 days. They grow rapidly to about seven inches by the end of their first year. A few mature when they are three years old, about 14 inches long and one pound. Fifty percent are mature at 16.5 inches and four years. Males mature at a slightly smaller size than females. By the time they are 10 years old, they average over 24 inches and weigh five pounds. The number of developing eggs increases from 20,000 in a 15-inch fish to about 2.3 million in a fish 30.5 inches long.

Off central and northern California, larval release occurs from January through May, peaking in February. In southern California spawning takes place from October through July, peaking in January. In central California, most larvae that survive to the juvenile stage are born in January and February, but months of successful reproduction can shift substantially from year to year. In southern California, some females produce as many as three broods in a season, but multiple brooding is uncommon farther north.

Larval bocaccio are initially pelagic and are most common within 100 feet of the sea surface, where they feed on plankton. Larval bocaccio have been captured in plankton nets as far as 300 miles from shore. By late May or early June, they settle to the bottom at lengths of 1.5 to 2.5 inches, often in kelp beds. Before completing their first year of life, these fast growing young of the year start eating the young of other rockfishes, surfperch, jack mackerel, and various small inshore fishes. Adults are found from depths of 60 to 1550 feet. They feed on smaller rockfishes, sablefish, anchovies, lanternfish, and squid.

Status of Population

During the past decade bocaccio landings have been dominated by the 1977 and 1984 year classes. As a consequence of the high variability in year-class strength, the size and age structure of the population fluctuates greatly over time. It appears that recruitment in the late 1960's and early to mid-1970's was, on average, substantially higher than average recruitment over the 1978-1989 period.

Stock analyses, using fishery age-composition data, recreational effort data, and trawl survey data, strongly indicate that biomass and spawning stock size have declined substantially over the 1978-1989 period. Estimated biomass has fallen from about 150 million pounds in 1978 to approximately 20 million in 1989. The recommended yield for all fisheries combined ranged from 1.6 million to 3.4 million pounds compared to 1989 landings of 2.6 million pounds.

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References

Bence, J.R. and J.E. Hightower. 1990. Status of bocaccio in the Conception/Monterey/Eureka INPFC areas in 1990. Appendix J.

In Status of the Pacific Coast groundfish fishery through 1990 and recommended acceptable biological catches for 1991. Pacific Fishery Management Council, Metro Center, Suite 420, 2000 SW First Avenue, Portland, OR 97201.

Moser, H.G. 1967. Reproduction and development of *Sebastodes paucispinis* and comparison with other rockfishes off southern California. Copeia. 1967:773-797.

Wilkins, M.E. 1980. Size composition, age composition, and growth of chilipepper, *Sebastes goodei*, and bocaccio, *S. paucispinis*, from the 1977 rockfish survey. Mar. Fish. Rev. 42:48-58.