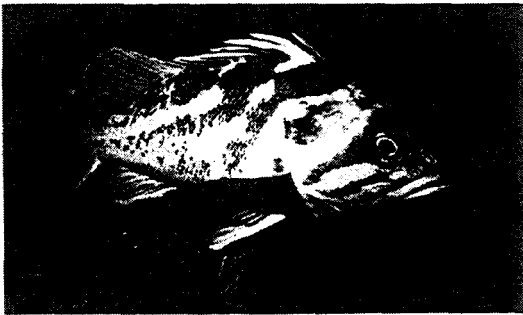


COPPER ROCKFISH

History of the Fishery

Copper rockfish (*Sebastes caurinus*) occur only sporadically in California commercial catch records. Commercial landings of copper rockfish are small and often included in the category of "other rockfish"; however, three-month landings of over 14,000 pounds have been recorded from Eureka. Although currently there are no significant commercial landings of copper rockfish in the United States, they were reported as the most commonly caught fish in otter trawls in Puget Sound in the 1930's.

Copper rockfish are a small, consistent portion of the statewide recreation catch of rockfish, averaging from two to three percent. The catch has no apparent trend and ranges from a high of over 500,000 fish in 1980 to 238,000 fish in 1986. Approximately two-thirds of the California recreational caught copper rockfish are taken from Monterey south versus one-third from north of Monterey. Copper rockfish are a major component of the recreational fishery further north, particularly in the Puget Sound-British Columbia area.



Copper rockfish, *Sebastes caurinus*.

Status of Biological Knowledge

The copper rockfish and the whitebelly rockfish (*S. vexillaris*) are virtually identical in appearance, except that the whitebelly rockfish tends to be more reddish. The meristics of the two species are the same, but there are chromosomal differences. Both are shallow water species usually found in rocky areas, but may be found as deep as 600 feet. Very limited tagging indicates that adult copper rockfish are strongly residential. The copper rockfish ranges from the Kenai Peninsula, Gulf of Alaska, to Monterey, and the whitebelly rockfish from Crescent City to San Benito Islands, Baja California.

Male copper rockfish begin maturing at three years old when they are about 12 inches; one-half are mature at four years old or 13 inches; and all are mature by seven years old or 16

inches. Females begin maturing at five years old or about 12 inches; one-half are mature at six years old or 13 inches; and all are mature by eight years old or 16 inches. A 13-inch female will have approximately 97,000 eggs, a 16-inch female 245,000 eggs, and a 20-inch female 654,000 eggs. The oldest copper rockfish found to date is 35 years old and is from Canadian waters.

In California, larvae are released from the female in February, but, in Washington and British Columbia, they are released in March and April. These fish remain as pelagic larvae and juveniles in offshore waters until May. From late May until July, juvenile copper rockfish first appear in kelp habitats high up in the water column, and later migrate to the bottom. As they grow, copper rockfish move into more typical adult rocky reef habitats.

Adult copper rockfish feed primarily on crabs and fish. Studies in Humboldt Bay found juvenile Dungeness crab to be a major part of their diet. Copper rockfish feed on small fish such as herring, anchovies, blennies, and small surfperch, but also on occasion have eaten spiny dogfish. Juvenile copper rockfish feed on calanoid copepods, caridean shrimp, and gammarid amphipods.

Like other rockfish, coppers are most vulnerable to predation as larvae and juveniles. During these stages, they are prey to salmon, lingcod, other rockfish, marine mammals and birds. As they grow older and larger, they are susceptible only to occasional predation by lingcod or marine mammals.

Status of Population

Although there are no population or mortality estimates for copper rockfish, there is no indication that stocks of this species are overfished in California waters. In the Gulf of Alaska and British Columbia, copper rockfish are the target of an expanding hook and line commercial fishery, and this fishery is having a significant impact on those stocks. If such a fishery were to develop in California waters, this species would require monitoring.

Peter B. Adams
National Marine Fisheries Service

References

- Halderson, L., and L. J. Richards. 1987. Post-larval copper rockfish in the Strait of Georgia: Habitat use, feeding, and growth in the first year. In: Melteff, B. R. (ed.), *Proceedings of the International Rockfish Symposium*, p. 129-141. Alaska Sea Grant Report 87-2.
- Patten, B. G. 1975. Biological information on copper rockfish in Puget Sound, Washington. *Trans. Amer. Fish Soc.* 102(2):412-416.
- Prince, E. D., and D. W. Gotshall. 1976. Food of copper rockfish, *Sebastes caurinus* Richardson, associated with an artificial reef in south Humboldt Bay, California. *Calif. Fish Game* 42(4):274-285.
- Richards, L. J., and A. J. Cass. 1987. The British Columbia inshore rockfish fishery: Stock assessment and fleet dynamics of an unrestricted fishery. In: Melteff, B. R. (ed.), *Proceedings of the International Rockfish Symposium*, p. 299-308. Alaska Sea Grant Report no 87-2.