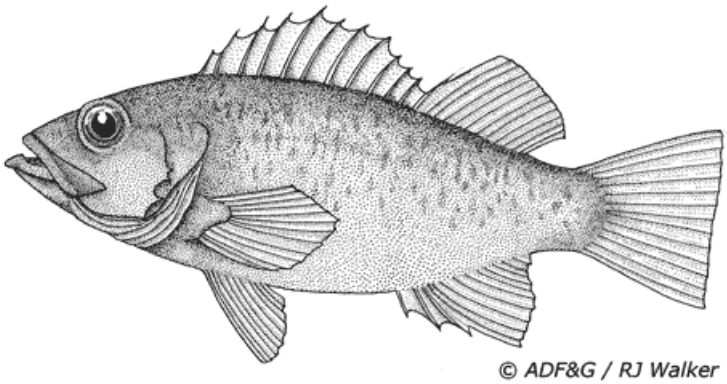
Alaska Department of Fish & Game

Rockfish

Rockfish (*Sebastes sp.*) are among the more interesting and colorful fishes in the North Pacific Ocean. They are also particularly vulnerable to overfishing. Maintaining healthy populations requires knowledge of their biology as well as innovative approaches to fishery management.



General description: There are thirty-two species of rockfish in the Gulf of Alaska, but fewer than ten are commonly harvested in sport and commercial fisheries. Rockfish have large scales, and they have spines on the head, gill covers, and fins. Depending on species, adult rockfish may reach 8 to 40 inches in length. Coloration ranges from bright red, orange, or yellow to blander black and gray. For management purposes, Alaska's rockfish are separated into two groups based on their preferred habitats:

1) Pelagic species congregate in large schools throughout the water column, above or around rocky shelves or pinnacles. Because they resemble bass they are commonly misnamed "black bass" or "sea bass" but there are no true basses in Alaska. The most common members of this group include the black, dusky, and dark rockfish.

2) Non-pelagic species usually stay close to the bottom in rocky areas. They are typically solitary or in small schools, often mixed with other species, and in general are far more colorful. The most common member of this group is the yelloweye rockfish, usually misnamed "red snapper" which does not exist in Alaska. Other common members include copper, quillback, silvergray, tiger, and China rockfish.

Life history: Rockfish are members of the family Scorpaenidae, or "scorpion fishes," named for their venomous fin spines. As a group however, rockfish venom is relatively mild and seldom causes more than minor pain or swelling. They are among the longest-living vertebrates on earth, with one rougheye rockfish from Southeast Alaska aged at 205 years. They are slow growing, and slow to reach sexual maturity. Most rockfishes do not start reproducing until 5-7 years old, and some may not reproduce until they're 15-25 years old. All species of the genus *Sebastes* are viviparous. This means that these fish give birth to live young after internal fertilization. Several months after fertilization, females give birth to thousands or millions of tiny larvae. Most are swept away by currents and eaten by other fishes. The survivors settle onto the ocean floor and hide in kelp, eelgrass, or around rocks and primarily eat small crustaceans, copepods, or fish eggs. As the juvenile fish grow and mature they move to adult habitats in deeper water with their diet turning more toward sand lance, herring, other small rockfish, as well as crustaceans. Their survival is believed to be closely linked to oceanographic factors such as temperature, currents, and food availability. Rockfish have evolved to live long and produce millions of offspring each year, which offsets frequently unfavorable conditions that may last a decade or longer.

Vulnerable to Overfishing: Rockfish are excellent table fare and have long been harvested in commercial, recreational, and subsistence fisheries in Alaska. Unfortunately, several important factors make them vulnerable to overfishing. For one, the rocky habitat rockfish prefer can easily be located using navigational charts or sonar. Once found, they are relatively easy to catch. Also, most species grow quickly in their first few years of life and reach harvestable size before they are mature. Catching fish before they can reproduce impairs the population's ability to replace itself. Another major factor contributing to their vulnerability is that rockfish have a swim bladder (a balloon-like organ used to adjust buoyancy) that is not vented. When they are brought to the surface from deep water, the air in the swim bladder expands, compressing internal organs and often forcing the stomach inside out into the mouth. Fish released in this condition cannot re-submerge and will likely die. There may be other less noticeable injuries to eyes, blood vessels, and internal organs that can cause death long after the fish is released, even if it appears to swim away normally.

When you consider their ease of capture, limited movements, late maturity, low annual productivity, and low survival rate when released, it is easy to see why rockfish populations are vulnerable to overfishing.

Management: Because of their vulnerability, and the fact that it may take decades to recover once overfished, recreational and subsistence fisheries for rockfish in Alaska are managed under some of the most restrictive bag limits on the Pacific Coast. For the most part, even stricter provisions for the less productive non-pelagic species have been put in place as well. In spite of these conservative measures, it is likely that we are not yet doing enough to ensure the long term sustainability of Alaska's rockfish populations. One strategy that has been promoted in recent years to help conserve rockfish is the effort to teach, and encourage, anglers to change their fishing techniques so that the incidental catch of rockfish can be minimized. Suggestions include: encouraging the use of a single circle hook; avoiding high relief rocky habitat where rockfish congregate; and, when targeting rockfish to concentrate effort on the more common pelagic rather than non-pelagic species. One thing anglers are not encouraged to do is the practice of deflating an inflated swim bladder or stomach protruding from the mouth. While such procedures may appear to allow the fish to swim away unharmed, it puts the fish at a high risk for infection, and it will likely die anyway from other decompression injuries not noticeable to the angler. Efforts to evaluate several methods of re-submerging rockfish quickly to depth of capture in the hope of ensuring survival are underway by numerous researchers, but results will not be known for perhaps many years to come. For the present, rockfish conservation can best be accomplished by learning to avoid catching them unintentionally when targeting other species, and taking only what you need. Hopefully, there will eventually be adequate information and management strategies to prevent Alaska's rockfish populations from going the way of most populations in other locations along the Pacific coast.

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