

Rockfishes

Introduction:

While 102 species of rockfish are currently recognized worldwide, the coast of British Columbia and the southeastern coast of Alaska provide habitat for approximately 31-35 species of rockfish.

First used in 1829 by French anatomist and ichthyologist Georges Cuvier, the genus name *Sebastes*, which means 'magnificent' in Greek, was first used to describe fishes in the northeast Pacific Ocean by Dr. William O. Ayres in 1854.

Rockfishes are notable for their commercial (i.e., economic) importance. Among the most popular rockfishes along the British Columbia coast are the Pacific Ocean Perch (*Sebastes alutus*) and Bocaccio (*Sebastes paucispinis*).

Characteristics:

All members of the genus *Sebastes* have the following characteristics in common:

- 1) a suborbital stay (a bone that reaches across the fish's cheek);
- 2) internal egg fertilization;
- 3) spines on top of the head (at some stage);
- 4) generally 13 dorsal spines;
- 5) 11-16 soft dorsal rays (i.e., fin-supports);
- 6) 3 anal spines;
- 7) 5-9 soft anal rays;
- 8) 15-20 pectoral rays;
- 9) a pair of muscles originating on the skull and extending to the swimbladder (curiously, this trait enables rockfishes to produce sound);

- 10) at least rudimentary venom glands at the base of some, or all, fin spines; and
- 11) relatively high fecundity (i.e., reproduction).

Life Cycle & Habitat:

When talking about saltwater fishes, habitat refers both to the distance from shore and water depth. Generally, different species of rockfish are found anywhere from the shallows of the intertidal zone to depths of more than 700 metres. Often, it depends on the stage they are at in their life. Younger fish tend to swim in shallow waters while more mature fish typically move further out and live in deeper waters.

The high rate of reproduction might be owing, in part, to the fact that rockfishes do not spawn in the same way other fish (such as salmon or cod) do, but *parturate* instead. Whereas spawning refers to the release of sperm and unfertilized eggs, parturition is the release of developed larvae (a result of characteristic #2, internal egg fertilization).

Rockfish produce a large number of eggs. Generally, the larger species produce more eggs than the smaller species. Existing data suggest a range of 18 000 eggs (Dwarf Calico Rockfish) to 2 700 000 eggs (Yelloweye Rockfish). However, many eggs are not fertilized so, although a greater number of eggs increases chances for overall survival, the population is not increasing at an alarming rate (see Threats). After mating, females store sperm for up six months at a time, depending on the species. After birth, all rockfishes spend a variable amount of time in a pelagic, or mid-depth open water, phase. This phase typically occurs between the larval and early juvenile stages of development.

In some cases, fish in the larval and/or early juvenile stages are found in shallower depths than mature fishes. Off British Columbia's coast, all intertidal rockfishes are in the larval

stage. Once mature, they migrate to deeper waters and establish themselves in a home range. This is known as settlement; it occurs when fish are about 3-9 cm in length and 3-6 months old. Home ranges can vary from a cavernous section of a coral reef to a span of miles along the seafloor, depending on the species. A few species, such as the Pacific Ocean Perch, move within their home range. The majority of such movement, however, is vertical, and the distance traveled along the coast is small.

Despite the lack of knowledge regarding the specific habitat requirements of most rockfishes, generally speaking they prefer environments with a variety of hard, vertical structures that provide safety from predators and an abundance of food (in the form of other fish).

Behaviour:

Besides exhibiting varying degrees of territorial behaviour (see Life Cycle & Habitat), some rockfishes have the ability, similar to birds and Pacific salmon, to return to their home site if they leave or are removed. Scientists still do not know what sorts of methods rockfishes use to navigate their way home.

Most rockfishes exhibit distinctive diel behaviour. This typically means that a species (or many species) will avoid certain areas during the day and return during the night for protection. In some instances, age determines such behaviour, as certain species will feed during the day as juveniles and become nocturnal predators during adulthood.

Threats:

The greatest threats to rockfishes are changes in the environment (e.g., temperature, pollutants in water) and over-fishing by humans. Most commercial species, such as the Pacific Ocean Perch,

Bocaccio, and Yellowtail in British Columbia, have been declared officially over-fished. Others seem not to be affected to great degrees, yet very little research has been done that allows us to come to such a comforting conclusion.

What can we do to help?

The best way to help is to learn more: learn what kind of fish you eat and where it comes from; learn what species of rockfish are being processed in the cannery nearby; learn about fish farms and the commercial importation of non-native fishes to BC waters.

Effective 1 April 2004, Fisheries and Oceans Canada has designated 89 Rockfish Conservation Areas (RCA) (see http://www.pac.dfo-mpo.gc.ca/recfish/Rockfish_Maps_2004/2004%20RCA%20descriptions%20and%20maps.pdf). The establishment of the RCAs is in conjunction with their Rockfish conservation strategy, started in May 2002. For information on current meetings and dialogue opportunities regarding rockfish conservation, go to http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/sara/Invitation_letter.doc.

Conclusion

There are so many different species of rockfish in BC's waters that it's difficult to comprehend the individual's role in our everyday lives. It doesn't sound elitist to suggest one would have to spend a life at sea or at school in order to know more than a handful of different rockfishes.

Those of us who stick mostly to land and don't work in a marine industry are left to ponder the wonderful array of rockfishes through books, articles, and web pages.

Bibliography

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Travis Mason