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✓ THE CANARY ROCKFISH

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INFORMATIONAL REPORT - CANARY ROCKFISH

INTRODUCTION

The canary rockfish, *Sebastes pinniger*, has been important to Oregon's trawl fishery since its beginnings in the 1930's. Canary rockfish in Oregon trawl landings have averaged about 30% of the 3-5 million pounds (1,360-2,270 metric tons) of continental shelf rockfish caught (Niska, 1976). These fish are filleted and primarily sold fresh as "red snapper" in Oregon. However, this name is a misnomer as canary rockfish are not red. Instead, canary rockfish have a mottled orange color on the body, orange fins, and three bright orange stripes across the head (Hart, 1973).

The accepted common name is canary rockfish. It is also called orange rockfish and red snapper.

REPRODUCTION

Little is known about the size and age of maturity of canary rockfish off Oregon. Only in California has these data been collected and published. Off the California coast an occasional precocious female may mature when 9½ inches (24 cm) in total length and 3 years old. About 50% of the population is mature at 14 inches (35.6 cm) and 5-6 years of age. At a length of 16 inches (40.6 cm), an age of 7 years and a weight of 2 pounds, all canary rockfish examined were mature (Phillips, 1964).

Canary rockfish, like all rockfish in the genus *Sebastes*, have a type of reproduction unlike many other Pacific coast fish. That is, the male fertilizes the female internally and the development of the eggs takes place in the body of the female. This type of reproduction is called oviviparity. When embryonic development of the eggs is complete, the female sheds the eggs and the stimulus of exposure to sea water probably activates hatching into newly formed rockfish called larvae (Phillips, 1964).

The fertilization of the mature female canary rockfish by the male rockfish occurs in the fall. October is believed to be the principal month of this insemination off British Columbia. The transfer of the sperm from the male to the female probably occurs by only a momentary contact of the genital openings (Westrheim, 1975).

After fertilization by the male rockfish the eggs in the female slowly develop. The number of eggs carried by a female increases greatly with size. Off California a 19-inch female will have about 260,000 developing eggs, while a 21- to 26-inch fish will have about 1,900,000 eggs (Phillips, 1964).

Hatching of the eggs into larvae takes place off Oregon, from January through March in 50 to 80 fathoms near or over rocky areas (Westrheim, 1975).

EARLY LIFE HISTORY

At hatching canary rockfish are about 1/5-inch (5.1 mm) long. They are relatively undeveloped and look entirely different than the adult. Larvae are transparent and have poorly developed fins. They are pelagic (living in the open water) and feed on plankton. Canary rockfish larvae have been found from 8 to 190 miles of the Oregon coast, but are thought to concentrate from 50 to 75 miles out. This wide range distribution has been attributed to the morphology of the larvae. It is thought the stubby, deep body of the larvae, together with long head spines, contribute to increased flotation and dispersal by currents (Richardson and Laroche, 1979).

Beginning in March, at an age of about three months, larvae about 1/2-inch (12 mm) long begin to transform into pelagic juveniles. This transformation occurs with the formation of spines in the dorsal and anal fins, and the beginning of pigmentation on the body. These pelagic juveniles, like the larvae, have a wide distribution range (Richardson and Laroche, 1979).

By the time pelagic juveniles reach a length of about one inch (25 mm) they can be more easily identified by a black blotch at the base of the spinous dorsal fin. Pigmentation of the pelagic juveniles continues until a length of approximately 1½-2 inches (40-50 mm) is reached. Around this time the body becomes more elongate, and many of the larval spines disappear. In June-August the juveniles then move inshore and take on the benthic or near bottom dwelling existence which they largely maintain throughout the rest of their life (Richardson and Laroche, 1979).

ADULT LIFE HISTORY

Distribution and Abundance

Canary rockfish occur from off Baja California, Mexico to southeast Alaska. However, areas of major abundance are from northern California to Southern British Columbia (Hart, 1973).

Adults occupy a depth range of about 30-200 fathoms (55-366 m). Off Oregon they are most abundant on the central to outer part of the continental shelf at depths from 40 to 80 fathoms. They show a preference for a mud or muddy sand bottom near rock reefs.

Canary rockfish are abundant off the Oregon coast. Commercial catches from the Oregon continental shelf of 5,000 to 25,000 pounds (2.3- 11.3 mt) per tow by trawlers occur (Niska, 1975). However, there has been no adequate population estimate made of this species off Oregon, because of the pelagic or semipelagic nature of this species, which makes a bottom trawl survey inadequate.

Age and Growth

Canary rockfish are known to attain a total length of 30 inches (76 cm) and an age of at least 25 years (Six and Horton, 1976). However, fish of this size and age are rare.

Age is determined by counting annual winter rings laid down on the otolith (ear bone). These annual rings (hyaline zones) are narrow translucent bands formed during the winter when fish grow more slowly than in other months.

In Oregon canary rockfish first enter the trawl fishery at about 5 years. The average age in the fishery is about 14 years for canary rockfish (Six and Horton, 1976).

Migrations

Nothing is known about the migratory habits of canary rockfish. The large air bladder in this and other rockfish species expands rapidly when it is brought up from mid-continental shelf depths. The air bladder expansion precludes this rockfish from returning to its normal habitat, so tagging or marking experiments have largely been unsuccessful.

Feeding Habits

The canary rockfish is a predatory fish, feeding on whatever is most available. It is known to feed on anchovies, sanddabs, other small fishes, and small shrimp-like organisms called euphasids (Phillips, 1964).

THE FISHERY

The fishery for canary rockfish off Oregon has been primarily with bottom trawls on the continental shelf. Small amounts are also caught with troll lines incidental to salmon fishing and with shrimp trawlers in modest amounts. Trawl catches of canary rockfish are high in January and February when female fish school up near the bottom when releasing their eggs. At other times of the year catches are also good, depending whether or not canary rockfish are on or near the sea bed.

Canary rockfish, like most continental shelf dwelling rockfish, are retained

almost exclusively as "red snapper" in a fresh-thawed fillet state. There is a small fresh-fish market near the immediate landing areas, but most of the catch is processed as fillets for inland markets.

ACKNOWLEDGMENTS

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LITERATURE CITED

- Hart, J.L. 1973. Pacific fishes of Canada. Fish. Res. Board Can. Bull. 180, 740 p.
- Niska, E.L. 1976. Species composition of rockfish in catches by Oregon trawlers 1963-71. Oreg. Dep. Fish Wildl., Inf. Rep. 76-7, 80 p.
- Phillips, J.B. 1964. Life history studies on ten species of rockfish (genus *Sebastes*). Calif. Dep. Fish Game, Fish. Bull. 126, 70 p.
- Richardson, S.L. and W.A. Laroche. 1979. Development and occurrence of larvae and juveniles of the rockfishes *Sebastes crameri*, *Sebastes pinniger*, and *Sebastes heluomaculatus* (family Scorpaenidae) off Oregon. Fish. Bull., U.S. 77(1):1-46.
- Six, L.D. and H.F. Horton. 1977. Analysis of age determination methods for yellowtail rockfish, canary rockfish, and black rockfish off Oregon. Fish. Bull., U.S. 75(2):405-414.
- Westrheim, S.J. 1975. Reproduction, maturation, and identification of larvae of some *Sebastes* (Scorpaenidae) species in the northeast Pacific Ocean. J. Fish. Res. Board Can. 32:2399-2411.