

SPOTTED RATFISH

History of the Fishery

The spotted ratfish or chimaera (*Hydrolagus collieri*) is presently not used commercially in California, and probably is eaten only rarely on the occasions when it is caught by recreational fishermen. However, fillets of chimaera have recently been imported into California, probably from Argentina and Chile, and have been sold in restaurants as well as fish markets. Chimaeras, called "ghostsharks" in New Zealand where the fillets are sometimes marketed as "pearl fillets," have been eaten there as well as in South Africa for many years. Chimaeras are also used as food in China, but no information is available on the amount consumed. The large liver also yields an all-purpose oil of good quality, which has been used as an

external and internal medication as well as a lubricant. Spotted ratfish is commonly taken in trawl nets, and may represent a sizable underutilized resource in California. Total world landings are on the order of 3,000-4,000 tons annually, primarily in New Zealand, Chile, and Argentina.

Spotted ratfish are commonly found in the bycatch of bottom trawl nets. They are also caught by baited hooks that are fished near or on the bottom, and in bottom set gill nets.



Spotted ratfish or chimaera. *Hydrolagus collieri*.

Status of Biological Knowledge

The spotted ratfish is an extraordinary fish, with a silvery to bronze body dotted with numerous white spots, and a smooth, scaleless skin often having a metallic cast. Large green eyes are set in a head that resembles that of a rabbit. The strong dorsal spine contains a venom which, though not lethal, can cause severe pain. Chimaeras are similar to sharks in having a cartilaginous rather than bony skeleton.

Found from western Alaska to the tip of Baja California, and in the northern part of the Gulf of California, it is common in depths from 1,000 to 1,300 feet in spring. It is a bottom dweller, and occurs in shallow waters in the northern extremes of its range, but has been found as deep as 3,000 feet.

Studies which use marks on vertebrae and spines have not been successful in estimating the age of ratfish, nor have those which use eye lens weights and body length modes. Females apparently grow to a larger size than males. In one collection of 448 ratfish, no males were as long as 20.4 inches, while ten females were between 20.4 and 21 inches. The largest recorded length is 38 inches.

Some females are mature at a length of 18 inches, while all are mature by the time they are 20 inches long. Fertilization is internal. Males have two hooked clasping organs in front of the pelvic fins and, like male sharks, are equipped with a pair of claspers which are used to transfer sperm capsules into females.

The female lays leathery egg cases which are five to six inches long and are wide at one end and narrowly tapered at the other, which sticks into the mud bottom. Egg-laying usually occurs in spring and summer, but some females and most males are reproductively active throughout the year. Egg capsules are probably laid in pairs, and it is possible that fertilization of a second pair of eggs may follow soon after the first pair is released, and that those are released soon thereafter.

The teeth of ratfish are arranged in three pairs of large flat plates, two pairs in the upper jaw and one pair in the lower. Feeding habits reflect an opportunistic nature, and the diet includes clams, snails, shrimps, nudibranchs, annelid and polychaete worms, coelenterates, amphipods, small fishes, and

heart urchins. Many large fishes such as lingcod, rockfish, and halibut, as well as several species of sharks and marine mammals, probably eat ratfish.

Spotted ratfish in the Gulf of California apparently migrate seasonally, but this may be due to special hydrographic conditions within the Gulf and may not be indicative of distribution patterns elsewhere.

Status of Population

Nothing is known about the size of the population of spotted ratfish. The species has never been purposely sought in California, but is caught regularly by fishermen targeting other species. Spotted ratfish are common in relatively shallow smooth bottom grounds where trawlers work, and are also found in rocky areas. Since they are not gregarious, it is rare to catch them in large numbers. Fecundity is low and, like sharks, chimaeras are probably more susceptible to overfishing than are bony fishes, which produce a large number of offspring.

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References

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