BOX CRAB

History of the Fishery

While they have rarely been marketed in California, box crabs (*Lopholithodes foraminatus*) have been used commercially in Oregon for several years. The meat, which is found mainly in the claws and legs, is tasty and has good texture, and the meat yield of about 25 percent of the total weight is high compared to that of the more familiar rock crabs. The shell takes on an appealing reddish tinge when cooked, but moderately sharp spines on the carapace and legs detract somewhat from the box crab's marketability. The shell is not as hard as that of rock crabs, however, so the meat is easier to extract.

Box crabs are a common bycatch in the groundfish fisheries of northern California. They are often entangled in gillnets that are used to catch rockfish in deep water, and are also captured, sometimes in large numbers, in trawl nets. Traps used to catch fish or Dungeness crab are also effective for catching box crabs, which are readily attracted to bait. Captured box crabs are usually discarded, or are eaten by fishermen, because of the lack of a market. No regulations apply to the commercial or sport take of box crabs.

An experimental trap fishery for box crab carried out in August and September, 1989, in southern California at the northern Channel Islands, produced only a few crabs. Most of the fishing was conducted in the shallow end of the box crab's range, which may partly account for the poor results. Observations made during that study suggest that long soak times are needed to catch box crab, which may not be as mobile as other crabs and lobsters. In fact it was suggested that trawling may be more efficient than trapping as a means of catching box crabs commercially. Box crabs do poorly in captivity in ambient surface sea water temperatures in southern California; so refrigerated systems are needed in order to keep them alive. On the other hand, they will remain alive out of water for at least two or three days if kept in temperatures under 45°.

The marketability of box crabs was discovered in Oregon in 1983, when El Niño conditions forced fishermen and dealers to look to substitute species for the many normal target species no longer available. Catches jumped from 16,000 pounds in 1983 to 272,000 pounds in 1984, then declined to 93,000 pounds in 1985. Much of the product was sold in the form of picked meat to buyers on the east coast, who needed substitutes for declining resources of "Jonah" crab. The crabs were caught mainly in Dungeness crab pots with entrances made a bit higher to accommodate the shape of box crabs.

Status of Biological Knowledge

When its legs and claws are folded under its body, the box crab resembles an oval rock or, arguably, a small box. Box crabs have a light brown carapace and are white below. The entire front margin of the carapace is armed with short, sharp spines. When the legs are folded inward, a round hole is formed at the angle of the middle joint between the claw and the first walking leg, from which the scientific name "*foraminatus*" was derived.

Box crab, *Lopholithodes foraminatus*.

In northern California, box crabs are abundant in depths of 300 to 800 feet. Further south, they are more common in somewhat greater depths of about 600 to 1,000 feet. The record depth of capture is 1,800 feet. Box crabs are found on sandy, muddy, and rocky bottom. They may possibly undergo migrations from deep to shallow waters and vice versa during certain seasons.

Little is known about the biology, behavior, or population parameters of this species. Egg-bearing females are common off southern California in February, and hatching probably occurs sometime in spring. Mature males weigh about 1.3 pounds, and the largest individuals are about 2.5 pounds and measure seven inches across the back. Females are smaller than males.

Like other crabs, box crabs probably feed mainly on invertebrates that occur in their habitat. The strong claws are used to grasp and tear their prey into manageable size. The major predator of box crabs is probably octopus. Other animals find it difficult to eat box crabs when they assume their defensive position, with all the appendages folded under the body.

Status of Population

Nothing is known about the abundance of box crabs. Occasional reports of catches of large numbers box crab by trawl fishermen in both northern and southern California suggest that the populations may be sizable. Near San Diego, researchers regularly caught box crabs in baited traps set in depths of 125-175 fathoms. We need to learn more about the life history as well as abundance of box crab in order to determine appropriate catch levels.

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References

Schmitt, Waldo L. 1921. The Marine Decapod Crustacea of California. Univ. of Calif. Press, Berkeley, Calif. 470 p.