

Louvar

History of the Fishery

Off California, louvar (*Luvarus imperialis*) tend to be seasonal transients associated with warm water currents late in the year. When present, they are considered a desirable, but incidental catch species primarily in the shark and swordfish drift gillnet fishery. Although primarily taken in this fishery, landings from other gear types such as set gillnet, hook-and-line, harpoon, trawl, and round haul nets have been recorded. The majority of catches occur off the Southern California Bight, with success being highest in the area encompassing Point Loma, San Clemente Island, and Cortez Bank. In the drift gillnet fishery, fish tend to be caught at depths of 18 to 78 feet. Inasmuch as louvar are strongly associated with warmer water currents, catches of this species typically increase during the late summer through fall and show a dramatic rise during strong El Niño events. Louvar occasionally are found stranded on the beach or drifting dead at the sea surface. There is not a significant recreational fishery for louvar.

From 1990 through 1999, a total of 95,844 pounds were landed in California; annual landings ranged from 5,190 pounds in 1994 to 17,498 pounds in 1992. Annual landings since the mid-1980s have shown fluctuations from year-to-

year but overall have remained relatively stable, with an average of 10,923 pounds (1986-1989), and 9,584 pounds (1990-1999).

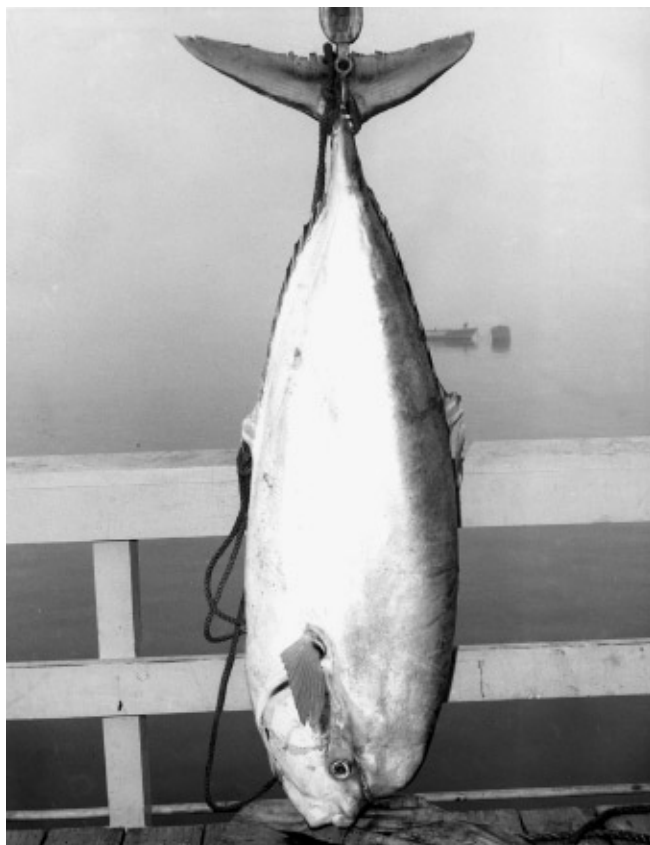
Landings off California from 1990 through 1999 had a total ex-vessel value of \$297,500 with an average of \$29,750 per year. The ex-vessel price per pound ranged from \$2.48 in 1992 to \$3.71 in 1998, with a mean value of \$3.20. Although landing amounts have remained relatively constant, the average price paid for louvar has increased over three-fold since 1986. Louvar flesh is delicate and white with a mild flavor, and is considered by many fishermen to be among the most delicious of fishes. This admiration has been carried over to the markets where the fresh fish are sold to the better restaurants.

Status of Biological Knowledge

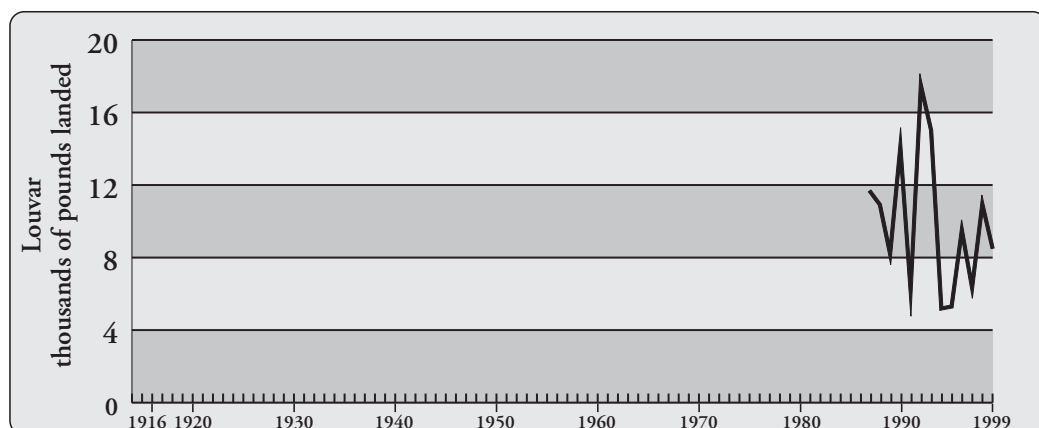
Luvarus imperialis, meaning "silver emperor," is the only member of the family Luvaridae. This streamlined fish has a strongly compressed body and a blunt head with a small, terminal, toothless mouth and a horizontal groove above each eye. The caudal fin is lunate with a keel on the caudal peduncle. Males have long filaments in front of the soft dorsal and anal fins. Adults have frothy pink bodies covered with dark spots and crimson fins, although after death the body turns silvery. Except for the blunt head, louvar are adapted for rapid swimming, with their lunate caudal fin and keeled caudal peduncle. When swimming slowly, louvar presumably scull with their caudal fin.

Louvar occur worldwide in temperate and tropical seas. In the eastern Pacific they are found from central Washington to Chile. Although generally uncommon, they are relatively abundant in southern California. All life stages of this species are pelagic and oceanic. Adults occur from the sea surface to a depth of 1,970 feet, but most are found at depths below 660 feet. The larvae have been taken at temperatures of 70.9-82.2° F. Spawning occurs in temperate waters between 40° N and 40° S latitude, from late spring to summer in the Northern Hemisphere. A ripe individual was taken off Morro Bay, California in May. Louvar fecundity is very high, which is typical of non-schooling, oceanic fishes; a female 66.9 inches (5.6 feet) long had a fecundity of 47.5 million eggs.

Larvae range from 0.14 to 0.42 inches in length. The larvae and small juveniles look sufficiently different from the adult that they were once thought to be different species. They have strong, serrated dorsal and anal spines and a short body. The smallest juveniles have long, deep fins and dark spots on the body. Larger juveniles (four to eight inches) are similar to the adult but have longer dorsal and anal fins.



Louvar, *Luvarus imperialis*
Credit: Charles Cranford



The size and age of louvar at first maturity is not known; however, a 295-pound female was mature. Louvar grow to at least 74 inches and 305 pounds. Because the otoliths are tiny and not useful for aging, the maximum age is unknown.

As midwater browsers, they feed primarily on gelatinous zooplankton such as jellyfish, ctenophores, and free-swimming tunicates (salps and pyrosomes), but occasionally eat small fish. Only about 20 percent of the louvar taken have had food in their stomachs.

The louvar stomach is lined with numerous papillae and the coiled intestine is extremely long. The intestine of adults is about eight to nine times as long as the fish. These features presumably are adaptations for feeding on jellyfish.

An eight-inch louvar was found in the stomach of a wahoo. Otherwise, predators other than man are not known. The gastrointestinal areas of louvar are often parasitized by digenean trematodes.

Status of the Population

The size of the louvar population worldwide or off California is not known. Louvar are solitary fish and few are taken at any one time. Because the population is worldwide in tropical and temperate seas, the California fishery probably has little impact on the species as a whole. It is not known whether local subpopulations exist or how far individual louvar travel. Using recent landings as an indicator, the local availability of the species is likely to become more abundant off California following warm water periods or El Niño events. Although commercial landings of louvar are recorded by the California Department of Fish and Game, the louvar is not presently a target species and the fishery is not actively managed.

Management Considerations

See the Management Considerations Appendix A for further information.

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