Monkfish *(Lophius americanus)*

Common Names: Goosefish, monk-tail, American angler, angel-shark, American goosefish, all-mouth, fishing frog, baudroie.

Description, Distribution and Biology

Monkfish is a large bottom-dwelling (demersal), cartilaginous lethargic fish from the family Lophiidae. It has a flat body, large pectoral fins, a bulky head and an enormous mouth, with canine-like teeth. They are typically dark brown in colour shading to a light tan towards the abdomen with red pelvic fins and dark tipped pectoral fins (Fig.1).

Monkfish is distributed throughout the western Atlantic Ocean, from the Labrador shelf to northern Florida. In Canadian waters, monkfish is more abundant on the southern Grand Banks, through the Gulf of St. Lawrence, on the Scotian Shelf and in the Bay of Fundy. This species generally inhabits warm slope regions with a variety of sediment types. It can be found at all depths from 0 to over 650 m and can tolerate a wide range of temperatures, but prefers temperatures between 6 and 10 ^{0}C. Studies on seasonal distribution suggest that monkfish will migrate to shallower bank waters during the summer and move to deeper waters during the winter.

Figure 1. Monkfish. Source: Steven A. Murawski, NOAA, Northeast Fisheries Science Center, Woods Hole, MA

In Canadian waters, monkfish typically spawn between June and September. Eggs, which are pelagic, spherical and 1.61 to 1.84 mm in diameter are deposited at the surface in large mucous sheets. The sheets are pink in colour and can contain more than a million eggs. The eggs will usually hatch in 6 to 7 days in 15 ^{0}C water. The newly hatched larvae, which are 2.5 to 4.5 mm long with elongated, dorsal head spines and pelvic fins, will float to the surface and remain pelagic for several months prior to settling on the bottom. Growth appears to be rapid and similar between sexes. Sexual maturity is reached between 4 and 7 years. Monkfish can reach a length of 11 cm at age 1 and by age 10 exceed 102 cm. This species has a relatively short life span, with a maximum age of 11 years.

Monkfish are voracious, carnivorous predators, consuming a wide variety of marine organisms including herring, sand lance, alewive, smelt, cod, haddock, mackerel, striped bass, sculpin, sea raven, flounder, skate, crab, shrimp, starfish and marine worms. Monkfish is known to bury itself in

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the substrate and use its fishing 'lure', located on top of its head, to attract prey. There is little information regarding predation of monkfish by other organisms, however it is eaten by swordfish, and young monkfish have been found in the stomach of predaceous marine fishes.

The Fishery

Directed fisheries for monkfish extend along much of the shelf and slope waters from the Carolinas north to the Grand Banks. Prior to 1991, there was no direct fishery for monkfish on the Grand Banks, in the Gulf of St. Lawrence, or on the Scotian Shelf and annual catches remained less than 200 metric tonnes (mt) from 1977 to 1990. During this period monkfish was a common by-catch in otter trawl groundfish fisheries, principally in Northwest Atlantic Fisheries Organization (NAFO) Division 3O and 3P. By the early 1990s, monkfish became a target for commercial effort, especially with the decline in traditional species. In 1991, a direct experimental trawl fishery was introduced in response to developing markets. In 1993 and 1994, an experimental gillnet fishery was initiated on the Grand Banks and since then has led to a limited fishery for monkfish, prosecuted mainly by large mesh gillnets. There is limited knowledge regarding most aspects of monkfish biology, distribution, and abundance, therefore, in 1995 to 1997, a precautionary quota restriction of 200 mt was introduced. In 1998, the quota was lifted and replaced with by-catch restrictions (closure due to excessive by-catch of restricted species). At present, there is no evidence to suggest that current fishing effort has any significant impact on monkfish stocks. A closely related species, *Lophius piscatorius*, found on the east coast of the Atlantic Ocean, is considered a delicacy in many European countries. The monkfish head is removed and the remaining body, the 'Tail,' is sold in fresh or frozen packages. The European market, in addition to an emerging North American market has opened the door for the commercial utilization of L. americanus. The price for monkfish tails has increased from approximately $0.90/lb (US) in 1982 to over $4.00/lb (US) in 1991. Over the last 8 to 10 years, a new market for monkfish livers, used in sushi bars, has developed in Japan.

The future success of a monkfish fishery off the east coast of Canada will require further research into the biology, distribution and abundance in Canadian waters, establishment of regulations to improve fisheries management, as well as more effective marketing efforts in both North America and Japan.

ADDITIONAL READINGS:

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