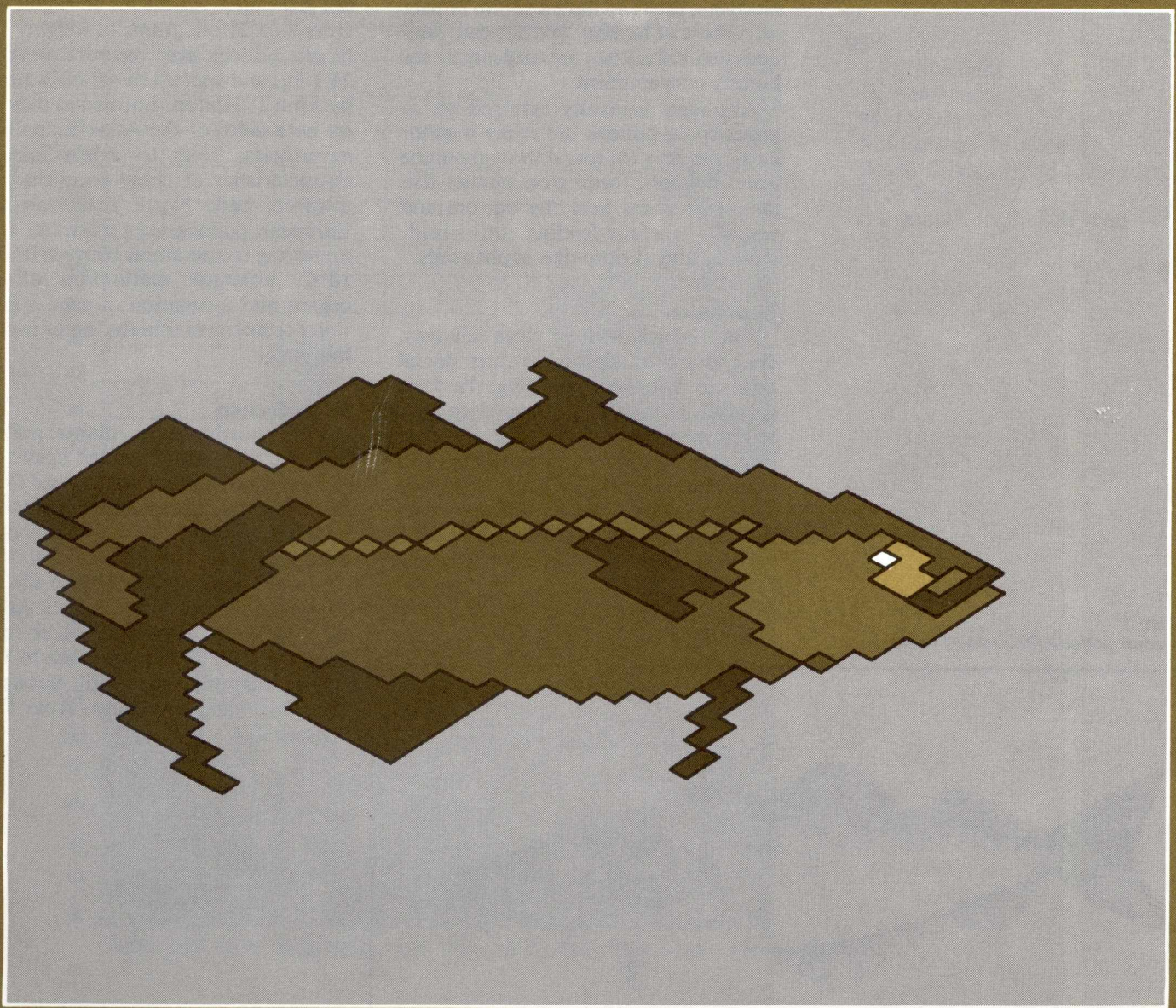
Fisheries and Oceans
Pêches et Océans

Underwater World

Pollock



Canada

Pollock

If you buy Boston Bluefish in your local supermarket, you'll be purchasing pollock, one of Canada's important commercial fish of the north Atlantic. Pollock (*Pollachius virens L.*), a member of the Gadidae, or "cod" family, is also known as saithe, coalfish, and green cod. It can be found in northern waters on both sides of the Atlantic — from southern Newfoundland to New Jersey on the North American side, and from West Greenland to Northwest Europe to the Bay of Biscay on the European side.

Pollock are voracious eaters, and since they often congregate in large numbers, they can have a severe impact on schools of herring, juvenile cod, haddock and hake. They are used largely for human consumption.

Although generally referred to as groundfish, pollock are really benthopelagic as they are found throughout the water column, feeding on smaller fish and crustaceans near the bottom and actually surface-feeding on squid, shrimp, and shrimp-like euphausiids.

Description

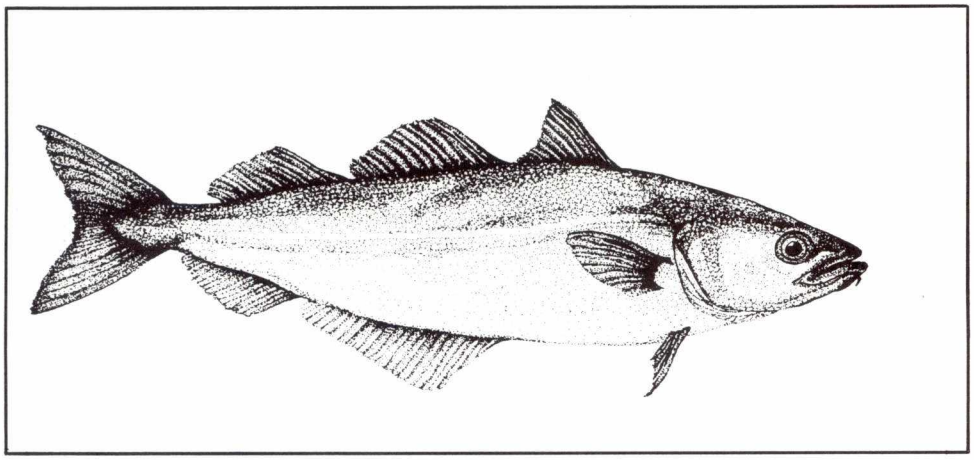
The pollock, like its close relatives, the cod and haddock, has three dorsal fins and two anal fins (Fig. 1). It is generally green, varying from deep olive to brownish green on the back, blending into a pale yellow or grey on the sides below the lateral line, and then into silvery grey or white on the lower surface. Young fish often can be found with a definite red or orange hue on the sides and fins. This is simply an adaptation to living in shallow areas as juveniles, as the adult colouration returns when these fish move offshore. The lateral line stretches from the end of the gills to the caudal fin and is white or pale grey. The body is deep, with white firm flesh. While considered a member of the cod family, the pollock can be distinguished easily from the cod and haddock by its distinctive forked tail, green colour, pointed snout and projecting lower jaw with a much reduced, if not absent, chin barbel.

The life span of pollock is approximately 17 years. During this time they can grow up to 1.5 metres in length, and from 8 to 21 kilograms in weight. The largest pollock ever recorded weighed 21.1 kg, and was taken off New Jersey by John T. Holton. Located as they are on both sides of the Atlantic, pollock nevertheless seem to exhibit similar characteristics at either location. For instance, both North American and European pollock are cold-water fish, preferring temperatures between 0° and 10°C, although maturation of sex organs and incubation of eggs require water temperatures in the upper part of this range.

Reproduction

In the northwestern Atlantic pollock are late fall, early winter spawners. Breeding generally begins in late October when water temperatures have cooled to 8 to 10°C, with peak activity occurring from November to February when the water reaches 5°C to 6°C. In European waters of the eastern Atlantic, spawning does not occur until January, when temperatures rise to 7°C; it then continues into April. Spawning occurs in water that ranges from 15 to 50 fathoms.

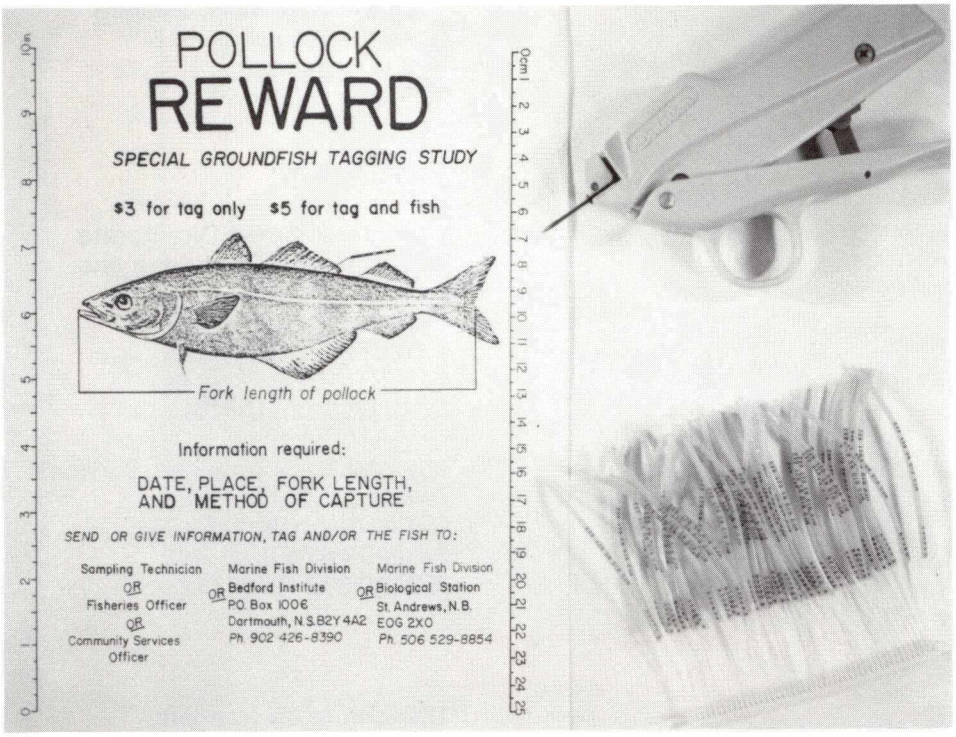
Figure 1
*An adult pollock (*Pollachius virens *L.)*



While the average female produces about 200,000 eggs, there have been recorded cases of large females with more than four million eggs. The eggs have a diameter of approximately 1 mm; they are buoyant and drift near the surface. Incubation time is from seven to nine days, depending on water temperature. When the larvae hatch, they are 3.5 to 4 mm in length and have a large yolk sac attached which provides nourishment for the first five days. At the end of that period, the yolk sac has been absorbed, and the larvae continue developing until they reach a length of 25 to 30 mm, at which time they exhibit most of their adult characteristics. The annual rate of growth is fairly rapid during the early stages, up to 12.5 or 15 cm per year for the first three years of development; 5 to 10 cm per year for the next three years; and slowing down to 2.5 to 5 cm per year as the fish reach sexual maturity at five years.

Larvae begin to migrate inshore to nursery areas almost immediately. Here they are known as "harbour pollock" and can be found all along the coast of Nova Scotia, New Brunswick, and the Gulf of Maine for their first three years. They then begin to move offshore into the fishery where they mature at age five years and older, when the life cycle begins again. A similar behavioural pattern is exhibited in European waters. More recent information suggests that pollock show a strong homing tendency, as they have been traced back to the same inshore location in subsequent years.

Figure 2
Tagging gun, tags and reward poster for pollock used in the tagging program run by DFO.



Management and Migration

Pollock are abundant from the Gulf of Maine to the northern end of the Scotian Shelf. Until recently, however, very little has been known about their migration routes and distribution, other than the fact that Jeffries Ledge in the Gulf of Maine was the only known spawning ground. Therefore, it was assumed that all the fish along the Scotian Shelf and Bay of Fundy migrated down to the Gulf of Maine to spawn and then moved back up along the coast. For lack of better information, the species was therefore managed as one stock. Several studies were conducted in the early part of the 1960s using tag and recapture methods to establish migration patterns and spawning grounds. The results indicated that other spawning areas probably existed along the Scotian Shelf but not enough data were collected to provide adequate proof.

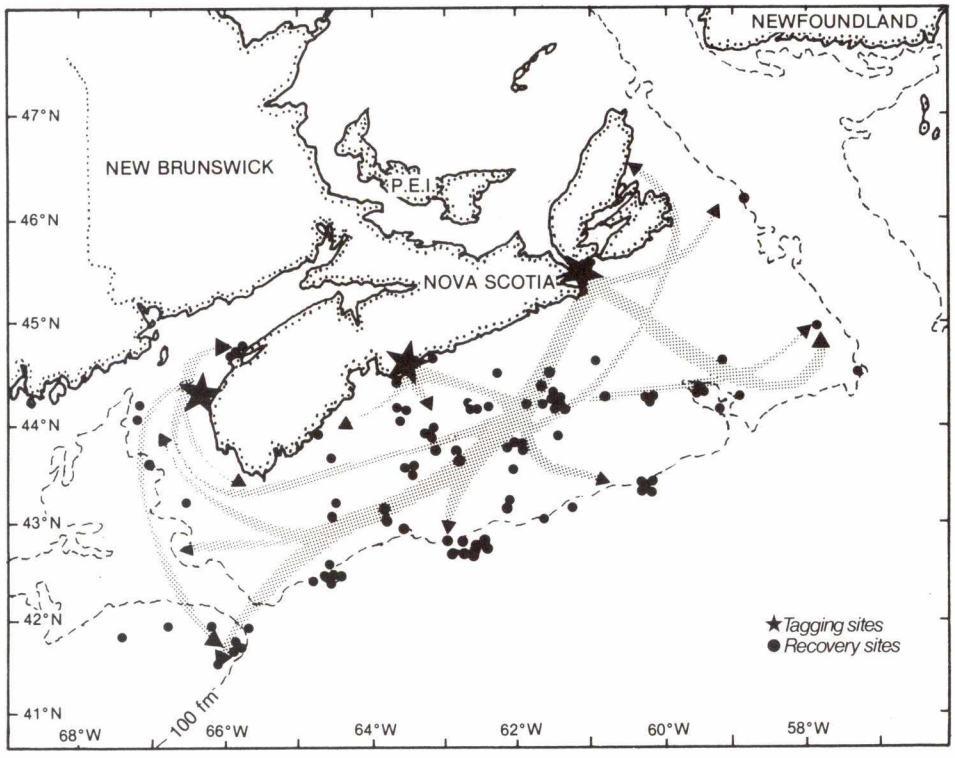
In 1978, the Department of Fisheries and Oceans (DFO) began a juvenile tag-and-recapture program from various sites along the Scotian Shelf and Bay of Fundy to try to assess pollock migration patterns and spawning areas (Fig. 2). To date, approximately 38,000 pollock have been tagged in this experiment. Preliminary results show these juveniles disperse all over the Scotian Shelf and

northeast peak of Georges Bank, with only one recapture, to date, from the Jeffries Ledge area (Fig. 3).

Parallel to these experiments, other scientists with DFO have been looking at the distribution of eggs and larvae from ichthyoplankton research cruises. These cruises show concentrations of eggs and larvae at several areas along the Scotian Shelf, Browns Bank, northeast Georges Bank, and Jeffries Ledge during established spawning times. A short incubation period, in addition to the fact that there is little proof for large scale drifting of eggs and larvae, indicate that pollock are spawning in each of these areas.

While it would seem that these preliminary results point to the existence of more than one spawning area and hence one stock, a great deal is left to be done. Modern experiments to determine the genetic structure and population of the species are being carried out, and it is hoped that they will provide a better understanding of the population structure of pollock and hence the answers necessary for good stock management.

Figure 3
Distribution of tagging sites and recoveries.



The Fishery

Pollock off the Canadian and American coasts were first brought under quota management in 1973. Since that time, when pollock were generally taken in a bycatch fishery, catches have risen steadily to a maximum in 1981 of 58,000 metric tons for essentially a directed fishery (Fig. 4). Canadian and American fishing fleets have traditionally been responsible for the majority of these catches, with foreign fleets contributing from 10 per cent in 1975 to less than 1 per cent in 1981. Although pollock are fished all year long, data suggest that in both North American and European waters peak fishing times occur in mid-winter and summer.

Pollock are fished inshore as well as offshore. In the early 1900s, the inshore fleet used gillnets, hand-lines and long-lines, and occasionally seines when schools of pollock could be seen near the surface. Otter trawls accounted for only a fraction of the catch. While the inshore fishery is much the same as it was, otter trawlers in the offshore fleet now are supplying the vast majority of pollock catches. In 1981, for example, offshore trawlers took approximately 70 per cent of the total pollock catch. It is also interesting to note that pollock are a good sport fish and many have been taken by anglers using anything from a fly, to a lure, to a hook and live bait during their spring and fall migrations.

Commercially, pollock is marketed as a food fish. Although found in many forms, it is chiefly dried and salted. Fresh or frozen fillets usually are sold as Boston Bluefish, or "deep-sea fillets".

Further Reading:

Anonymous, (1981). *Atlas of the seas around the British Isles.* Published by Ministry of Agriculture, Fisheries, and Food, 100 p.

Bigelow, H.B., and W.C. Schroeder. 1953. *Fishes of the Gulf of Maine.* Fish Bull. U.S. *53* (74): 577 p.

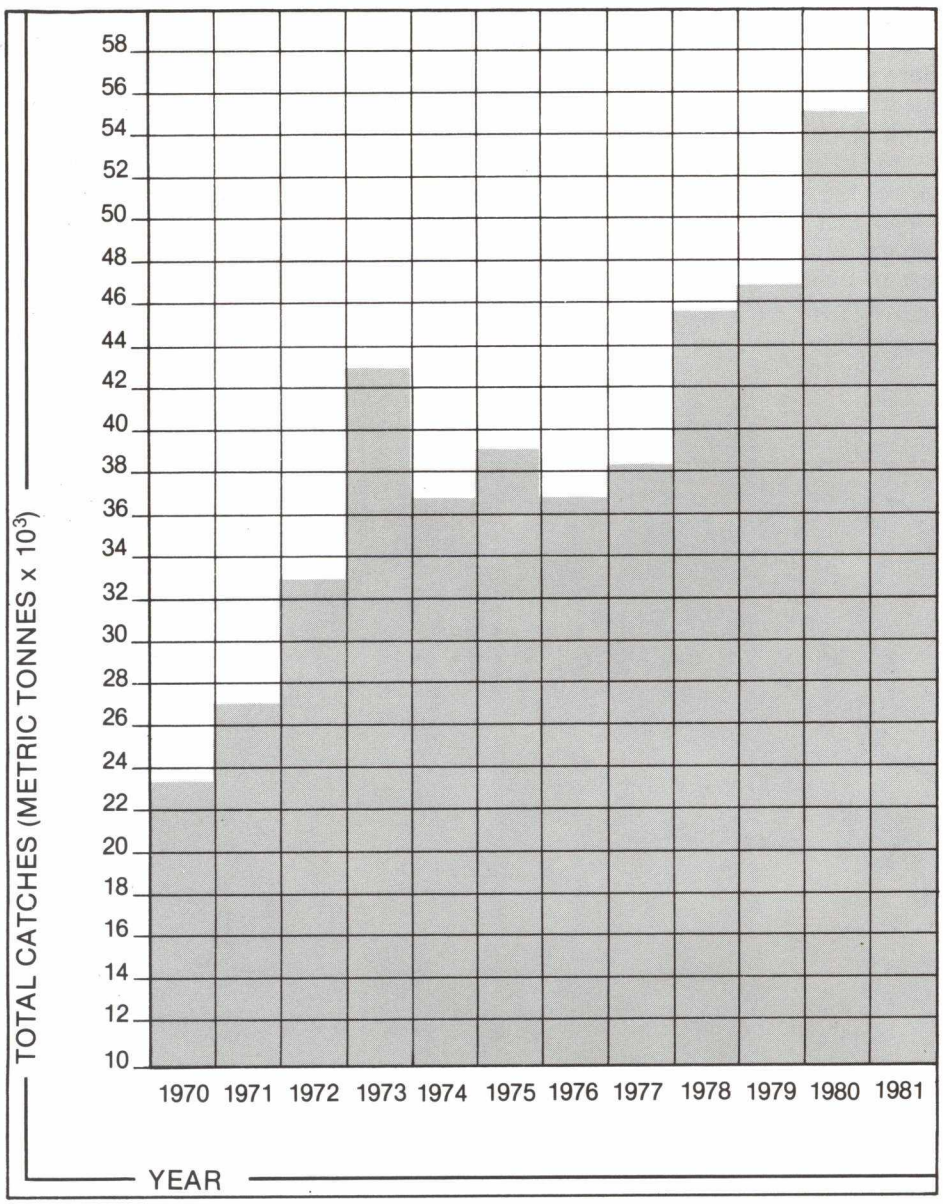
Leim, A.H., and W.B. Scott. 1966. *Fishes of the Atlantic coast of Canada.* Fish. Res. Bd. Can. Bull. 155: 485 p.

McGlade, J.M., M.C. Annand, and D. Beanlands. 1983. *Stock status of pollock in NAFO Division 4VWX and Subarea 5.* CAFSAC Res. Doc. 83/84: 33 p.

McGlade, J.M. 1983. *Preliminary study of stock structure of pollock (Pollachius virens L.) on the Scotian Shelf and in the Gulf of Maine,* CAFSAC Res. Doc. 83/

Steele, D.H. 1963. "Pollock (Pollachius virens (L.)) in the Bay of Fundy." *J. Fish. Res. Bd. Can., 20* (5): 1267-1314.

Figure 4
Historical catches of pollock in the north western Atlantic.



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Published by:

Communications Directorate
Department of Fisheries and Oceans
Ottawa, Ontario
K1A 0E6

DFO/1300 UW/35

Minister of Supply and Services Canada 1984
Catalogue Number
Fs 41-33/35-1984E
ISBN 0-662-12952-0

Disponible en français