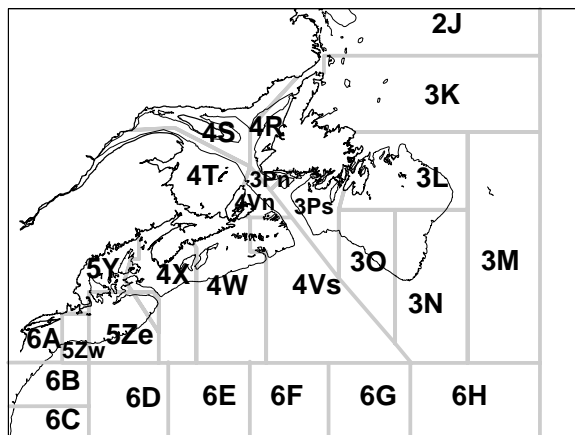


## PORBEAGLE SHARK



### Background

The porbeagle shark (*Lamna nasus*) is a cold-temperate species that occurs in the north Atlantic, south Atlantic and south Pacific oceans. The species range extends from Newfoundland to New Jersey and possibly to South Carolina in the west Atlantic and from Iceland and the western Barents Sea to Madeira and Morocco and into the Mediterranean in the east Atlantic. This pelagic shark inhabits inshore and offshore waters colder than 18 °C. In Canadian Atlantic waters, porbeagle sharks move onto the Scotian Shelf in late spring and into the Gulf of St. Lawrence and onto the Grand Banks during the summer and early fall. Porbeagle move into deeper water in late fall and are taken off the continental shelf in winter. They are also taken in deep water basins such as Emerald Basin and the Gulf of Maine during the winter.

Stock structure of the porbeagle shark is presently unknown, although the history of the fishery suggests that separate populations may exist in the east and west Atlantic. However, this remains an unresolved issue.

Unlike most of the teleosts (bony fishes), the fertilization of eggs occurs internally in elasmobranchs (sharks, skates and rays). In most species of sharks, fertilized eggs continue to develop in the uterus of the female and young are born as fully formed juveniles (often referred to as "pups"). Development is prolonged and young are born at a relatively large size, which reduces the number of potential predators of the young. Pregnant females continue to release eggs and the embryos obtain nourishment by consuming unfertilized eggs in the uterus. The number of young produced (litter size) ranges from 1 to 5, with an average of 4 pups per litter. Size at birth is approximately 70cm. Many details of the life history of this species are still poorly understood. The reproductive cycle of mature females is at least one but may be two years long. Males mature at 150 to 200cm total length while females mature at 200 to 250cm total length. It has been estimated that first maturity in females occurs at age 8. Porbeagle sharks are among the faster-growing species of sharks. Maximum reported size is 365cm total length and greater than 230kg; however specimens over 250cm are rare.

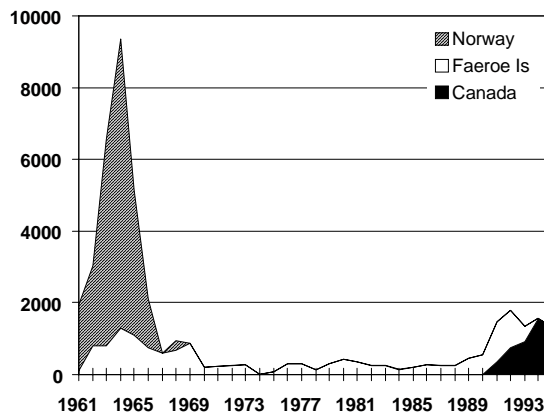
Diet of the porbeagle shark consists primarily of small pelagic schooling fishes, such as mackerel and herring, but includes squid, silver hake and a variety of other fishes. The only likely natural predators are other large sharks.

### The Fishery

#### Landings (t)

Year	1990	1991	1992	1993	1994	1995
Foreign	556	1138	1049	428	64	
Canada		346	741	919	1549	1305
TOTAL	556	1484	1790	1347	1613	1305

All landings provisional



The **directed fishery** for porbeagle sharks in the Northwest Atlantic (NAFO areas 3 - 6) started in 1961 when Norwegian vessels began exploratory fishing using pelagic longline. These vessels had previously fished for porbeagle in the Northeast Atlantic. They were joined by vessels from the Faeroe Islands

during the next few years. **Reported landings** in the Northwest Atlantic rose from 1,924t in 1961 to 9,360t in 1964 and then fell to less than 1,000t in 1969. There are indications that the porbeagle shark stock in the Northwest Atlantic was over-exploited during this period. Although the fishery was unrestricted, reported landings were less than 500t until 1991. Reported landings rose to 1,484t in 1991 and 1,790t in 1992, due to increased effort by Faroese vessels and also due to the entry of Canadian interests into this fishery. Participation by Faroese vessels in the fishery was restricted in 1993 and total landings dropped to 1,347t. Foreign participation was eliminated from the directed fishery by 1994, at which time total landings by three Canadian offshore pelagic longline vessels and a number of inshore vessels was 1613t. Provisional landings dropped to 1305t in 1995 on account of one of the offshore vessels leaving the fleet. Although a precautionary catch level of 1500t was defined for 1994 and 1995, it was not implemented. Landings from the Northwest Atlantic now dominate those for the Atlantic as a whole.

Porbeagle sharks are taken as a **by-catch** in the Canadian swordfish longline fishery; however Observer reports suggest the levels are low. In 1995, while the directed porbeagle fishery reported 1277t, the bycatch in the swordfish was only 15t. About 13t of porbeagle was taken as by-catch in a variety of inshore gear during 1995. Porbeagle sharks are also taken as a by-catch in the Japanese tuna longline fishery; Observer estimates were 2t in 1994 and zero in 1995.

**Angling** for sharks has increased in Atlantic Canada over the last few years, based primarily on blue shark catches, but porbeagle sharks are occasionally taken. Information on removals by this developing recreational fishery is not yet available.

### *Resource Status*

There are uncertainties concerning the **stock area** of this species. No hypotheses have been proposed related to the movements or migrations of this species. In lieu of this, a management unit which includes NAFO Areas 3 to 6 has been adopted at this time for pragmatic reasons.

While many of the details of the **reproductive cycle** of porbeagle remain to be elucidated, it appears that the female gives birth to about 2 to 4 pups per year. This level of pup production is relatively low for a shark species.

A preliminary analysis of catch rates in the Canadian and Faeroe Islands fisheries indicates that they have declined in recent years. Further work is required to confirm these trends.

Given the limited information available, it is not possible to estimate the status of this resource.

### *Outlook*

Porbeagle sharks are long-lived, bear live young and produce comparatively low numbers of offspring. This combination of life history characteristics makes porbeagle sharks highly susceptible to over-exploitation.

The porbeagle shark fishery appeared sustainable during the 1970s and 1980s when landings averaged 250t annually. The levels experienced in the early 1960s did not appear sustainable. The precautionary catch level of 1,500t in the 1995 Management Plan is not based upon estimates of stock abundance and may not be sustainable.

Given the lack of knowledge of this resource and its sensitivity to over-exploitation, the 1995 level of fishing effort should not be exceeded for several years. As well, the 1995 catch level should be used as a harvest ceiling.

It is very important that the provisions of the Shark Management Plan be implemented to ensure orderly harvesting of the resource. This implies that the fishery must have a comprehensive scientific component to collect the information necessary to fill the identified knowledge gaps.

This species is part of a large pelagic species complex that includes tunas, swordfish, billfishes, and other species of large sharks. Management of the porbeagle shark fishery needs to consider interactions with other species in the complex.

The stock area of this species may extend beyond the Canadian Zone. Management of this resource in the future could require bilateral cooperation. Notwithstanding this, benefits to Canadian fisheries could be realized through unilateral action.

### ***For More Information***

Contact:

Bob O'Boyle  
Marine Fish Division  
Bedford Institute of Oceanography  
P.O. Box 1006, Dartmouth  
Nova Scotia, B2Y 4A2

TEL: (902) 426-4890  
FAX: (902) 426-1506  
E-Mail: r\_oboyle@bionet.bio.dfo.ca

### ***References***

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