

## Mackerel Shark

*Lamna nasus* (Bonnaterre) 1788

[Bigelow and Schroeder, 1948 p. 112.]

[Garman, 1911 pl. 6, figs. 4-6 (as *Isurus punctatus*).]

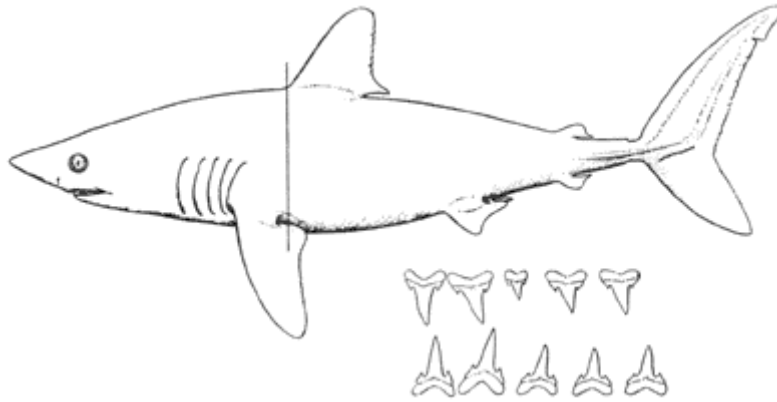


Figure 5 - Mackerel shark (*Lamna nasus*)  
about 37 inches long, Nahant, Massachusetts.

Upper and lower first to fifth teeth from center of jaw of a larger specimen from Platts Bank, about 0.7 times natural size. From Bigelow and Schroeder. Drawings by E. N. Fischer.

## Description

This is a stout, heavy-shouldered shark, tapering in front to a pointed conical snout and behind to a very slim tail root. Its dorsal and pectoral fins are large; the former, originating a little rearward of the armpits of the pectorals, is triangular and about as high as it is long; the pectoral fins are only half as broad as long. The second dorsal and anal fins are very small indeed, and the pelvics but little larger. The second dorsal fin stands over the anal. There is a conspicuous transverse furrow or pit on the upper surface of the root of the tail, also one on the lower surface close in front of the origin of the caudal fin. The lower lobe of the caudal fin is two-thirds to three-fourths as long as the upper lobe, and there is a small secondary keel on the base of the caudal fin on either side, below and behind the rear end of the primary keel formed by the sidewise expansion of the caudal peduncle.

The teeth of the porbeagle are alike in the two jaws, slender, pointed, smooth-edged, and with a sharp denticle near the base on each side (young fish may not have these) which the mako lacks.

The only Gulf of Maine sharks with which the porbeagle might be confused are the maneater, or the mako. And it is easily told from the former by its slender, smooth-edged teeth, as well as by the position of its second dorsal fin directly over the anal; from the mako, by the shape of its teeth (cf. fig. 5 with fig. 6), each usually with a small basal denticle on either side, which the mako lacks; also by its stouter body and by the presence of the secondary longitudinal keel on the anterior part of its caudal fin.

## **Color**

Dark bluish gray to bluish black above, including the upper surfaces of the pectorals, changing abruptly, low down on the sides, to white below; lower surfaces of pectorals dusky to black on the outer one-half to one-third, more or less mottled white and dark toward their bases, and with the anterior and posterior edges narrowly rimmed with black; the anal is white or slightly dusky.

## **Size**

The common run of mackerel sharks in the Gulf of Maine are from 4 to 6 feet long, with few heavier than 200 pounds; thus 18 recently landed at Portland and Eastport, Maine,[31] averaged 4 feet 5 inches, the largest being about 8 feet long, the smallest 3 feet 7 inches.

Specimens longer than 7 to 8 feet are not common; only two longer than 8 feet have been recorded previously from the Gulf of Maine, one of which was 10 feet,[32] the largest recorded from either side of the North Atlantic. This shark has been said to reach a length of 12 feet. But the sizes of sharks often are overstated, unless actually measured, point to point, not around the curve of the body. Information as to the relationship between length and weight is restricted to a report of 305 pounds at 8 feet 3 inches, and of about 400 pounds at about 9 feet. One 3 feet long that we measured weighed 20 pounds.

## **Habits**

The whole mackerel-shark tribe lead a pelagic life, wandering about over the ocean in pursuit of the fishes on which they prey, and often uniting in small companies, though they can hardly be called gregarious. Like swordfish they spend much time at the surface on calm days, when their triangular back fins, followed by the tip of the caudal fin (the bluntness of the former and the wavy track of the latter identify the shark as such) may often be seen cutting through the water. We have sailed close to sharks probably of this species again and again, only to see them sound, just out of harpoon range, plainly visible at first but soon fading from sight as they swim downward.

The porbeagle has often been described as active and strong swimming. But it puts up only a very feeble resistance when hooked. We have never seen or heard of one jumping, as the mako often does (p. 24), nor is there any difficulty in landing one of 4 to 5 feet on an ordinary cod line. It is, in fact, as proverbial among fishermen for its sluggishness when hooked, as is the mako for its activity. While often seen "finning," many are caught close to the bottom, in depths down to 80 fathoms in the gill net fishery for ground fish that is carried on from Portland, Maine; some also on bottom on cod lines; how much deeper they may descend is not known.

## **Food**

In the Gulf of Maine the porbeagle feeds chiefly on mackerel and on the herring tribe; on butterfish; on ground fish, as cod, hake, cusk, rosefish, flounders, or other kinds available; and on squid. It has also the annoying custom of foraging on the cod and other fish that have been hooked on long lines and biting off the snoods. It is also known to prey on the spiny dogfish in the eastern Atlantic; probably in the Gulf of Maine also. But we find no record of its eating crustaceans of any kind.

## **Breeding**

The mackerel shark tribe are ovoviviparous; that is, the eggs are hatched within the maternal oviducts, but there is no placental connection between mother and young. The embryos, like those of the sand shark (p. 19), are nourished chiefly by swallowing the unfertilized eggs that lie nearby in the "uterus," and their stomachs become enormously swollen by the masses of yolk that are eaten in this way. Another interesting feature of the porbeagle embryo is that the upper lobe of its caudal fin is much longer at first than the lower lobe, the latter increasing in relative length with growth. The embryos also are very large at birth; young of 18, 19, and 24 inches have, for example, been found in a five-foot mother. Corresponding to their large size, gravid females contain only one to four young (0-2 in each oviduct).

## **General Range**

Continental waters in both sides of the North Atlantic; southern Scandinavia, Orkneys and North Sea southward to the Mediterranean and northwest Africa in the east; northern coast of Newfoundland,[33] Newfoundland Banks and Gulf of St. Lawrence to New Jersey and perhaps to South Carolina in the west; represented in the northwest Pacific and in Australian-New Zealand waters by forms that are closely allied to it, but not identical.

## **Occurrence in the Gulf Maine**

It has been known from the days of the earliest settlement that stout-shouldered, surface-swimming sharks of moderate size, with "mackerel" tails and slender, smooth-edged teeth are tolerably common in the Gulf of Maine; they are universally referred to by the fishing population as "mackerel sharks." During the first half of the last century only one such shark species was recognized in our waters. And while more recent researches have proved that two actually occur within the limits of the Gulf (this and the next described) the present species is the more northerly of the pair, and much the more frequently taken in the Gulf. Hence it is probable that most of the mackerel sharks that fishermen often see swimming lazily on the surface, and often catch, off the shores of northern New England, belong here.

Seemingly, the chief centers of population for the porbeagle in the western Atlantic are along outer Nova Scotia, and in the western side of the Gulf of Maine. Thus, while there are but two published records for it from the Newfoundland Banks, and one (besides verbal reports) in the Gulf of St. Lawrence, fishermen report it as the commonest large shark along the Atlantic coast of Nova Scotia. Apparently it tends to shun the cold waters of the Bay of Fundy, for it is recorded only twice from

Passamaquoddy Bay, one in August 1900, the other on October 3, 1935.[34] But it is so plentiful farther west in the Gulf that incidental catches are on record of 19 that were taken in one night by six men on hand lines, and of about 150 taken by one crew during three weeks' cod fishing near Monhegan Island, Maine. We have ourselves hooked or sighted about one per three or four days' fishing, on the cod grounds in general in the western side of the Gulf, the majority near Platts Bank off Cape Elizabeth, but some also on Nantucket Shoals.[35] Certainly it is the most often seen of the larger sharks around the Isles of Shoals and near Cape Ann, and it has been characterized repeatedly as "common" in Massachusetts Bay.[36]

To the westward the porbeagle is described as not uncommon near Woods Hole (we have not seen it there). We saw a small one about 3 feet long taken in an otter trawl at 60 fathoms, off Marthas Vineyard, on February 20, 1950, by the Eugene H; and it has been reported on several occasions from Rhode Island waters. But it appears only as a stray off New York and to the southward.

Thus, the latitudinal range within which it occurs regularly off the American coast covers only something like 5°. And its on- and offshore range is correspondingly so narrow that no report [page 23] of it has come to hand from Georges or Browns Banks, only one from the Nova Scotia slope off Sable Island, and two from the Grand Banks, as just noted. On the other hand, few come in-shore close enough to be picked up in pound nets or weirs.

All published records of mackerel sharks from the Gulf, and all that we have seen there, have been in the warm half of the year, and something like 70 percent of the landings of porbeagles on the coast of Maine are for August to November. But its presence in the Gulf in winter is proved by our receipt of a photograph of a porbeagle embryo, taken from a female caught in January, off Portland, Maine, in 1927. And it is also caught in winter as well as in summer in north European waters. Apparently it simply descends into deeper water during the winter to escape low surface temperatures, feeding little, else more of them would have been caught in the Gulf during the winter fishery with long lines for hake (*Urophycis*).

In the Gulf of Maine, females containing embryos have been taken in August (near Monhegan Island, Maine); in October (off Barnstable, Mass.); in November (off Portland, Maine); and in January (off Portland, Maine). But the fact that the largest embryos have been found in European seas in summer suggests that most of the young are not born until then.

## **Importance**

The liver oil of the porbeagle, mixed with other fish oils, was in demand for use in tanning leather during the first quarter of the 19th century. And it is interesting to read that as much as 11 gallons of oil has been obtained from the liver of a single shark 9 feet long.

This demand had almost entirely died before 1850 and has never revived. But a new demand has developed of late years for porbeagle meat, which resembles swordfish in taste as well as in appearance, resulting in landings for this purpose of about 46,000 pounds in 1944 on the coast of Maine, and of 71,600 pounds in 1945. Assuming an average weight of, say, 50 pounds, this corresponds to a commercial catch of about 900 to 1,400 sharks. There is no special fishery for porbeagles at present in the Gulf of Maine, or for any other sharks for that matter. About four-fifths of those brought in are taken in gill nets set on bottom for ground fish, and most of the sharks caught in this way are landed in Portland, Maine. The remainder are taken by seines, traps, weirs, hook and line or harpoons. And most of the porbeagles taken in these ways are discarded at sea.[37] the porbeagle is not "game" enough to be of any interest to sport-anglers.

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[31] Scattergood, Copeia, 1949, No. 1, pp. 71-72.

[32] Hubbs, Copeia, No. 173, 1973, p. 101.

[33] One reported at Raleigh, on the Newfoundland side of the Strait of Belle Isle, July 1929, by Dr. W. G. Jailers.

[34] Reported by McGonigle and Smith, Proc. Nova Scotia Inst. Sci., vol. 19, 1936, p. 160.

[35] Cod tagging cruises of the U. S. Bureau of Fisheries.

[36] Actually no sharks other than the spiny dogfish (p. 47) are "common" in the Gulf of Maine, in the sense that this term is applied to such fish as herring, cod, mackerel, and other species, but only as relative to other sharks of corresponding sizes.

[37] See Scattergood, Copeia, 1949, p. 70, for further details as to landings in Maine and methods of capture.

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**Fishes of the Gulf of Maine** by Bigelow & Schroeder is the seminal work on North Atlantic fishes. It was originally published in 1925 with William Welsh, a Bureau of Fisheries scientist who often accompanied Henry Bigelow on his research cruises. In the late 1920's, Bigelow began a long association with William C. Schroeder, publishing a number of papers and reports on fishes of the North Atlantic, including the first revision of *Fishes of the Gulf of Maine*. This excerpt is from that 1953 edition.

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