

Tomcod

Microgadus tomcod (Walbaum) 1792
[Jordan and Evermann, 1896-1900, p. 2540.]

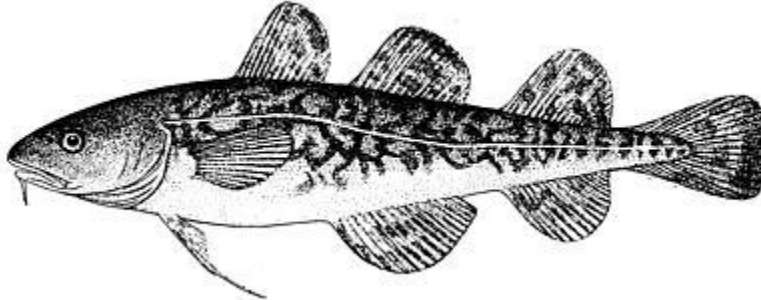


Figure 95 - Tomcod (*Microgadus tomcod*),
Woods Hole. From Goode. Drawing by H. L. Todd.

Description

The tomcod resembles a small cod so closely in its fins, in the projection of its upper jaw beyond the lower, in the presence of a barbel on its chin; and in its pale lateral line, that the one might easily be taken for the other. But the outlines of the ventral fins offer a field mark by which the two fish may be separated, for while their second rays are filamentous at the tip in both species, the ventrals of the cod are moderately broad, rounded, and with the filament occupying less than one-fourth the total length of the fin, whereas the ventrals of a tomcod are so narrow, so tapering, and with so long a filament (as long as the rest of the fin) that the whole suggests a feeler rather than a conventional fin. Furthermore, the margin of the caudal fin of a tomcod is noticeably rounded, while that of the cod is square or slightly concave; the eye of the [page 197] tomcod is decidedly smaller than that of a cod (about one-fifth to one-sixth as long as the head in the tomcod, about one-fourth in the cod, in fish 7 to 10 inches long); and the general form of its body is more slender. A less obvious difference is that the first dorsal fin of the tomcod originates over the middle of the pectoral fins or farther back still, farther forward in the cod; and the pectoral fins reach back only a little beyond the middle of the first dorsal fin in the tomcod, but nearly to the rear end of the first dorsal on a cod.

Unfortunately, the number of fin rays varies so widely in both these fish that it is not diagnostic, there being from 11 to 15 in the first dorsal, 15 to 19 in the second dorsal, and 16 to 21 in the third dorsal of the tomcod: 12 to 21 in its first anal fin and 16 to 20 in its second anal fin. Most of the recent accounts list the position of the vent as the chief external distinction between tomcod and cod, describing it as in front of the origin of the second dorsal fin in the former and back of it in the latter. But we must caution the reader that it is only for adults of the two species (which no one could confuse in any case, cod being so very much the larger) that this distinction holds; cod as small as tomcod (that is, up to a foot long) often have the vent well in front of the second dorsal, while it may hardly be further forward than that in adult tomcod in breeding condition.

Color

Tomcod are not so variable in color as cod. Those we have seen (a considerable number) have been olive or muddy green above, with a yellowish tinge, darkest on the back, paling on the sides, and mottled with indefinite dark spots or blotches. The lower parts of the sides usually show a decided yellowish cast in large fish; the belly is grayish or yellowish white; the dorsal and caudal fins are of the same color as the back; the anals are pale at the base but olive at the margin; and all of the fins are more or less dark mottled. The tomcod has often been described (following Storer) as thickly speckled with black dots, but we have never seen one marked in that way.

Size

The maximum size is about 15 inches and 1¼ pounds, but few of them are more than 9 to 12 inches long.

Habits

The tomcod is strictly an inshore fish; probably few ever descend more than two or three fathoms, or stray as much as a mile outside the outer headlands. In our Gulf they chiefly frequent the mouths of streams and the estuaries into which these empty, as well as shoal, muddy harbors like Duxbury Bay. As often as not they are in brackish water, and they run up into fresh water in winter. Dr. Huntsman, for example, writes us that they are caught in the Petit Codioc River 12 miles above the head of tide. Tomcod are less plentiful in harbors where there is no stream drainage, but now and then they are caught off open shores, off Nahant, for instance, and such fish are usually large ones. South of Cape Cod, most of them move out from the shore into slightly deeper (hence cooler) water in spring, coming in again in autumn to winter in the estuaries. But a year comes from time to time (such as 1925) when they are plentiful close inshore all summer, as far south even as New York.[12] And they do not carry out any inshore-offshore migrations of a regular sort in the cooler Gulf of Maine, so far as is known. Indeed, they are so resistant to cold that we find no record of them killed by winter chilling, a fate that sometimes overtakes other fishes that live in shoal water. And they are equally hardy toward sudden changes of salinity.

Tomcod feed chiefly on small crustaceans, especially on shrimps and amphipods, a great variety of which have been found in their stomachs; also on worms; small mollusks; squids; and fish fry, such as alewives, anchovies, cunners, mummichogs, herring, menhaden, launce, sculpins, silversides, smelt, and sticklebacks.

According to Herrick[13] tomcod are not so keen sighted as pollock nor so active as hake, but spend most of their time quietly on the bottom in the aquarium. His experiments also proved that they are able to recognize concealed baits by the sense of smell if they chance to swim near and that they search the bottom by dragging the chin barbel and the sensitive tips of the ventral fins as they swim to and fro, either for food, or to stir up shrimps and other food items.

Tomcod spawn in the shoal waters of estuaries, in stream mouths and such places, either in salt water or in brackish, and their eggs have been hatched artificially in fresh water. The season lasts from November to February, inclusive, with the height of production in January. The eggs are about 1.5 mm. in diameter with a conspicuous oil [page 198] globule, and (unlike those of its larger relative) they sink to the bottom where they stick together in masses, or to seaweeds, stones, or any available support. Incubation occupies about 24 days at an average temperature of 43°; 30 days at 40°. The larvae are not only somewhat larger (5 mm.) at hatching than those of the cod, but are farther advanced in development, the mouth being formed. And they differ from all other Gulf of Maine gadoids at a corresponding stage by the presence of the oil globule and by the fact that the vent opens at the margin of the ventral fin fold and not at its base at one side.[14] Although great numbers of tomcod have been hatched artificially by the State of New York, its later larval stages have not been described, nor have we seen them ourselves. The fry, which are said to remain through their first summer in the waters where they are hatched, grow to a length of 2½-3 inches by the following autumn. But nothing is known of the rate of growth of older fish.

General range

North American coastal waters from the Gulf of St. Lawrence and northern Newfoundland to Virginia, running up into fresh water.

Occurrence in the Gulf of Maine

The tomcod is locally common around the entire coastline of the Gulf. It is reported at Pubnico and in St. Mary Bay, for example, on the west coast of Nova Scotia; at various localities on both shores of the Bay of Fundy (e. g., Annapolis Basin and River, Minas Basin, St. John Harbor, and the St. Andrews region); at Eastport; from almost every river mouth along the Maine coast; in the vicinity of Boothbay Harbor; at sundry stations in Casco Bay; and in Portland Harbor in Maine. And it is to be found in practically every estuary around the Massachusetts Bay region.

Tomcod are caught from docks and bridges and in salt creeks in mid-summer as well as in winter. Tomcod are in the inner parts of Duxbury bay, for example, in midsummer; there are also plenty of them in a certain salt marsh creek at Cohasset at all seasons; and this applies to many similar locations all up and down the coast, including the Bay of Fundy, where tomcod are in and near the estuaries the year round, as Huntsman[15] remarks.

Westward and southward from Cape Cod, the tomcod is plentiful in suitable situations all along the coast to New Jersey, where Abbott[16] described them many years ago as a "very common" little fish, and we have often caught them while fishing from docks in lower New York Harbor.

In the opposite direction, they are common along the outer shores of Nova Scotia. They are plentiful enough around the shores of the Gulf of St. Lawrence for catches of 684,000 pounds to be reported from the New Brunswick coastline of the Gulf in 1947, 20,400 pounds from the southern shore of the estuary of the St. Lawrence River, 152,900 pounds from the north shore of the estuary and Gulf, while Jeffers[17] reports them as taken in considerable numbers through the ice in winter, on the Newfoundland side of the Strait of Belle Isle. And they are to be expected along the southern and eastern coasts of Newfoundland, though they seem not to have been reported there as yet.

Importance

The tomcod is a delicious little fish. But it seems to have been more highly considered a century ago, when between 5,000 and 10,000 pounds were caught annually in the Charles River tributary to Boston Harbor; today, it is unusual to see any for sale in a Massachusetts fish market. And, in any case, tomcod are not plentiful enough anywhere around our Gulf to support a regular commercial fishery of any magnitude. In 1929 the reported catch was about 6,000 pounds for Massachusetts, about 16,500 pounds for Maine, and about 6,100 pounds for the Canadian shores of the Gulf. In 1942,[18] 27,500 pounds were reported for Maine, none for Massachusetts, about 10,000 pounds for the Nova Scotian shore of the Bay of Fundy. Since that time a few thousand pounds have been reported yearly from the Nova Scotia shores of the open Gulf and of the Bay of Fundy;[19] none at all, however, from its New Brunswick shore.

Most of the tomcod marketed in Maine (also most of those formerly marketed in New Brunswick) are taken in bag nets or in pocket nets set [page 199] in the courses of the larger rivers, a few in weirs. In the days when the commercial catch for Massachusetts was large enough to be worth reporting, most of it was taken on hook and line north of Plymouth, in weirs and traps south of Plymouth.

Besides the fish reported in catch statistics, a considerable number are caught in autumn on hook and line by smelt fishermen and by anglers fishing especially for "frost fish," all along the shores of northern New England and used for home consumption. Hence they are not reported or included in the fishery statistics.

Tomcod bite any bait greedily. Clams, shrimp, sea worms, or cut fish will serve, and they afford amusement to a larger number of anglers in harbors and stream mouths than the meager commercial catch might suggest.

[12] Nichols and Breder (*Zoologica*, N. Y. Zool. Soc., vol. 9, 1927, p. 166) state that tomcod up to 10¼ inches long were common throughout that summer in Sandy Hook Bay.

[13] *Bull. U. S. Fish Comm.*, vol. 22, 1904, p. 262.

[14] Ryder (*Rept. U. S. Comm. Fish.*, (1885) 1887, p. 523, pl. 13, fig. 67) describes and pictures the newly hatched larva of the tomcod.

[15] *Contrib. Canadian Biol.*, (1921) 1922, p. 67.

[16] *Geol. New Jersey*, 1868, p. 818.

[17] *Contrib. Canadian Biol. N. Ser.*, vol. 7. No. 16 (Ser. A, general, No. 13), 1932, p. 7.

[18] Most recent year when tomcod were mentioned in the United States catch statistics for the Gulf of Maine coast.

[19] 35,000 pounds of tomcod were reported for Digby County in 1944, but this amount is so much larger than for preceding years, or for 1946, as to suggest some error.

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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