

Cusk

Brosme brosme (Müller) 1776

[Jordan and Evermann, 1896-1900, p. 2561]

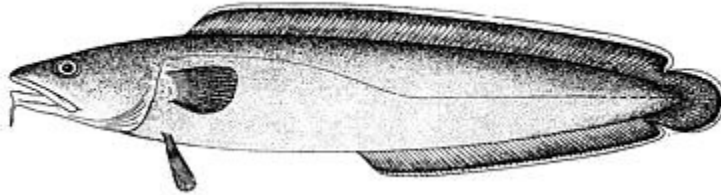


Figure 115 - Cusk (*Brosme brosme*), Boston market.
From Goode. Drawing by H. L. Todd.

Description

The cusk is separable from all its Gulf of Maine relatives at a glance by the fact that it has only one dorsal fin. The relationship of the anal and dorsal fins to the caudal and the outline of the latter are distinctive also, for both the dorsal and the anal are continuous with the caudal at the base but are separated from it by notches so deep that they are obviously distinct. And the caudal is evenly rounded. The cusk is a more slender fish than the hakes, being only about one-fifth to one-sixth as deep as it is long, round-bodied in front of the vent but flattened sidewise behind the vent, and tapering evenly backward to the base of the caudal fin. The mouth is large, gaping back to opposite the rear third of eye, is set slightly oblique, and is armed with small, sharp, curved teeth. The snout is blunt at the tip. The upper jaw encloses the lower when the mouth is closed; the eye is of moderate size; the chin bears one barbel; and the entire head and trunk are clad with small scales. The dorsal fin (85 to 105 rays) runs the whole length of the back from the nape of the neck, and is of uniform and moderate height from end to end with rounded corners. The anal fin is similar to it in outline but is only a little more than half as long (71 to 76 rays). The pectoral fins are rounded, and about half as long as the head. The ventral fins are about as long as the pectorals, with their 5 rays free at the tips, and are situated a little (but obviously) in front of the pectorals. All the fins are so thick and fleshy at their bases that it is only near their margins that the rays are to be seen.

Color

The cusk varies in color, no doubt conforming to the bottoms on which it lives. Its upper parts range from dark slaty to dull reddish brown or to pale yellowish, paling to grayish on the lower part of the sides and to dirty white on the belly. Old fish are plain colored, the sides of small ones, however, are often cross-banded [page 239] with about half a dozen yellowish bands. The pectoral and ventral fins are of the same color as the sides, and the ventral fins are sooty at their tips. The most characteristic color mark is that all three of the vertical fins (dorsal, caudal, and anal), which are of the general body tint at their bases, are black at the margin, and they are narrowly edged with white, except that the anal may lack the white edging on some individuals.

Size

Cusk grow to a maximum length of about 3½ feet; one 40 inches long, weighing 27 pounds, trawled by the Albatross II in the central part of the Gulf of Maine, in 120 fathoms, was the largest that has been recorded definitely from our waters. But those caught in the Gulf of Maine average only 1½ to 2½ feet long, and from 5 to 10 pounds in weight. The relationship of weight to length, in fish we have handled recently, was as follows: 26 inches, about 5½ pounds; 33½ inches, about 14¾ pounds; 36 inches, about 20 pounds. The size at which cusk first mature sexually seems not to have been recorded.

Habits

Once the young fry have taken to the bottom they are ground fish so exclusively that we have never heard of one swimming up to the upper waters, as cod so often do, and even hake. They are sluggish, too, and weak swimmers, but powerful of body; when a cusk is hooked it is likely to twine itself around one's line in a bothersome way.

They are more or less solitary, not so abundant anywhere as cod, haddock, or hake are, as may be illustrated by the following catches counted as they came from the water by representatives of the Bureau of Fisheries in 1913: Twenty miles east of Cape Cod Light, November 16 and 17, 1913, long line, 460 cusk to 2,150 haddock and 1,228 cod; 15 miles southeast of Monhegan Island, June 24 and 25, 1913, long lines, 580 cusk to 2,880 hake; Jeffreys Ledge, December 11 and 12, 1913, long line, 230 cusk to 470 haddock and 475 cod; northwest part of Georges Bank, October 10 to 13, 1913, otter trawl, 4 cusk and 12,473 haddock; 6 miles east of Boon Island, March 30, 1913, gill net, 5 cusk, 1,055 haddock; 51 cod, 20 pollock, and 76 dabs (*Hippoglossoides*).

It also seems that cusk move little from bank to bank. Thus the "Massachusetts fishermen tell me," wrote Goode[80] "that these fish are usually found in considerable abundance on newly discovered ledges, and that great numbers may be taken for a year or two, but that they are soon all caught. Sometimes, after a lapse of years, they may be found again abundant on a recently deserted ground." Neither is there any definite evidence that the cusk performs in or off shore migrations with the seasons, at least in our Gulf.

The cusk is so purely a fish of at least moderately deep water that we have never heard of one taken in less than 10 to 15 fathoms of water within our Gulf. On the other hand, it is safe to say that there are few cusk living below 100 fathoms or so in the deep basins of the Gulf. But they range down to 250-300 fathoms on the continental slope off southern New England, according to Goode and Bean.[81] And they have been caught down to 530 fathoms in the Faroe Channel.

Cusk are decidedly fastidious, too, in their choice of bottoms, being found chiefly on hard ground, especially where the sea floor is rough with rocks or boulders; on gravelly or pebbly grounds; occasionally on mud with hake, but seldom on smooth clean sand. In Norwegian waters they often lurk among gorgonian corals, and they may have this same habit on the parts of our offshore banks where these are plentiful.

The cusk is a fish of cool water, but not of the coldest. In the Gulf of Maine (once the fry have deserted the surface for the bottoms at their chosen depths), cusk spend their lives in water which does not warm above about 48° to 50° at the warmest season, nor cool below about 33° to 34° at the coldest. And it is probable that temperatures of 32° F. or lower are the factor that limit their American range in the north (p. 242).

Food

Little is known of the diet of the cusk. European students describe the stomachs as usually containing crustaceans, sometimes mollusks. And crabs, with occasional mollusks, that we found in the stomachs of several cusk caught on Platts Bank in the summer of 1924, are the only record of its food of which we know, for this side of the Atlantic. But the cusk is not fastidious as to bait, accepting clams, cockles, and herring readily.

Cusk spawn in spring and early summer in both sides of the Atlantic. In European waters the season lasts only from April until June; but [page 240] throughout July in the Gulf of Maine, for we have caught several nearly ripe females on Platts Bank and around Boon Island at the end of that month, though we have seen no perfectly ripe fish. In the eastern Atlantic cusk spawn chiefly deeper than 100 fathoms, to judge from the distribution of the eggs at the surface. But the chief production of eggs probably takes place in shallower water in the Gulf of Maine, since most of the stock lives in lesser depths there. And some must spawn close inshore, for we have taken cusk larvae only 6 to 13.8 mm. long off Cape Cod; in Provincetown Harbor; and near the Isles of Shoals.[82]

We owe what is known of the eggs and larvae to European students. The cusk is among the more prolific of fishes, more than 2 million eggs having been estimated in a female of medium size. Their eggs are buoyant like those of other gadoids; 1.29 to 1.51 mm. in diameter, with one oil globule of 0.23 to 0.3 mm.; and they may be recognized by the brownish or pinkish color of the oil globule, together with the fact that the entire surface of the egg is finely pitted.

The larvae are about 4 mm. long when they hatch. The vent is situated at the base of the ventral finfold as it is in other gadoids, but they are separable from all other gadoid larvae that occur in the Gulf of Maine by the pinkish oil globule at the posterior end of the yolk. The yolk is absorbed in about a week after hatching when the larvae are about 5 mm. long. The ventral fins of the little cusk elongate as it grows, like those of young hake and of young rockling, besides becoming heavily pigmented with black. But cusk larvae are separable from those of hake and of rockling by the fact that their ventral fin rays are separate one from another, and by the presence of three patches of black pigment: one on the top of the head; a second over the gut; and a third at the tip of the tail, besides two vertical black bands which divide the trunk behind the head into three nearly equal sections. The rockling has only one band of pigment behind the vent, and neither of the hakes that are common in the Gulf of Maine has a definite cross-band of pigment.

The first traces of the vertical fin rays of the young cusk are visible at about 12.5 mm.; the dorsal and anal fins are differentiated at about 28 mm.; and it is at this stage that the ventrals are at their longest, relatively. Fry of 40 mm. and upward show most of the characters of the adult. And the relationship of their dorsal and anal fins to the caudal, and the presence of only one dorsal fin and one anal fin is sufficient to identify them from this stage on.

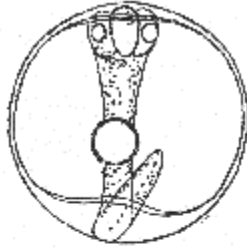


FIGURE 116.—Egg (European). After Schmidt.

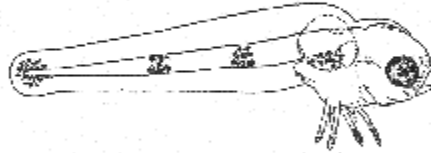


FIGURE 117.—Larva, 6.8 mm. (European). After Schmidt.



FIGURE 118.—Larva, 9.25 mm., off northern Cape Cod.

Figure 116 - Egg (European). After Schmidt.

Figure 117 - Larva, 6.8 mm. (European). After Schmidt.

Figure 118 - Larva, 9.25 mm., off northern Cape Cod.

Cusk (*Brosme brosme*).

The older cusk fry, while still living at the surface, are described by Schmidt [83] as greenish yellow with blue eyes, not silvery-sided. The young cusk drifts near the surface, as other gadoids do, until it is 2 inches long or more, and there is reason to believe that in European seas they first seek the bottom in considerable depths. But we have nothing to offer on this point for the Gulf of Maine.

The rate of growth of the cusk has not been studied, so far as we know.

General range

Both sides of the North Atlantic, chiefly in moderately deep water and on hard bottoms; north on the American coast to the Newfoundland Banks, and to the Strait of Belle Isle, south regularly to Cape Cod, rarely to southern New England, and occasionally to New Jersey; northern coasts of the British Isles, Denmark (Jutland), northern part of the North Sea, and Kattegat off Bohuslan, Sweden, to Iceland and the Murman coast in the eastern Atlantic. It reaches east and west Greenland only as a rare stray from the south.

Occurrence in the Gulf of Maine

The cusk is distributed very generally in the Gulf in water deeper than 10 to 15 fathoms, its presence or absence depending on the precise type of bottom. Because of its preference in this respect (p. 239), it varies greatly in abundance in different parts of the Gulf, and the grounds occupied by it are much less extensive than those haunted by Cod, by haddock, by pollock, or by the hakes. Thus cusk are rarely taken in Cape Cod Bay or in the deeper holes in Massachusetts Bay, and we have taken none on the soft mud of the deep bowl west of Jeffreys Ledge. But considerable numbers are caught on the ledges off Chatham, Cape Cod, on Stellwagen Bank, and on the broken grounds between the latter and Cape Ann, while they are plentiful off Cape Ann and on Jeffreys Ledge, the latter being one of the most productive cusk grounds of our Gulf. The rocky slopes of Cashes Ledge, also have long been famous for cusk. In past years when more fishing was done there (as in 1902 and 1905) this ground was the chief source of supply for the cusk landed in New England. In 1935, similarly, about 30 percent of all the cusk landed in Portland, Gloucester, and Boston came from Cashes. And we have caught more cusk there than anywhere else. As might be expected, cusk are also caught on Fippenies and Platts Banks by the few vessels that fish there as is illustrated by the catches reported from these inshore grounds for the 5-year period 1931-35.[84]

The landings, 1931-1935, in Boston, Gloucester, and Portland (to nearest 1,000 pounds) follow:

Locality	1931	1932	1933	1934	1935
Cashes	225,000	98,000	173,000	612,000	1,023,000
Fippenies	19,000	69,000	35,000	47,000	61,000
Platts	7,000	6,000	165,000	84,000	45,000
Jeffrey Ledge	301,000	143,000	148,000	122,000	53,000
Stellwagen Bank	65,000	63,000	85,000	259,000	78,000

We are inclined to believe that the wide differences from year to year, in the catches on these small grounds reflect the number of vessels that fished there, rather than the number of cusk waiting there to be caught.

Cusk are said to be plentiful on the rather indefinite ground off Penobscot Bay that is known as Jeffreys Bank (not Ledge) or "Matinicus Sou'sou'west." In 1921, for example, 43,545 pounds were reported thence, and considerable numbers are taken, in the aggregate, on the patches of hard bottom that skirt the coast of Maine, as appears from the approximate amounts landed in the smaller ports[85] in the different Maine counties in 1919 and in 1945: York, 9,000 pounds and 2,600 pounds; Cumberland (exclusive of vessel landings at Portland), 79,000 pounds and 182,000 pounds; Sagadahoc, 15,000 pounds and 44,000 pounds; Lincoln, 27,000 pounds and 3,000 pounds; Knox, 52,000 pounds and 109,000 pounds; Hancock, 12,000 pounds and 22,000 pounds; Washington, 4,000 pounds and 500 pounds, respectively.

Some cusk are caught at the mouth of the Bay of Fundy also, especially about Grand Manan on the New Brunswick side, and off Brier Island on the Nova Scotian side, as Doctor Huntsman informs us, though none are reported toward the head of the Bay. Small rocky patches along the west Nova Scotian shore and off Seal Island also yield some cusk; and they are taken regularly on Grand Manan Bank. German Bank and the fishing grounds off Lurcher Shoal are less productive of cusk, perhaps because they are floored, mostly, with patches of gravel and pebbles and small stones alternating with sand and clay. But large catches are taken on Browns Bank, and fair numbers on the rougher spots on Georges Bank, though its smoother expanses yield only an occasional cusk.

The only important exceptions in our Gulf to the rule that cusk hold to rocky ground are that they are at least tolerably plentiful in the co-called [page 242] South Channel, where the bottom is mostly smooth (see regional summary of 1945 catches, p. 242); that some are caught with hake off the coast of Maine on broken or even muddy bottom; and that we have trawled a few, on the Atlantis, in depths greater than 78 fathoms off Cape Cod, where the bottom is mostly a sticky sand.

One striking accompaniment of the preference of cusk for rough or stony grounds in moderately deep water, is that many more are caught around the peripheral belt of the Gulf, between, say, the 15-fathom and the 75-fathom contour lines, than are on the offshore rim formed by Nantucket Shoals, Georges Bank, and Browns Bank. The one notable exception is that there are so few cusk, if any, in the inner parts of the Bay of Fundy that they are not mentioned in the fishery returns for the Bay, except for a few thousand pounds taken near its mouth on the Nova Scotian side.

This regional contrast is illustrated by landings by United States fishermen (1945)[86] and Canadian fishermen (1944, 1946) combined, of between 215,000 and 250,000 pounds off western Nova Scotia;[87] 1,000 to 15,000[88] pounds at the mouth of the Bay of Fundy, Nova Scotian side; about 63,000 pounds off eastern Maine; about 333,000 pounds off central Maine; about 255,000 pounds off western Maine; about 419,000 pounds off eastern Massachusetts; about 338,000 pounds from the small grounds in west central part of the Gulf; about 68,000 pounds from the South Channel; a few hundred pounds only from Nantucket Shoals; about 25,000 pounds from the northwest part of Georges Bank; none reported from the southwestern part of Georges; about 17,000 pounds from the eastern central and northeastern parts of Georges Bank; and about 18,000 pounds from Browns Bank.

Following the cusk eastward and northward, we find that considerable quantities are caught all along the Nova Scotian Banks, from Browns to Banquereau and to the Canso grounds off Cape Breton Island (catch, in 1946, about 542,000 pounds by United States and Canadian vessels combined). Cusk were also reported from the Newfoundland Banks many years ago by Goode,[89] but there cannot be many of them there, for they are not included among the fishes reported thence from cruises of the Newfoundland Fishery Research Commission.[90] And the only report we have found of cusk anywhere in the Gulf of St. Lawrence is at Cheticamp, on the Cape Breton shore.[91] In fact, the only definite record we have found of cusk on the American coast farther north than Cabot Strait is of one that was caught in the Strait of Belle Isle at 80 fathoms many years ago.[92] And while the cusk has been credited repeatedly to Greenland, it is a rare stray there from the south, only 7 specimens having been reported there during the period 1936-46, 5 of them on the west coast, 2 on the east.[93]

Westward from Cape Cod, the cusk is said to have been "not uncommon" formerly in Vineyard Sound, but it is so rare there now (if it ever occurs there) that we have not heard of one caught anywhere in the Woods Hole region of late years. But one was caught off Newport, Rhode Island, in November 1898,[94] and two were reported from Cape May, New Jersey, many years ago.[95]

Importance

The cusk is a good food fish and there is a ready market for all that are brought in. The landings from the Gulf of Maine by United States fishermen ranged between about 1,600,000 pounds and about 2,200,000 pounds for the years 1945-47; between about 100,000 pounds and about 200,000 pounds by Canadian fishermen for 1944 and 1946, which contrasts with 2 to 7 million pounds yearly by United States fishermen alone for the few years that preceded the publication of the first edition of this book (in 1925). We attribute this decrease to the evolution that has taken place in the fishery from long lining to otter trawling chiefly, and to the [page 243] fact that the cusk (frequenter rough bottom) is not a good trawl fish. And 80 to 90 percent as much cusk (pounds) are caught on long lines as are caught in otter trawls even today (as illustrated by 1947), although the yearly landings of fish of all kinds in Maine and Massachusetts now are 70 to 80 times as great by otter trawls as by long lines.[96]

A few cusk are caught from party boats by sportsmen hand lining for ground fish in general, but most of the cusk live too deep to be of any particular interest to anglers.

[80] Fish. Ind. U. S., Sect. 1, 1884, p. 233.

[81] Smithsonian Contrib. Knowl., vol. 30, 1895, p. 385.

[82] the records are July 22, 1912, 1 specimen; July 20, 1916, 4 specimens; and July 22, 1916, 1 specimen.

[83] Meddel. Kommiss. for Havundersøgelser, Serie Fiskeri, vol. 1, No. 8. 1905, p. 7. He also describes the larval stages of the cusk.

[84] 1935 is the most recent year when landings were reported from these grounds, separately.

[85] Mostly by small boat fishermen.

[86] Most recent year for which landings have been published by counties, for Maine and Massachusetts, in addition to the landings at Portland, Gloucester, Boston, and New Bedford.

[87] Off western Nova Scotia, by United States fishermen, 1945, about 108,000 pounds; Yarmouth County landings, Nova Scotia, about 140,500 pounds in 1944, about 106,000 pounds in 1946.

[88] 1944, 15,000 pounds; 1946, 700 pounds.

[89] Fish. Ind. U. S., Sect. 1, 1884, p. 232.

[90] Frost (Service Bull. 8, Newfoundland Dept. Nat. Resources, 1938, p. 29) states that there is no definite record of cusk on the Newfoundland fishing grounds.

[91] Recorded by Cornish (Contrib. Canadian Biol. (1918-1920) 1921, p. 114) from fishermen's reports. W. R. Martin of the Fisheries Research Board of Canada, writes us that any fisheries reports of cusk for the Gulf of St. Lawrence actually refer to hake.

[92] Weitz, Proceedings, Boston Soc. Nat. Hist., vol. 10, 1866, p. 274; Packard, Labrador Coast, 1891, p. 819.

[93] For further details and discussion of the status of the cusk as a Greenland fish, see Jensen (*Spolia Zool., Mus. Hauniensis*, Copenhagen, vol. 11, 1948, p. 175).

[94] Tracy, 40 Ann. Rept. Commiss. Inland Fish. Rhode Island, 1910, p. 159.

[95] Abbott, Geol. New Jersey, 1868, p. 819.

[96] Otter trawlers landed about 499 million pounds of fish of all sorts in Maine and Massachusetts in 1947; long liners about 7 million pounds.

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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