

Common Mummichog

Fundulus heteroclitus (Linnaeus) 1766
[Jordan and Evermann, 1896-1900, p. 640.]

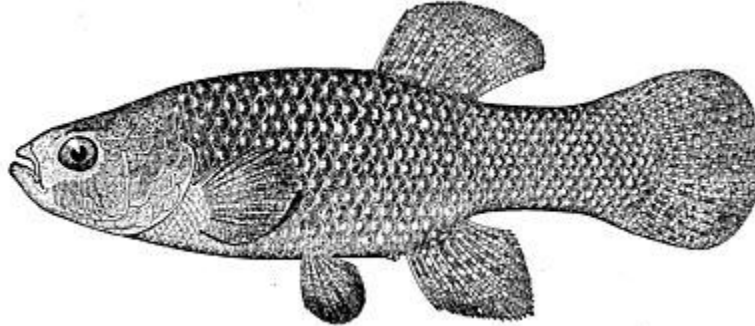


Figure 76 - Common mummichog (*Fundulus heteroclitus*), Maryland.
From Jordan and Evermann. Drawing by A. H. Baldwin.

Description

This is a stout-bodied little fish, about one-fourth as deep as long, its body thickest just back of the pectoral fins, whence it tapers to the tail. Both its back and its belly are rounded, but the top of the head is flat between the eyes. The snout, as seen from above, is blunt. The mouth is at the tip of the snout and is so small that it does not gape back to the eye. Perhaps the most striking feature of *Fundulus* is its very deep caudal peduncle and rounded caudal fin. The fins are of moderate size, the dorsal situated behind the middle of the body above the anal, the pectorals broad and rounded. Both head and body are covered with large rounded scales. On males in breeding condition the scales on the sides of the head and those on the flanks below and behind the dorsal fin develop fingerlike processes on their free edges, called "contact organs."

The mummichog shows a striking sexual dimorphism in the dorsal and anal fins, which are not only larger in the male than in the female, and the anals of a different shape, [90] but are more muscular and are used as claspers in the act of spawning.

Color

Males and females differ in color as well as in the sizes of the fins. Out of breeding season the males are dark greenish or steel blue above, with white and yellow spots, and marked on the sides with narrow irregular silvery bars or mottlings made up a series of dots. The belly is white, pale yellow, or orange; the dorsal, anal, and caudal fins are dark green or dusky with pale mottlings; the front edges of the anal and of the ventrals are yellow. Sometimes there is a darkedged, pale-centered eyespot on the rear part of the dorsal fin. At spawning time the pigmentation of the male is generally intensified, the back and upper sides darkening almost to black, while the yellow of the belly becomes more brilliant and the body generally takes on steel-blue reflections. The females (much paler than the males) are uniform [page 163] olive to bottle green, darker above, lighter below, without definite markings though their sides often show faint and indefinite crossbars of a deeper tone of the same hue. Their fins are much paler than those of males. Very young fry of both sexes show dark transverse bars on the sides, but these bars are lost with growth.

Killifishes vary in shade from very pale to dark, according to the color of their surroundings. And recent experiments [91] have proved that their ability to change from light to dark depends on the sense of sight.

Size

The maximum length is 5 to 6 inches, but adult mummichogs are seldom more than 3½ to 4 inches long in the Gulf of Maine. Several varieties of this species have been described, but they are so closely allied that it is not necessary to discuss them here.

Habits

The home of the mummichog is along sheltered shores where the tide flows over beds of eelgrass or salt hay (*Spartina*), among which shoals of "mummies" may often be seen moving in with the flood tide. They abound in the tidal creeks that cut the salt marshes, on the shores of our harbors, and in the brackish water at the mouths of our streams and estuaries, particularly in little muddy pools, creeks, and ditches. So closely, indeed, do they hug the shore that a line drawn 100 yards out from land would probably inclose practically all the mummichogs in the Gulf of Maine. Where the shore is bold and rocky, as it is about the Bay of Fundy, the mummichog is practically restricted to brackish water, and it often goes up into fresh water. At the other extreme, it is not likely that they ever descend to a depth of more than a couple of fathoms in their journeys in and out of the creeks or along the shore.

Mummichogs are so resistant to a lack of oxygen, to the presence of carbon dioxide, and to unfavorable surroundings generally, that they can survive in very foul water. At ebb tide "mummies" are often trapped in little pools where they remain until the next tide if the water holds, often huddled together in swarms. Should the pool go dry, they work their way for the time being into the mud, where we have often found them. [92] And it is probable that they can flop overland for a few yards to some other drain as the striped mummichog does.

They winter in a more or less sluggish state on the bottoms of the deeper holes or creeks, where they have been found buried 6 or 8 inches deep in the mud, [93] and there is no evidence that they move out to sea during the cold season; in short, this is one of the most stationary of fishes.

Food

"Mummies" are omnivorous, feeding on all sorts of edible things, vegetable as well as animal. They have been found full of diatoms, eelgrass, and other vegetable matter; foraminifera; shrimps and other small Crustacea, also small mollusks; and they sometimes have small fish in their stomachs. [94]

They soon congregate about any dead fish or other bit of carrion, to prey either upon it or upon the amphipod scavengers that gather on such dainties and they eat their own or each other's eggs at spawning time.

Spawning probably takes place at the same season in the Gulf of Maine as on the southern coast of New England; i. e., in June, July, and early August. As sexual activity approaches, the males (now brilliantly tinted) court and pursue the females, rivalry among them being very keen; those that are the most highly colored or most excited usually driving off the others. Sometimes they fight fiercely. They spawn in a few inches of water, seeking shady spots. At the moment of spawning the male clasps the female with his anal and dorsal fins just back of her anal and dorsal, usually forcing her against some stone or against the bottom, the bodies of both are bent into an S and their tails vibrate rapidly while the eggs and the milt are extruded. [95] Occasionally, pairs clasp and spawn free in the water without coming in contact with any object, and sometimes a female is seen to pursue and court a male.

The eggs, which are about 2 mm. in diameter, colorless or pale yellowish and surrounded by a firm capsule, sink and become so sticky on contact with the water that they mass together in clumps, or stick fast to sand grains or to anything else they chance to rest upon. Incubation occupies from 9 to 18 days, the exact duration probably [page 164] depending on temperature. The larva is about 7 to 7.7 mm. long at hatching, its yolk absorbed already, and its pectoral and caudal fins fully formed. By the time the little fish has grown to 11 mm. The dorsal and anal fin rays are present in full number, and the first trace of the ventrals is to be seen. At 16 mm. The ventrals are apparent, and fry of 20 mm. resemble their parents.

General range

Coast of North America, from the Gulf of St. Lawrence to Texas. Port au Port Bay, on the west coast of Newfoundland, [96] is the most northerly record that we have found for it.

Occurrence in the Gulf of Maine

The "mummie" is one of the few fish which can fairly be characterized as "universal" in suitable locations around the entire coastline of the Gulf. We dare say that there is not a single bit of salt marsh, muddy creek, harbor, sheltered shore line, or brackish estuary, where they are not to be found, from the elbow of Cape Cod around to Cape Sable.

Importance

The mummichog is of some commercial value as bait, but only locally. It is also a favorite for biological experiment.

[90] A detailed account of the sexual differences is given by Newman (Biol. Bull., vol. 12, No. 5, 1907, pp. 314-348).

[91] Parker and Lanchner, Amer. Jour. of Physiol., vol. 61, 1922, p. 548.

[92] This habit is described by Mast (Jour. of Animal Behavior, vol. 5, No. 5, 1915, p. 351).

[93] Chichester, Amer. Naturalist, vol. 54, 1920, p. 551.

[94] Lists of stomach contents are given by Field (Rept. U. S. Comm. Fish., (1906) 1907, p. 29).

[95] Newman (Biol. Bull., vol. 12, No. 5, April 1907, p. 315) gives an interesting account of the courtship and spawning, from which the preceding is condensed.

[96] Johansen (Canadian Naturalist, vol. 40, February 1926, p. 34).

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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