

Little Skate

Raja erinacea Mitchill 1825

[Bigelow and Schroeder, 1953, p. 176.]

[Garman, 1913, pl. 20.]

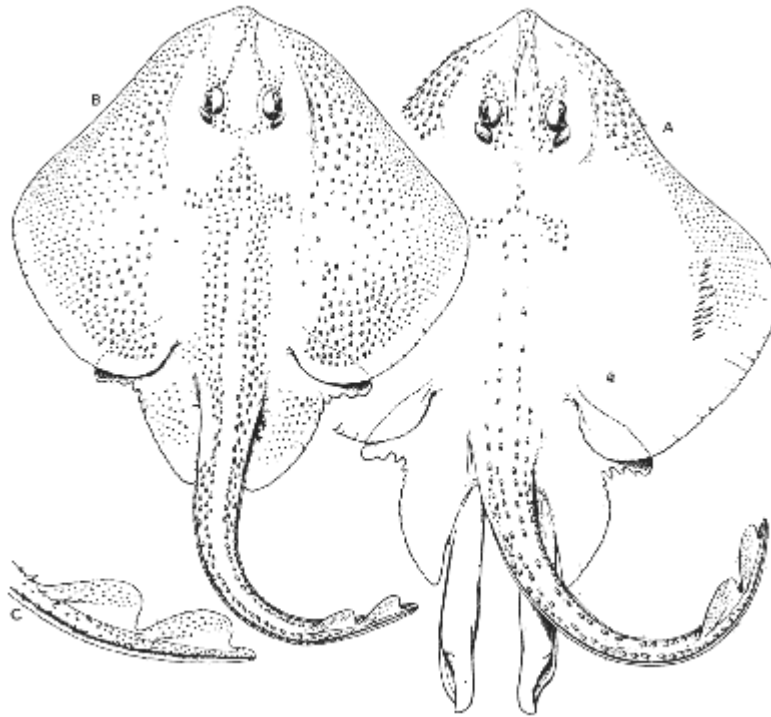


Figure 29- Little skate (*Raja erinacea*).

A, male, 20 inches long, Boston Harbor;

B, female, 17½ inches long, Mystic Connecticut;

C, side view, end of tail of same, about 0.6 times natural size.

From Bigelow and Schroeder. Drawings by E. N. Fischer.

Description

The most distinctive characters of grown specimens are their small size, absence of thorns along the midline of the back (except in the young) and blunt nose.

The anterior angle of the disc is blunter than a right angle and the tip of the snout is rounded, with the margins bulging opposite the eyes. The teeth are in only about 38 to 66 series. Females have thorns scattered generally over the upper surface; these are especially prominent on head, snout, shoulders, and sides of tail. Ordinarily there are no spines on the midline, back of the shoulder girdle; but we found one fish, 13½ inches long, among the many we have observed, with a median row of spines extending from the shoulder girdle to the first dorsal fin near the [page 68] end of the tail, and this is true of newly hatched specimens in general. Males are less spiny, but the spines on tail, shoulders, and along either side of the back ridge are noticeably strong in both sexes. The two dorsal fins are close together; the tail is about half the total length. Large ones closely resemble small specimens of the big skate (*R. ocellata*, p. 63) that may chance to lack the ocellar spots with which that species usually is marked. A count of the teeth is then the only sure clue to the identity of the specimen in hand.

Color

Grayish to dark brown above, or clouded light and dark brown, paler at the edges of the pectoral fins; usually with many small round darker spots; white or grayish below.

Size

Ordinarily up to 16 to 20 inches long; the maximum recorded length is 21 inches (53 cm.); they weigh about ¾ to 1 pound at 16 to 17 inches and anywhere from 1-1/3 to 2 pounds at 18 inches. Females mature sexually when 12½ - 17 inches (32-43 cm.) long, males at about 14 to 17½ inches. [68]

Habits

It is common knowledge that this skate, like others, is most abundant on sandy or pebbly bottom; but they are likewise found on mud and we have seen them lying on ledges at times.

The usual depth range is from close to tide line down to 75 fathoms or so. Many even follow up the shelving bottoms of our beaches until they [page 69] strand. And the bulk of the population hold to depths of less than 40 to 50 fathoms, as appears from average catches, per haul, of 100 at 26 to 35 fathoms, and 95 at 36 to 49 fathoms, but only 12 at 50 to 75 fathoms, in 42 hauls by the *Eugene H.*, fishing from Nantucket Lightship to the southcentral part of Georges Bank, in late June 1951. Fifty fathoms (off the Bay of Fundy) is, in fact, the deepest that positively identified specimens are known, in the inner parts of our Gulf; 80 fathoms off southern New England. [69]

The little skate tolerates a wide range of temperature, being found in water as warm as 68-70° in summer, while they are exposed to temperatures close to 32° in the Bay of Fundy in some winters, unless they move out, and deeper there than seems likely. In the southern side of the Gulf of St. Lawrence, writes Huntsman, [70] they are found in the intermediate zone between the icy cold waters of the banks and the surface stratum, which last warms to 61° (16°C.) or higher in summer.

They have never been reported, to our knowledge, where the water is appreciably brackish.

Hermit and other crabs, shrimps, worms, amphipods, ascidians ("sea squirts"), bivalve mollusks, squid, small fishes, and even such tiny objects as copepods have been found in their stomachs. Probably crabs loom largest in their diet, for more than 29 percent of the skates opened by Field at Woods Hole, contained them; 15 percent had bottom-dwelling shrimps (Crago); and 6 percent had eaten squid. In Long Island Sound, however, amphipods (*Leptocheirus*) are the dominant item in their diet, forming from one-third to one-half of the stomach contents at all seasons of the year. [71] Launce, alewives, herring, cunners, silversides, tomcod, silver hake, have all been found in their stomachs, and they bite a baited hook readily, affording amusement to vacationists.

The spawning habits of the little skate have not been followed in the Gulf of Maine. Studies, at the Bingham Oceanographic Laboratory, however, suggest that they ordinarily deposit their eggs in water not deeper than 15 fathoms and on a sandy bottom. It appears from anatomical examination of the sexual organs of the mature females that copulation may take place at any time throughout the year, and frequently. Observations, too, on skates kept in aquaria have shown that the eggs are laid in pairs at intervals of from five days to several weeks; also that they are usually buried in sand, at least partially. [72] the eggs have been taken off Southern New England, in fish traps and dredges in a few fathoms of water in abundance from July through September.

Examination of large numbers of females has shown that eggs are laid there throughout the year. And there is no reason to doubt that this is the case to the north and east of Cape Cod as well. Aquarium experiments have also shown that eggs laid in the period, May-July, hatched between the end of November and the beginning of January, i. e., after 5 to 6 months. But the incubation period is likely to be somewhat longer for spring-summer laid eggs in nature because of somewhat lower temperatures; and considerably longer for eggs laid in autumn and early winter.

The eggs measure about $1\frac{1}{2}$ to $1\frac{7}{8}$ inches by about $2\frac{1}{8}$ to $2\frac{1}{2}$ inches, not counting the horns, and the great majority of the empty skate eggs that are washed up on the beaches of our Gulf belong to this species. The young skate, which emerges through a transverse opening at the edge of the egg case at the end that has the longer pair of horns, is about $3\frac{3}{4}$ to 4 inches long at hatching; its abdomen is still swollen with yolk, and its tail terminates in a whiplash-like extension that disappears within a few days. Huntsman's observations suggest that young hatched near the head of the Bay of Fundy descend to deeper water the first winter, and this probably applies to the Gulf of Maine as a whole.

It appears from information of various sorts that a little skate 8 inches (20 cm.) long may be 1 to $1\frac{1}{2}$ years old; one of $11\frac{3}{4}$ to 12 inches (30 cm.) 2 to 3 years; one of $15\frac{3}{4}$ to 16 inches (40 cm.) 3 to 4 years; one of $19\frac{3}{4}$ to 20 inches 6 to 8 years old. And the mortality rate appears to be very high after five years, for very few of those taken are longer than about 18 to 19 inches. [73]

General range

Atlantic coast of America; southern side of the Gulf of St. Lawrence and [page 70] northern Nova Scotia to Virginia, in coastal waters and on the shoaler of the offshore banks.

Occurrence in the Gulf of Maine

This, the smallest of our skates, is the commonest and the most familiar from its habit of coming up into very shoal water in summer and of stranding on the beaches, where dried skate carcasses are often to be seen. It occurs all along the coast in the southern side of the Gulf of St. Lawrence and along outer Nova Scotia; is very abundant both on the New Brunswick and on the Nova Scotia sides of the Bay of Fundy, and is to be caught everywhere and anywhere along the coasts of Maine and of Massachusetts; far more commonly, indeed, than one might suspect from the few definite records that have found their way into scientific literature.

An average catch of about 88 per haul (about 60 percent of all the skates taken) in 42 trawl hauls by the *Eugene H*, in late June 1951, fishing eastward from Nantucket Lightship suggests that this is the most plentiful skate on the southwestern part of Georges Bank and on the Nantucket grounds. But it seems to be far less numerous on the northeastern part of the Bank, if it is present there at all; at least we failed to find a single one, among 495 skates of other kinds caught there in 37 hauls by the otter trawler *Kingfisher* in September 1929. And we have never found it (nor has it been reported) in the deeper basins and troughs of our Gulf, probably because it is restricted in general to depths less than 40 to 50 fathoms (p. 69).

In our Gulf many of the little skates appear to carry out an irregular migration into shoal water in April and May, where they remain throughout the summer, autumn, and early winter, to retire again to somewhat deeper, hence, warmer water in December or January. Its migration schedule appears to be more complex in Long Island Sound waters where summer temperatures are higher; i. e., inshore in spring, offshore in mid- or late summer, inshore again in late autumn and offshore again in midwinter. [74] Doubtless little skates breed throughout the shoaler parts of the Gulf, and on the offshore banks.

They are of no commercial importance in our Gulf except as they form a part of the landings of trash fish.

[68] Information supplied by Dr. Daniel Merriman, Dr. Y. H. Olsen, the Misses S. B. Wheatland and L. H. Calhoun, who have made a detailed study of the little skate in southern New England waters.

[69] Seventeen that we saw trawled on the *Albatross III*, May 1950.

[70] Trans. Roy. Soc. Canada, Ser. 3, vol. 12, sec., 4, 1918, p. 63.

[71] Information from Dr. Daniel Merriman, Dr. Y. H. Olsen, and the Misses S. B. Wheatland and L. H. Calhoun.

[72] This summary of the breeding habits is based on extensive information supplied by Dr. Daniel Merriman, Dr. Y. H. Olsen, and the Misses S. B. Wheatland and L. H. Calhoun.

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[74] Information from Dr. Daniel Merriman, Dr. Y. H. Olsen, the Misses S. B. Wheatland and L. H. Calhoun of the Bingham Oceanographic Laboratory.

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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