

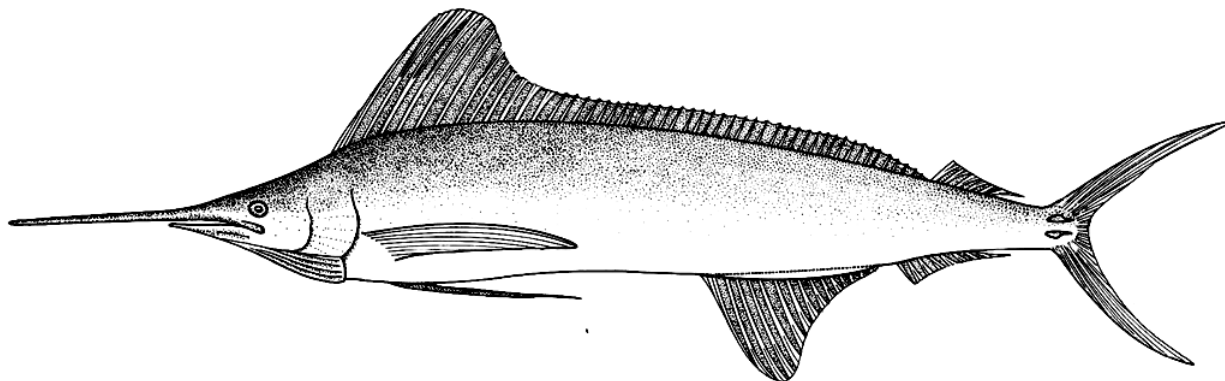
Tetrapturus georgei Lowe, 1840

ISTIO tetra 4

Tetrapturus georgii Lowe, 1840, Proc.Zool.Soc.London, 8:36-7 (Madeira).

Synonymy : Tetrapturus georgii-de Sylva, 1973; Tetrapturus georgei-Robins, 1874.

FAO Names : En - Roundscale spearfish; Fr - Makaïre épée; Sp - Marlín peto



Field Marks : First dorsal fin unspotted; tips of first dorsal and anal fins rounded; distance between anus and anal fin origin nearly equal to half of anal fin height; scales on mid-body soft and round.

Diagnostic Features : Body fairly robust and compressed. Bill long and slender, round in cross section; nape moderately humped; right and left branchiostegal membranes completely united to each other, but free from isthmus; no gillrakers; both jaws and palatines (roof of mouth) with small, file-like teeth. Two dorsal fins, the first with 43 to 48 rays, higher than the maximum body depth anteriorly, and lower posteriorly, with a rounded anterior lobe and a long base extending from above posterior margin of preopercle to just in front of second dorsal fin origin; second dorsal fin with 6 or 7 rays, its position slightly backward with respect to the second anal fin; two anal fins, the first high and broadly rounded, with 14 to 16 rays, the second with 5 to 7 rays and very similar in size to the second dorsal; pectoral fins long, subequal to pelvic fins, reaching beyond the curve of the lateral line, adpressible against sides of body and with 19 or 20 rays; pelvic fins long and slender. Caudal peduncle with a pair of keels on each side; anus moderately far from first anal fin origin, at a distance equal to about half the height of first anal fin. Lateral line single and simple. Scales on sides of body rounded anteriorly, only slightly imbricated and soft; scales on dorsal and ventral parts of body elongate, imbricated and stiff. Vertebrae 24 (12 precaudal and 12 caudal). Colour: most probably there are no bars on body, but this is still uncertain: first dorsal fin completely unspotted. Flesh distinctly redder than in T. belone, more similar to T. albidus.

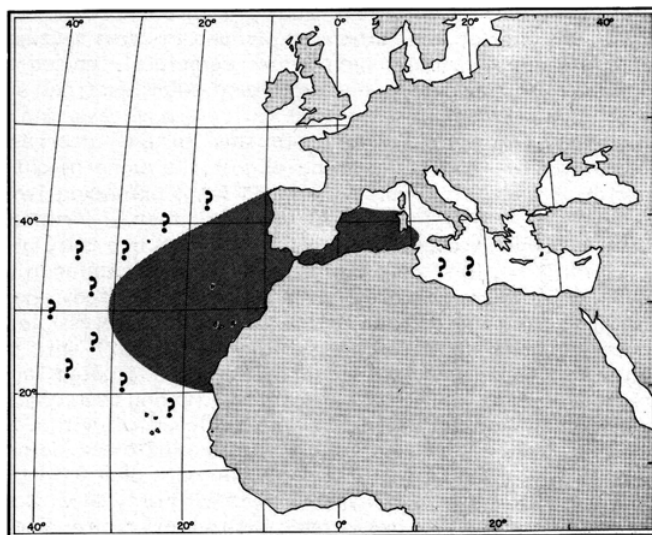


scales

Geographical Distribution : This species is positively known only from the type locality, Madeira, and from the specimens studied by Robins (1974) from Sicily, the Straits of Gibraltar, and the adjacent Atlantic Ocean off southern Portugal. Obviously it can be expected to range widely in the eastern and perhaps central North Atlantic, and clarification of the central and eastern Atlantic records of spearfish from the Japanese longliner's data is of vital importance. The larvae and juveniles and their areas of occurrence are unknown.

Habitat and Biology : The available data are too few to permit a discussion of the seasonal or annual variations in occurrence of this species. It is probably epipelagic and oceanic.

All three of the known females were in a refractory state with no developed ova. They were collected on 27 May, 9 August and 5 October 1961. The only known male, collected on 2 August, had fairly large testes, but was not in spawning condition. Nothing else is known of the bionomics and life history of this species.



Size : Male: 160 cm body length, 21.5 kg body weight; females: 157 cm body length and 20 kg body weight; more or less 1.5 m body length and 23.5 kg body weight; 154 cm body length and 23.5 kg body weight (Robins, 1974).

Interest to Fisheries : No data are available.

Local Names : "Roundscale spearfish" was proposed by Robins (1974) as the English common name for the species in recognition of its peculiar lateral scales. No other names are available to the author.

Literature : de Sylva (1973); Robins (1974).

Remarks : *T. georgei* resembles most closely the white marlin, *T. albidus*, especially in the somewhat humped nape and the broadly rounded anterior lobes of the first dorsal and first anal fin. The possibility that the known specimens of *T. georgei* represent hybrids between other istiophorids has been discussed and rejected by Robins (1974). Further study is strongly needed to clarify the validity of this species.

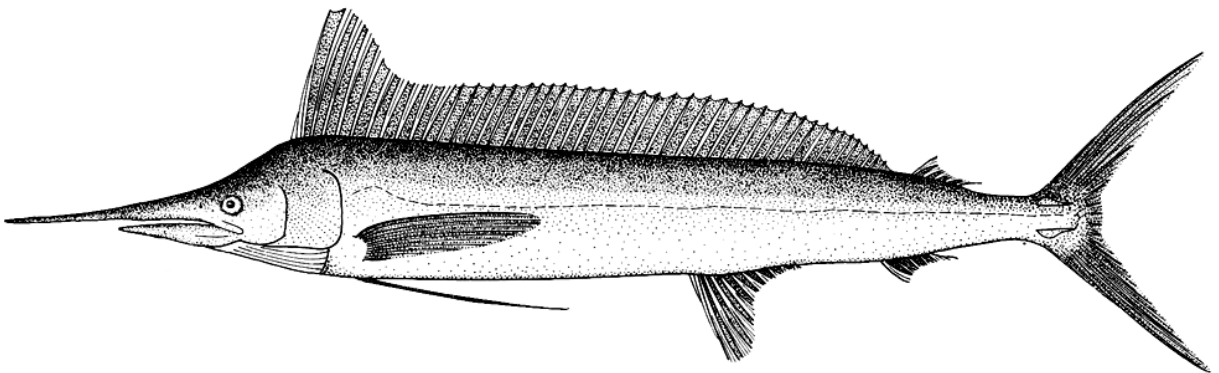
Tetrapturus pfluegeri Robins & de Sylva, 1963

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Tetrapturus pfluegeri Robins & de Sylva, 1963, *Bull.Mar.Sci.Gulf Caribb.*, 3(1):86-69, figs 1-2 (off San Juan, Puerto Rico).

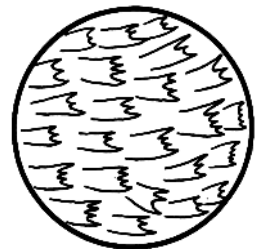
Synonymy: *Tetrapturus belone*: Fowler, 1936 (and many other authors who had not distinguished this species from *Tetrapturus belone* Rafinesque, 1810, until *Tetrapturus pfluegeri* was described by Robins & de Sylva, 1963); *Tetrapterus belone*-La Monte, 1940; *Tetrapturus beloni* -(sic) sic Briggs, 1958.

FAO Names : En - Longbill spearfish; Fr - Makaïre bécune; Sp - Aguja picuda.



Field Marks : Bill long, its length usually equal to or slightly longer than head length; pectoral fins wide, long and rounded, longer than 18% of body length; anus situated far anterior to first anal fin origin, the distance between anus and anal fin origin nearly equal to anal fin height.

Diagnostic Features : Body elongate and remarkably compressed, its depth very low. Bill slender and rather long, round in cross section; nape nearly straight; right and left branchiostegal membranes completely united to each other, but free from isthmus; no gillrakers; both jaws and palatines (roof of mouth) with small, file-like teeth. Two dorsal fins, the first with 44 to 50 rays, and a rounded anterior lobe higher than body depth anteriorly, the fin then abruptly decreasing in height to about the 9th dorsal fin ray and maintaining almost the same height further backward, except at posterior end; first dorsal fin base long, extending from above posterior margin of preopercle to just in front of second dorsal fin origin; second dorsal fin small, with 6 or 7 rays, its position backward with respect to second anal fin by one third of second anal fin base; two anal fins, the first with 12 to 17 rays, the second with 6 or 7 rays and very similar in size and shape to the second dorsal; pectoral fins long and wide, round-tipped, adpressible against sides of body and with 18 to 21 rays; pelvic fins slender and almost equal to, or slightly longer than the pectorals, and depressible into deep ventral grooves. Caudal peduncle compressed (laterally) and slightly depressed (dorsoventrally), with strong double keels on each side and a shallow notch on both, the dorsal and ventral surfaces; anus situated far anterior of first anal fin origin. Lateral line single and obvious, curving above base of pectoral fin and then continuing in a straight line toward the caudal fin base. Body densely covered with elongate bony scales, each with 2 to 5 posterior points. Vertebrae 24 (12 precaudal and 12 caudal). Gonad y-shaped. Colour: body blue-black dorsally, silvery white, splattered with brown, laterally, and silvery white ventrally. First dorsal fin dark blue without dots or blotches; second dorsal fin dark blue; pectoral fins blackish brown, sometimes tinged with greyish white; pelvic fins blue-black with a black fin membrane; first anal fin dark blue, its base tinged with silvery white; second anal fin blackish brown.

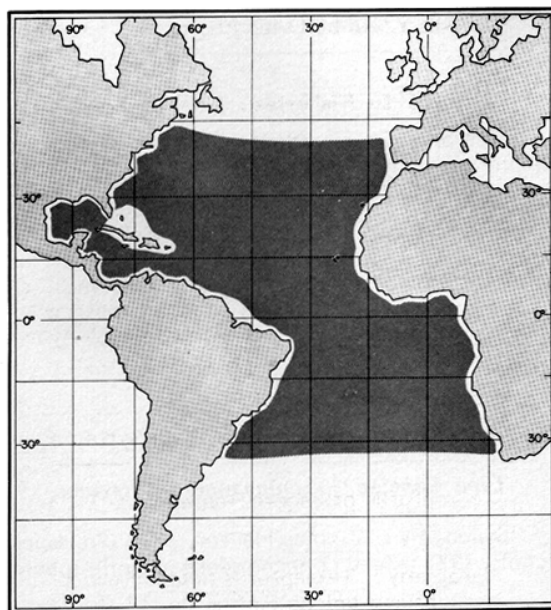


scales

Geographical Distribution : *T. pfluegeri* was reported only rather recently as a new species by Robins & de Sylva (1963). At that time, this species was known certainly only from the western North Atlantic where it occurs from Georges Bank to Puerto Rico and from the Gulf of Mexico to the Caribbean Sea. Recent surveys of research vessels have clearly shown that this species is also widely distributed in Atlantic offshore waters, much more densely so in the western than in the eastern Atlantic. Its latitudinal range, based on catches by surface longlines of research vessels and commercial boats, extends from approximately 40°N to 35°S.

Habitat and Biology : An epipelagic and oceanic species, chiefly found in offshore waters, usually above the thermocline.

Based on occurrence of larvae and mature fish, spawning of *T. pfluegeri* takes place throughout wide areas of the tropical and subtropical Atlantic: mature individuals are caught only in the January-March quadrant (mostly) and in the April-June quadrant (less frequently), with the exception of the areas around the Cape Verde Islands and the Caribbean Sea, where some mature individuals have also been recorded in the October-December quadrant; mature individuals have not been recorded from north of 20°N in the western North Atlantic, north of 30°N in the eastern North Atlantic, south of 10°S in the western South Atlantic, or south of 30°S in the eastern South Atlantic. Maturation seems to occur at the same time rather than in the same season both in the northern and southern hemispheres, which could be suggestive of homogeneity of the population of this species. Like the other billfishes, *T. pfluegeri* feeds chiefly on pelagic fishes and squids. For example, off northeastern Brazil, forage organisms for this species are *Alepisaurus* spp., *Vomer* spp., *Cephalacanthus* spp., anchovies (Engraulidae), dolphinfishes (*Coryphaena* spp.) and squids. Within any region, billfishes show negligible food selectivity and to some extent are food competitors to each other.



The term “double header” used by sportsfishermen applies to a situation where two longbill spearfish cross the stern and take both trolled baits. Such pair-formation is known for other billfishes and the dolphinfish *Coryphaena hippurus*. Sexes of the paired fish are unknown and frequently only one of them is boated. The pair-formation, however, is most likely related to hunting procedure and sometimes to mating behaviour. Whether spawning is done in pairs or larger groups is unknown. No information on the reproductive behaviour nor the fecundity is available. Fertilization is external, the eggs have not been identified, but the larvae have been described.

Size : The maximum size of this species exceeds 200 cm in body length and 45 kg in weight. The weight range of *T. pfluegeri* taken by sportsfishing is from 9 to 36.5 kg, with rare specimens over 45 kg. The most common size caught by surface longlines is about 165 cm body length throughout the Atlantic fishing grounds.

Interest to Fisheries : The longbill spearfish is fished by anglers with the same method they use for other billfishes. No one specifically fishes for this species only. Gear and tackle preferences vary with fishermen but all are well described in the sportsfishing literature, such as Mygdalski (1958), Tinsley (1964), Rybovich (1965), Goadby (1970, 1972), etc. As many as 10 longbill spearfish per year are sent to each of the two principal taxidermy shops in southeastern Florida. Catches everywhere are low; probably fewer than 100 specimens are caught per year by sportsfishermen in the western Atlantic.

Commercial longliners take *T. pfluegeri* along with tunas, swordfish, other billfishes, wahoo (*Acanthocybium solandri*), dolphinfishes (*Coryphaena* spp.), pelagic sharks and miscellaneous other larger pelagic fishes. Catches of this species are incidental and the gear used is the ordinary surface tuna longline. Japanese statistical data lump this species with the Atlantic sailfish, *Istiophorus albicans* as “spearfish and sailfish”; usually, nearshore records roughly apply to *I. albicans* and offshore records to *T. pfluegeri*. In this category, 67 000, 51 000, 118 000, 118 000, 65 000, 59 000, 52 000, 28 000, 39 000, 23 000, 11 000, 8 000, 7 000, 10 000, 7 000, 2 000, 1 000, 2 000 and 3 000 fishes were caught in the years from 1962 to 1980, with an effort ranging from 22 million to 97.5 million hooks per year. The number of fish caught is apparently decreasing recently.

Local Names : JAPAN: Kuchinaga, *Kuchinagafuurai* (names for this species landed in Japan, see: Howard & Ueyanagi, 1963); USA: Atlantic longbill spearfish, Longbill spearfish; USSR: Malyi kopénosets.

Literature : Robins & de Sylva (1963); Ovchinnikov (1970); Ueyanagi et al. (1970); Robins (1975).

Remarks : Outline drawings of five specimens of this species (Nakamura, Matsubara & Iwai, 1968, p. 64, fig. 18) based on field notes, were thought by de Sylva (1973) to correspond to *T. georgei* rather than to *T. pfluegeri*, or even to an undescribed species. The present author believes that those five specimens were in fact *T. pfluegeri*, since very wide individual variations are recognized in external appearance of this species and none of the above-mentioned specimens had the round scales typical of *T. georgei*; they also showed a wider distance between anus and first anal fin origin (usually greater than height of first anal fin) than in *T. georgei* (about half the height of first anal fin).