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THE OCCURRENCE OF *SPHOEROIDES PACHYGASTER* (OSTEICHTHYES-TETRAODONTIFORMES) OFF NORTH-WEST IRELAND

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Wheeler, A. & M. J. P. van Oijen: The occurrence of *Sphoeroides pachygaster* (Osteichthyes-Tetraodontiformes) off North-West Ireland.

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This paper reports the occurrence of a specimen of *Sphoeroides pachygaster* (Müller & Troschel, 1848) off Co. Donegal, Ireland, at 55°10'N 9°12'W in January 1984. This is the first record of this pufferfish from North European waters. The specimen is described and illustrated, its identification is discussed, notes are given on the origin of this specimen and on the species' range elsewhere.

Keywords: Tetraodontiformes; *Sphoeroides pachygaster*; North-West Ireland.

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INTRODUCTION

In the cool temperate waters of the British Isles pufferfishes are exceptionally rare. Only a single species, *Lagocephalus lagocephalus* (Linnaeus, 1758), has hitherto been reported and that only rarely, each occurrence being separated from the previous one by long intervals of time (Wheeler, 1969, 1978). On the coasts of the British Isles this oceanic pufferfish has been reported probably on no more than thirty occasions (Wheeler, unpublished data). No other member of the family has been reported north of the Bay of

Biscay (Tortonese, 1973). Therefore, when a specimen of pufferfish was captured off the coast of Co. Donegal in the north-west of Ireland, it was at first expected to be *L. lagocephalus*. Close examination, however, showed that it was not this species but a specimen of the widespread deep-water species *Spherooides pachygaster* (Müller & Troschel, 1848).

DETAILS OF CAPTURE

The specimen was caught in January 1984 in the pelagic trawl of the Dutch trawler M. V. Francisca, SCH 54, when it was fishing for mackerel at a depth of 100-150 m off Donegal Bay, 55°10'N 9°12'W, near the north-west coast of Ireland. When one of the crew members, K. Roeleveld, discovered the pufferfish in the catch, it was fully inflated and still alive. The coloration of the specimen is believed to have been blueish.

DESCRIPTION AND IDENTIFICATION

The specimen measures 157 mm T.L., 137 mm S.L. Unfortunately, after capture it was inflated artificially and in its present bloated condition it is difficult to make accurate measurements; the process of inflation may even have changed some proportional measurements (see fig. 1).

Referring to the description of *S. pachygaster* by Shipp (1974), the following meristic and morphometric features are relevant: head 2.6 in S.L.; snout short, 1.8 in head; eye 4.5 in head; interorbital flat, broad, 1.4 in snout, 2.6 in head; dorsal rays 9, anal 8, pectorals 15.

No prickles on the skin dorsally or ventrally; no skin lappets.

Coloration after formalin preservation: dark grey-blue with irregular, pupil-sized, dark grey spots on dusky back and tail, ventrally creamy-white with a blueish tinge but no spots or blotches. Axil of pectoral fins black, base of dorsal fin dark, caudal fin dark, especially on fin membrane and on upper and lower edges. Dusky under the lower lip.

The lack of prickles on the body, broad head, dorsal fin ray count of 9, and 8 anal rays all point clearly to *S. pachygaster*. The uniform grey or brown dorsal coloration, and the dusky lateral spots are also characteristic of this species.

The specimen has been deposited in the Zeebiologisch Museum, Dr. Lelykade 39, 2583 CL Scheveningen, The Netherlands, reg. no. 52531.

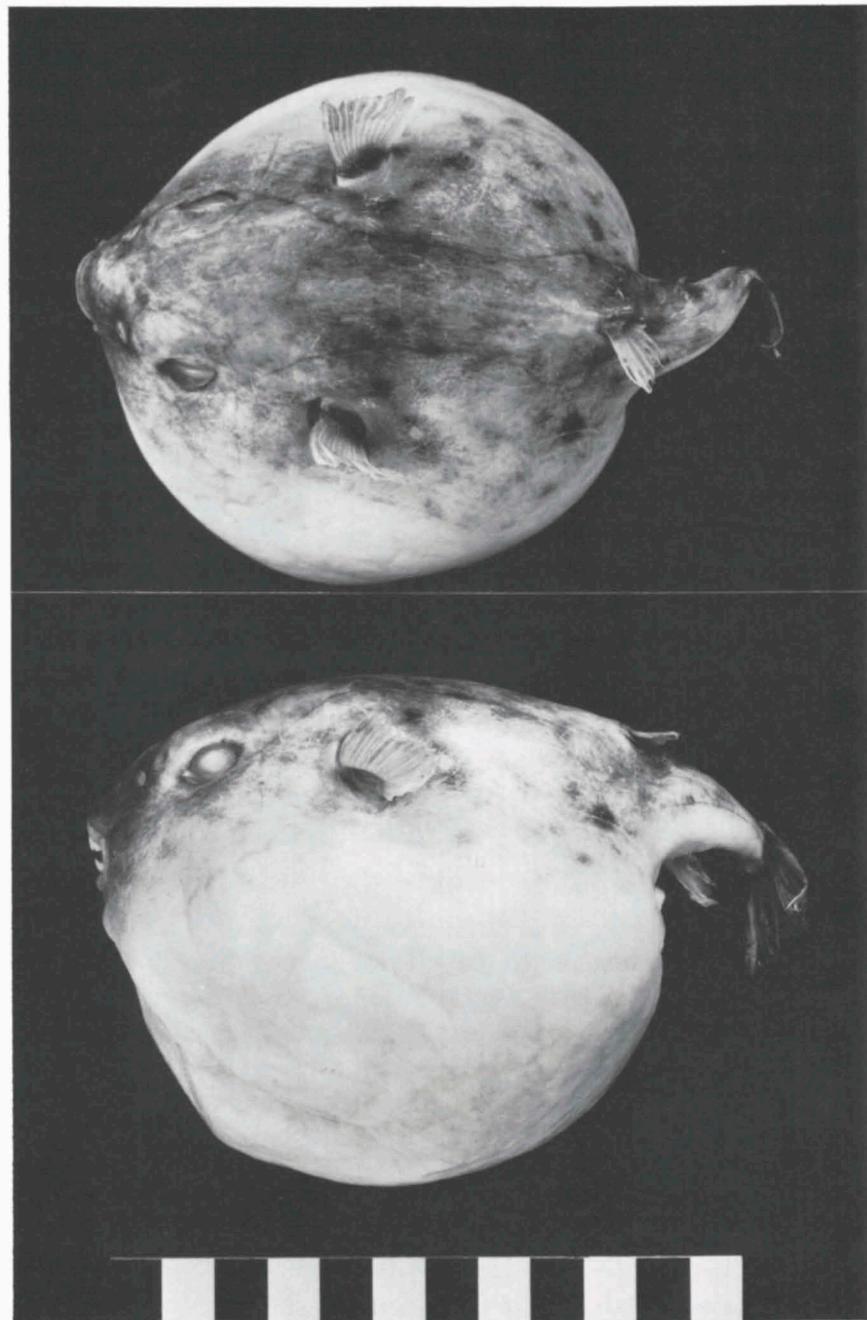


Fig. 1. The described specimen of *Sphoeroides pachygaster* (Müller & Troschel, 1848), Zeebiologisch Museum reg. no. 52531, left lateral (lower figure) and dorsal view (upper figure). (Photograph: British Museum (Natural History).)

DISCUSSION

Nomenclature. — Shipp (1974), in a paper on the pufferfishes of the Atlantic Ocean, gives an extensive annotated list of synonyms of *Sphoeroides pachygaster*. Among these is *Sphoeroides (Liosaccus) cutaneus* (Günther, 1870), which name was used for the taxon by Tortonese (1973). Shipp does not mention Tortonese's paper but seems to be the only author who examined the type specimens of both species. Since Shipp's revision was published, at least three authors have mentioned the occurrence of *Sphoeroides cutaneus*: Calvario et al. (1980) from the Portuguese coast, Talwar & Chakravarthi (1980) from the northern Indian Ocean, and Oliver (1981) from the Balearic Islands in the western Mediterranean. Talwar & Chakravarthi even resurrected *Liosaccus* as a genus. Although we have not examined the specimens described by these authors, we are inclined to say that, judging from the descriptions and illustrations in the papers, all these specimens would seem to be referable to *S. pachygaster*.

Distribution. — The Atlantic distribution of *S. pachygaster* has been described by Shipp (1974). In summary, he reported the limits of its occurrence at New Jersey (38°N) and Argentina (37°S) in the western Atlantic, and along the southern African coast to Nigeria (ca. 5°N) in the eastern Atlantic. However, he does not refer to Gonçalves (1941) who had previously recorded the species from the coast of Portugal. It has been reported on a number of occasions at St. Helena, and at least once from the Azores (Fowler, 1920) and it appears that this Azores record was the sole reason for its being included in the fish fauna of the north-eastern Atlantic by Tortonese (1973). Subsequently specimens have been reported from Portugal in May 1978 near Nazaré and in June 1979 off Ericaria (Calvário et al., 1980), and from off Isla de Mallorca (Balearics) in the western Mediterranean (Oliver, 1981).

Outside the Atlantic Ocean it has been reported on both sides of the Indian Ocean and has recently been recorded as relatively common in the Australian and New Zealand seas by Hardy (1981). It thus appears that this pufferfish is a widespread oceanic species in most tropical and warm-temperate oceans. It lives in relatively deep water, mainly at depths of 100-480 m (Shipp, 1974), while of the fifteen records from Australian and New Zealand seas published by Hardy (1981) eight were from depths of 200 m or more. The European specimens reported by Calvário et al. (1980) and Oliver (1981) were caught at depths of 120-220 and 80 m respectively.

S. pachygaster therefore appears to be an oceanic fish which also occurs close to land. Like many tetraodontid fishes it is probably not a powerful swimmer and many of the records of its occurrence near the extremities of its

range may be due to carriage by oceanic currents. There can be little doubt that its occurrence off the coast of Donegal, north-western Ireland, is due to carriage in the North Atlantic Drift, although it is impossible to prove this.

A number of other fishes of rare occurrence reported on the Atlantic coast of northern Europe, which have probably originated in the tropical western Atlantic, are believed to have done so because of their sparsity, or even absence, in the eastern Atlantic. Several of these have been discussed by Wheeler (1985) in a paper reporting the occurrence of the white marlin *Tetrapturus albidus* Poey, 1860 on the British coast; amongst them the occurrence of *Istiophorus platypterus* (Shaw, 1791), *Thunnus albacares* (Bonnaterre, 1788), and *Tarpon atlanticus* (Valenciennes, 1847) in the seas around the British Isles indicate that a number of such fishes are trans-Atlantic vagrants. To these must be added a specimen of *Seriola rivoliana* (Cuvier, 1833) captured on the British coast in 1984 (which it is hoped will be reported in greater detail in due course) and the two frogfish species, *Antennarius radiosus* Garman, 1896 from the west coast of Ireland (Palmer, 1960) and *Histrio histrio* (Linnaeus, 1758) from the Barents Sea coast of Norway (von Dübén & Koren, 1845). None of these species have been recorded other than as vagrants elsewhere in the eastern Atlantic.

Wheeler (1985) in discussing most of these, shows that the occurrence of the Atlantic tarpon, *Tarpon atlanticus* is of special interest, as it has recently been reported from the Bay of Biscay off the French coast (Quero & Delmas, 1982) the Tagus estuary, Lisbon, Portugal, and the Azores (Pereira & Saldanha, 1977). *T. atlanticus* is an abundant fish in the western Atlantic but is uncommon in the eastern Atlantic, except for the West African coast; therefore it is likely that these North European and Azores specimens were trans-Atlantic vagrants.

Sphoeroides pachygaster appears to be more widely distributed and more common in the western Atlantic than in the east (although several recent records have considerably extended its known range there). This suggests that the Irish specimen may have originated in the western Atlantic as is postulated for the tarpon. It is interesting that the recorded eastern Atlantic distribution of the pufferfish (Azores, Irish coast, Portuguese coast) is almost identical to that of the tarpon, and the occurrence of both species is likely to be a result of carriage in the North Atlantic Drift, the Lusitanian specimens having arrived with the southerly branch of oceanic circulation which carried them first eastwards, then southwards. The Mediterranean specimen (reported by Oliver, 1981) may have owed its occurrence there to carriage in Atlantic water through the Straits of Gibraltar, which seems a more probable event for this species than artificial transport or the release of aquarium specimens as suggested by Oliver.

Shipp (1974) suggests that the eastern and western Atlantic populations of *S. pachygaster* may be discrete. The former he characterizes as being uniformly pigmented, pectoral fin ray count of 14.3 (mean of 44 specimens), large eye (3.5 times in head), and a broad bony interorbital region (about 2.4 in snout length). Members of the western Atlantic population are always spotted, have a high pectoral fin ray count of 16 (mean of 32 specimens), a smaller eye (about 4.5 times in head), and a very broad bony interorbital region (about 2 times in snout).

The Irish specimen is distinctly spotted on back and tail, the pectoral fins have 15/15 rays, the eye is 4.5 times in the head, and the interorbital width is about 1.4 times in the snout length. This, while not conclusive as only one specimen is involved, strongly suggests that it originated from the western Atlantic.

The data for the three Portuguese specimens reported by Calvário et al. (1980) (pectoral fin rays 14, 13, 14; eye in head 5.4, 4.8, 3.6; interorbital in snout 1.2, 0.9, 1.16), while not conclusive, are nearer to the data for the western Atlantic form than to those for the eastern Atlantic, with the exception of the pectoral fin ray counts, but again, the sample is small. The authors make no mention of coloration.

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