



First confirmed record of the blunthead puffer, *Sphoeroides pachygaster* (Osteichthyes: Tetraodontidae) off the Algerian coast (south-western Mediterranean)

FARID HEMIDA¹, MOHAMED MOURAD BEN AMOR² & CHRISTIAN CAPAPÉ³

¹ Ecole Supérieure des Sciences de la Mer et de l'Aménagement du Littoral (ESSMAL), BP 19 Bois des Cars, 16320 Dely Ibrahim, Algiers, Algeria. Email: hemidafarid@yahoo.fr

² Institut National des Sciences et Technologies de la Mer, port de pêche, 2060 La Goulette, Tunisia. Email: benamor7@yahoo.fr

³ Laboratoire d'Ichtyologie, Case 104, Université Montpellier 2, Sciences et Techniques du Languedoc, 34095 Montpellier cedex 5, France. Email: capape@univ-montp2.fr

Abstract. A blunthead puffer *Sphoeroides pachygaster* (Müller & Troschel, 1848) was recorded for the first time in the Algerian waters, off the eastern region close to the Tunisian border. The specimen was an adult male; it measured 330 mm in total length and weighed 650 g.

Key words: distribution, migration, Algerian ichthyofauna, Maghreb shore.

Resumo. Primeiro registro confirmado do baiacu *Sphoeroides pachygaster* (Osteichthyes: Tetraodontidae) na plataforma argelina (sudoeste do Mediterrâneo). Um exemplar do baiacu *Sphoeroides pachygaster* (Müller & Troschel, 1848) foi registrado pela primeira vez em águas argelinas, águas fora da região leste próximo à fronteira da Tunísia. O espécime foi um macho adulto, com 330 mm de comprimento total e peso de 650 g.

Palavras-chave: distribuição, migração, ictiofauna argelina, costa de Maghreb.

The blunthead puffer *Sphoeroides pachygaster* (Müller & Troschel, 1848) is a relative deep water species, found between 100 and 500 m of depth, and distributed circumglobally in tropical and temperate waters (Shipp 1990, Sampaio *et al.* 2001). *S. pachygaster* presents a widespread amphiatlantic distribution, off the western Atlantic, the species was reported from New England to southern Brazil (Golani *et al.* 2002), while off the eastern Atlantic, the species was recorded from Irish waters (Wheeler & Van Oijen 1985), the Bay of Biscay (Quéro *et al.* 1998, 2003), off Portugal (Albuquerque 1954-1956). The species is known to be reported south Strait of Gibraltar, from off Morocco, Senegal (Séret & Opic 1981) to the Gulf of Guinea (Blache *et al.* 1970, Shipp 1990), southward probably to South Africa (Smith & Heemstra 1986). The species is also reported from the Indian Ocean (Golani *et al.* 2002) and the Pacific (Hardy 1981).

Sphoeroides pachygaster formed a well

established population in the Mediterranean Sea, where it was reported to date, at least 26 times between the first record off Mallorca, Balearic Islands, which occurred in 1979 (Oliver 1981), and 2004 according to Psomadakis *et al.* (2006). Recently, three additional records were reported by Peristeraki *et al.* (2006) and Ligas *et al.* (2006, 2007). The species was reported from Adriatic Sea, Aegean Sea, Italian seas, the eastern Levant Basin and southern Tunisian coast. Although the 'core' of the Mediterranean population seems to be located off the southeastern Tunisian coast, especially the Gulf of Gabès (Bradaï *et al.* 2004). Golani *et al.* (2002) wrongly considered the occurrence of *S. pachygaster* as probable off the Algerian coast, due to fact that no specimen being available for confirmation despite investigations were regularly conducted during four decades at Algerian fishing sites and fish markets.

However, on 22 November 2008, a

specimen of *Sphoeroides pachygaster* was trawled at a depth of approximately 150 m, on sandy-muddy

bottom, at about 20 km west to Annaba, in the eastern region of the Algerian coast (Fig. 1).

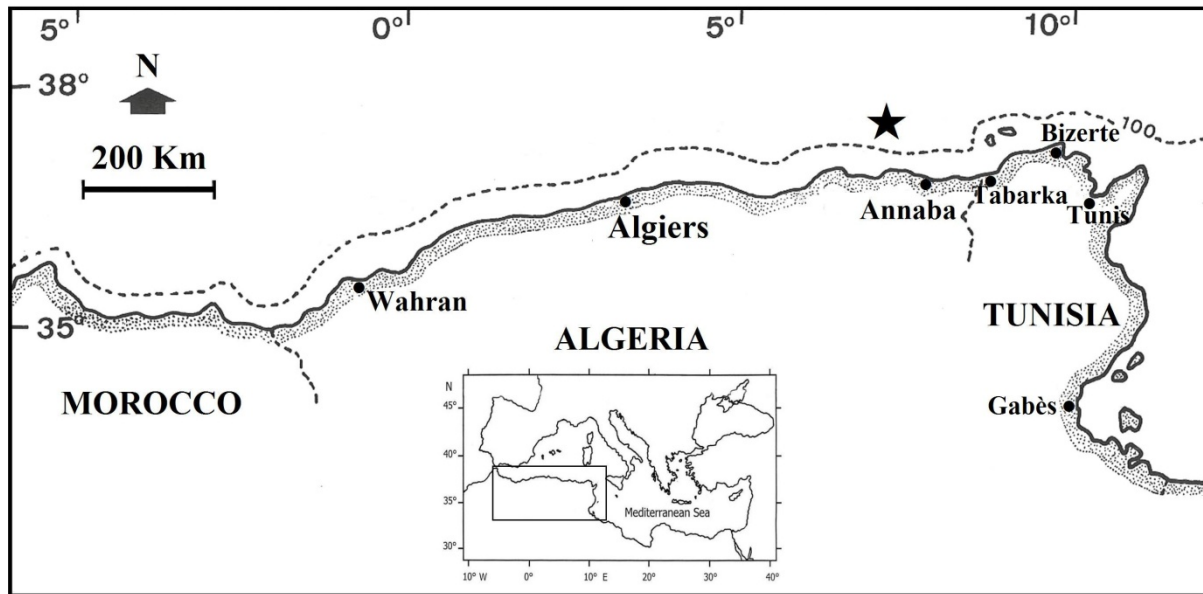


Figure 1. Map of the Mediterranean showing the Maghreb coast and capture site (black star) of the specimen of *Sphoeroides pachygaster* off the Algerian coast.

The specimen was weighed to the nearest gram and measured to the nearest millimetre; all measurements with percents of total length (% of TL) and counts are summarized in Table I, following Ragonese *et al.* (1997). The specimen was photographed (Fig. 2), preserved in 5% buffered formaline, and deposited in the Ichthyological Collection of the University of Bab Ezzouar (Algiers), Faculté des Sciences Biologiques, under the catalogue number FSB/HAL IV B 12.

Identification was made by skin completely smooth with total lack of scales, spines and body plates; one lateral line on each side convoluted; body inflatable, with large head and snout rounded; with a beak-like jaws with two large teeth on each jaw forming a dental plate with entire cutting edge; eyes big and ovale with a flat interorbital space; dorsal fin single placed in front of the similar shaped anal fin, pelvic fin absent and caudal fin truncated or slightly concave; colour greyish on dorsal surface with brownish spots, belly whitish pale grey, caudal fin base dark. Both macroscopic and microscopic examination allowed to consider the specimen as a mature adult male, no food was found in the gut.

Morphology, colour, morphometric measurements and meristic counts of the Algerian blunthead puffer agree with previous descriptions (Tortonese 1986, Ragonese *et al.* 1997, Golani *et al.* 2002, Psomadakis *et al.* 2006). Nevertheless, slight variations were observed when compared with

material from the south-western Atlantic (Sampaio *et al.* 2001).

This recent finding is the first well-documented and confirmed record of *S. pachygaster* off the Algerian coast. Consequently, *S. pachygaster* could be considered at present as a new additional species for the Algerian ichthyofauna.

Records of the species generally occurred in the western and central Mediterranean, suggesting a migration from the eastern Atlantic through Gibraltar Strait. However recent findings in the eastern Mediterranean cannot exclude the possibility of a lessepsian migration (*sensu* Por 1978), according to Psomadakis *et al.* (2006), but also a more ancient presence of *S. pachygaster*, mainly in the south-eastern Mediterranean according to Relini & Orsi-Relini (1995) who referred to ancient literature (see Golani *et al.* 2002). The specimen described in this note was captured in the eastern area close to the Tunisian where the species is substantially established, so a migration from the Tunisian waters where the species is substantially established cannot be totally excluded, as it was the case for the filefish *Stephanolepis diaspros* Fraser-Brünner, 1940, a lessepsian migrant. This species develops and reproduces in the southern Gulf of Gabès (Zouari-Ktari *et al.* 2008), it migrated northward in Tunisian waters and was found in a brackish area the Lagoon of Bizerte (Fig. 1) by Bdioui *et al.* (2004) and more recently off Tabarka, city located close to the Algerian border (Fig. 1) by Ben Amor & Capapé

(2008). Similar pattern could explain the occurrence of *S. pachygaster* in Algerian waters, but this

suitable hypothesis needs to be confirmed by genetic methods prior definitive statement.

Table I. Morphometric measurements and meristic counts carried out on the specimen of *Sphoeroides pachygaster* captured off the Algerian coast.

Morphometric measurements	in mm	% of TL
Total length (TL)	330	100
Standard length	295	89.4
Head length	100	30.3
Head width	70	21.2
Head height	60	18.2
Eye horizontal diameter	21	6.4
Eye vertical diameter	21	6.4
Interorbital space	30	9.1
Snout length	40	12.1
Postorbital length	35	10.6
Width of pedunculum	35	10.6
Width of gill opening	25	7.6
Predorsal length	215	65.2
Preanal length	225	68.2
Dorsal fin length	25	7.6
Dorsal fin base length	11	3.3
Anal fin length	30	9.1
Anal fin base length	11	3.3
Pectoral fin length	30	9.1
Caudal fin length	38	11.5
Body thickness	90	27.3
Body height	90	27.3
Nostrill greatest diameter	6	1.8
Nostrill lesser diameter	4	1.2
Internarial space	30	9.1
Meristic counts		
Dorsal fin rays		8
Anal fin rays		8
Pectoral fin rays		15
Caudal fin rays		10



Figure 2. *Sphoeroides pachygaster* captured off the Algerian coast (scale bar = 50 mm).

Acknowledgements

The authors wish to thank two anonymous referees for helpful and useful comments that allowed improving the manuscript. They are also grateful to Si Hadj Aissa, carreau n° 9, at Algiers Fishery who kindly provided the specimen of *Sphoeroides pachygaster*.

References

- Albuquerque, M. R. 1954-1956. Peixes de Portugal. **Portugaliae Acta Biologica**, 5: 1-1164.
- Bdioui, M., Gharssallah, H., Ben Naceur, L. & M'Rabet, R. 2004. Première mention du poisson-bourse *Stephanolepis diaspros* (Fraser-Brünner, 1940) dans la lagune de Bizerte. **Bulletin de l'Institut National des Sciences et Technologies de la Mer de Salammbô**, 31: 119-121.
- Ben Amor, M. M. & Capapé, C. 2008. Occurrence of a filefish closely related to *Stephanolepis diaspros* (Osteichthyes: Monacanthidae) off northern Tunisian coast (south-western Mediterranean). **Cahiers de Biologie marine**, 49: 323-328.
- Blache, J., Cadenat, J. & Stauch, J. 1970. Clés de détermination des poissons de mer signalés dans l'Atlantique orientale tropical (entre le 20^{ème} parallèle N. et le 15^{ème} parallèle S. **Faune tropicale ORSTOM**, 18: 1-479.
- Bradai, M. N., Quignard, J. P., Bouaïn, A., Jarboui, O., Ouannes-Ghorbel, A., Ben Abdallah, L., Zaouali, J. & Ben Salem, S. 2004. Ichtyofaune autochtone et exotique des côtes tunisiennes: recensement et biogéographie. **Cybium**, 28(4): 315-328.
- Golani, D., Orsi-Relini L., Massuti, E. & Quignard, J. P. 2002. **CIESM Atlas of exotic species in the Mediterranean**. Vol. 1. Fishes. (F. Briand editor). Monaco, CIESM Publications. 256 p.
- Hardy, G. S. 1981. New records of pufferfishes (Family Tetraodontidae) from Australia and New Zealand, with notes on *Sphoeroides pachygaster* (Müller and Troschel) and *Lagocephalus sceleratus* (Gmelin). **Records-National Museum of New Zealand**, 1(20):311-316.
- Ligas, A., Sirna, R. & Sartor, P. 2006. Prima segnalazione di *Sphoeroides pachygaster* (Müller & Troschel, 1848) (Pisces, Tetraodontidae) nel Mar Tirreno Settentrionale. **Biologia Marina Mediterranea**, 13: 274-275.
- Ligas, A., Sirna, R. & Sartor, P. 2007. New findings of *Fistularia commersonii* Rüppell, 1835 and *Sphoeroides pachygaster* (Müller & Troschel, 1848) in the northern Tyrrhenian Sea. **Atti de la Società toscana di Scienze naturale, Memorie, Serie B**, 144: 131-133.
- Oliver, P. 1981. Sobre la aparición de algunos peces raros en las Islas Baleares. **Boletino Instituto Español de Oceanografía**, 6: 59-64.
- Peristeraki, P., Lazarakis, G., Skarvelis, M., Georgiadis, M. & Tserpes, G. 2006. Additional records on the occurrence of alien fish species in the eastern Mediterranean Sea. **Mediterranean Marine Science**, 7: 61-66.
- Por, F.D. 1978. **Lessepsian migration. The influx of Red Sea into the Mediterranean by the way of the Suez Canal**. Berlin, Ecological studies, 23, Springer-Verlag, 228 p.
- Psomadakis, P. N., Ceddia, P. & Vacchi, M. 2006. Additional record of *Sphoeroides pachygaster* (Pisces: Tetraodontidae) in the Tyrrhenian Sea and notes on the distribution of the species in the Mediterranean. **JMBA2 – Biodiversity records**. 1-4. Accessible at <http://www.mba.ac.uk/jmba/pdf/5186.pdf>.
- Quéro, J. C., Du Buit, M. H. & Vayne, J.J. 1998. Les observations de poissons tropicaux et le réchauffement des eaux dans l'Atlantique européen. **Oceanologica Acta.**, 21(2): 345-361.
- Quéro, J. C., Porché, P. & Vayne, J. J. 2003. **Guide des poissons de l'Atlantique européen. Les Guides du naturaliste**. Lonay (Switzerland)-Paris, Delachaux & Niestlé, 465 p.
- Ragonese, S., Jereb, P. & Morana, U. 1997. Morphometric relationships of *Sphoeroides pachygaster* (Pisces, Tetraodontidae) of the Strait of Sicily (Mediterranean Sea). **Cahiers de Biologie marine**, 38: 283-289.
- Relini, M. & Orsi Relini, L. 1995. Pesci palla in Mediterraneo, presenze antiche et recenti. **Biologia Marina Mediterranea**, 2(2): 509-511.
- Sampaio, C. L. S., Lopes, P. R. D. & Olavo, G. 2001. Registros de *Lagocephalus lagocephalus* (Linnaeus, 1758) e *Sphoeroides testudineus* (Muller & Troschel, 1848) (Actinopterygii:Tetraodontidae) para o litoral da Bahia, Nordeste do Brasil. **Interciência, Venezuela**, 26(4): 157-160.
- Séret, B. & Opic, P. 1981. **Poissons de mer de l'Ouest africain tropical**. Paris, ORSTOM, 416 p.
- Shipp, R. L. 1990. Tetraodontidae. p. 1341-1345. In: J. C. Quéro, J. C. Hureau, C. Karrer, A. Post & L. Saldanha (Eds.), **Check-list of the**

- Fishes of the eastern tropical Atlantic**, Unesco 2, Paris.
- Smith, M. C. & Heemstra, P. C. 1986. **Smiths' sea fishes**. Berlin, Heidelberg, New York, London, Paris, Tokyo, Springer-Verlag editor. 1047 p.
- Tortonese, E. 1986. Tetraodontidae. p. 1341-1345. In: P.J.P. Whitehead, J.C. Hureau, J. Nielsen, E. Tortonese (Eds.), **Fishes of the north-eastern Atlantic and the Mediterranean**, 1984-1986, Unesco 1, Paris.
- Wheeler, A. & Van Oijen, M. J. P. 1985 The occurrence of *Sphoeroides pachygaster* (Osteichthyes- Tetraodontiformes) off North-West Ireland. **Zoologische Mededeelingen**, 59 (11): 101-107.
- Zouari-Ktari, R., Bradai M. N. & Bouain, A. 2008. The feeding habits of the Lessepsian fish *Stephanolepis diaspros* (Fraser-Brünner, 1940) in the Gulf of Gabès (eastern Mediterranean Sea). **Cahiers de Biologie marine**, 49: 329-335.

Received February 2009

Accepted April 2009

Published online May 2009