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FIRST RECORD OF THE YELLOWSPOTTED PUFFER *TORQUIGENER FLAVIMACULOSUS* HARDY & RANDALL, 1983 (OSTEICHTHYS: TETRAODONTIDAE) FROM THE MEDITERRANEAN SEA COASTS OF SYRIA

SUMMARY

The first record of the yellowspotted puffer, *Torquigener flavimaculosus* Hardy & Randall, 1983 in the Syrian marine waters is reported based on four 52-160 mm total length specimens collected from the Syrian coasts of Mediterranean Sea, between Ras Al-Bassit and Tartoos, 47′ N 39′′ 35° 17′ E 53′′35° and 20′ N 56′′ 35° 25′ E 44′′ 34° Morphometric and meristic data are provided and compared with those of 7 specimens caught off the north and south coasts of the eastern Mediterranean Sea and from Middle region of this sea.

INTRODUCTION

There are nine species belonging to four genera belonging to the family Tetraodontidae in the Mediterranean Sea (Tortonese, 1986; Golani *et al.*, 2009). The genus *Torquigener* contains twenty species (Froese and Pauly, 2013). *Torquigener flavimaculosus* is found in the Western Indian Ocean from the northern Red Sea to Kenya. It has been also reported from, the Arabian Gulf and Seychelles (Froese and Pauly, 2013).

Torquigener flavimaculosus inhabits shallow water areas on sand-muddy bottoms at depths of 3 to 57 m. It feeds on small benthic invertebrates (Froese and Pauly, 2013).

Torquigener flavimaculosus has been first recorded in the Mediterranean Sea by Golani (1987) in Haifa Bay, Israel. Later, the species has been record-

ed from the Turkish coastal waters, north-eastern Mediterranean Sea (Bilecenoglu, 2003, 2005; Erguden and Gurlek, 2010) and from the Greek waters (Corsini-Foka *et. al*., 2006; Zenetos *et al*., 2007).

This record extends the species' geographical distribution in the Mediterranean Sea and is the first record of the species for the Syrian coastal waters.

MATERIAL AND METHODS

Four specimens of *Torquigener flavimaculosus* (52 – 160 mm SL) (Fig. 1) were captured by gill net between November 2009 and October 2010, along the Syrian coast between Ras Al-Bassit and Tartoos (47′ N 39″ 35° 17′ E 53″ 35° and 20′ N 56″ 35° 25′ E 44″ 34°) at depth of about 20 m (Figure 2). The specimens were measured fresh to the nearest 0.1mm, fixed in 10% formaldehyde/seawater solution for three weeks and then transferred to 70% ethanol/distilled water solution for long term preservation. The specimens were stored in the dark collection room of the Marine Science Laboratory, Faculty of Agriculture, Tishreen University, Syria.

Figure 1. Map of the Mediterranean coasts of Syria pointing out the capture site of the four *Torquigener flavimaculosus* (black stars).

RESULTS

All specimens were characterised by the following set of characters (Fig.1): eye encircled by dorsal lateral line; presence of ventrolateral skin fold extending posteriorly from chin; lower margin of the eye above the level of

mouth corner; terminal mouth at level of upper end of pectoral fin; elongated, pointed dorsal and anal fins; caudal fin truncate; presence of patch of small spines on head, body sides back not reaching dorsal fin; lower edge gill with a cartilaginous spur; posterior margin of gill cover with small, irregularly distributed spines; dorsal body surface brown with grey-whitish spots; a mid-lateral line of well-distinguished yellow-orange spots, followed by a pale yellow zone, separating the dorsal coloured surface from the white ventral surface; vertical yellow-brown bands on cheek, separated by irregular white bands; caudal fin with brown spots; dorsal fin lightly spotted with white; anal and pectorals fins transparent.

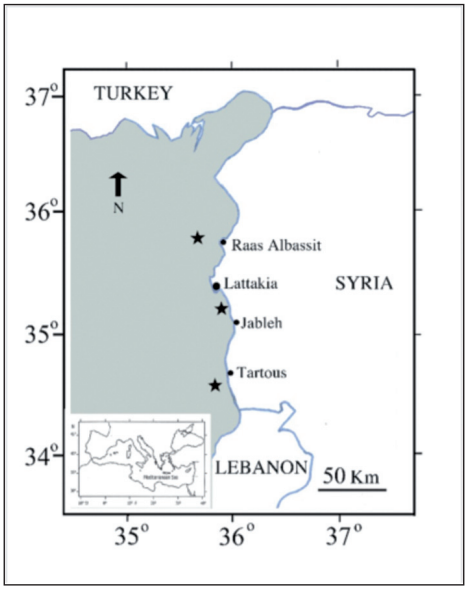

Figure 2. *Torquigener flavimaculosus*, 85 mm Total length, captured by gill net from the Mediterranean coasts of Syria between Ras Al-Bassit and Tartoos, November 2009- October 2010.

DISCUSSION AND CONCLUSIONS

There are thirteen tetraodontid species in the Mediterranean Sea (Corsini – Foka *et al.*, 2010). At least three tetraodontid species are known from the Syrian coasts of the Mediterranean Sea (Saad, 2005, 2009). Before extending its range further west, to the Aegean Sea (Corsini – Foka *et al.*, 2006, 2010), *T. flavimaculosus* has only been record from two localities in the eastern Mediterranean Sea, from the south at Haifa Bay (Golani, 1987) and from the north from Fethiye shore, western Mediterranean coast of Turkey. No report of its occurrence on record between the northern and southern extends of the eastern Mediterranean. Measurements, counts and body coloration of puffer fish *T. flavimaculosus* agree with descriptions of Hardy and Randall (1983), Golani (1987) and Golani *et al*. (2009). The present record differs from one specimens obtained from the south of the eastern Mediterranean Sea in having less pectoral fin ray count (14 in the Syrian specimens, 15 in the south eastern Mediterranean specimen) (Golani, 1987) (Table 1).

Table 1.Morphometric and meristic characters of *Torquigener flavimaculosus* collected from the Syrian coasts of the Mediterranean Sea (TL, total; HL, head length; SL standard length; *n*, number of specimen).

Morphometric/ meristic characters	Present study *n* = 4	Corsini et al., 2006 *n* = 3	Zenetos et al., 2007 *n* = 1	Ergudeu and Gurlek, 2010 *n* = 1	Golani 1987 *N*=2
Total length (mm)	52-160	55-134.6	133	520	97-98
Standard length (% in TL)	43-144 (83-90)	43.1-110.8 (78.4-82.3)	110 (82.7)	426 (81.9)	76-77 (78.4-78.6)
Head length (% in SL)	10-38 (19.2-24)	17.1-38.4 (31.1-35)	25 (22.7)	99 (23.3)	26.2-27.3 (34.5-35.5)
Eye diameter (% in HL)	4-10 (10.5-26.3)	4.3-9.6 (25-25.1)	10 (40)	37 (37.4)	7.2-8.0 (27.5-29.3)
Preorbital length (% in HL)	7-17 (45-70)	7.2-11.6 (42.1-43.2)	11 (4)	69 (69.7)	-
Posorbital length (% in HL)	6-16 (42.1-60)	6.4-15 (37.4-39.1)	21 (84)	118 (27.7)	-
Interorbital space length	6-17 (45-60)	6.5-15.6 (38-40.6)	-	66 (66.7)	10.9-11.6 (41.6-42.5)
Predorsal fin length (% in SL)	28-82 (57.65)	29.1-76.7 (69.2-67.5)	76 (69.1)	242 (56.8)	54.2-55.4 (71.3-71.9)
Prepectoral fin length (% in SL)	18-54 (38-42)	18.7-40.9 (36.9-43.4)	35 (31.8)	132 (30.9)	29.7-30.1 (39.1)
Preanal fin length (% in SL)	30-88 (61-70)	31.5-79 (71.3-73.1)	83 (75.5)	242 (56.8)	57.6-58.0 (75.3-75.8)
Caudal peduncle depth (% in SL)	10-28 (19.4-23.3)	3-8.3 (7-7.5)	15 (13.6)	-	5.9 (7.8)
Pectoral fin length (% in SL)	18-54 (38-42)	-	25 (22.7)	-	-
Meristic characters					
Dorsal fin count	9	9	-	9	9
Pectoral fin ray count	14	14	-	14	15
Anal fin ray count	7	7	-	7	7-8
Caudal fin ray count	10	10	-	10	10

This record of *T. flavimaculosus* off the Syrian coasts of the Mediterranea Sea documents a range expansion of the species within the Levantine region.

Torquigener filavimaculosus, is very similar to *T. brevipinnis* (Regan, 1903) and differences are due to a caudal fin markings less regular and more numerous on each ray and the dorsal fin arises above the vent (Erguden and Gurlek, 2010). This species also differs from *T. hypselogeneion* in the relative eye diameter, caudal peduncle length, and in having denser ventral supination (Hardy, 1984).

The Suez Canal may be suspected as a mode of entry for the species in the Mediterranean basin. However, as for other fish species, puffer species are commercially valuable in the aquarium trade (Semmens *et al*., 2004), and the hypothesis that the species entered the Mediterranean being discharged by aquarists cannot be excluded. This species is grouped among the Lessepsian immigrants, the up to now two records showing an ability to colonize the eastern coasts of the Mediterranean (Golani, 1987; Bilecenoglu, 2005). The Syrian coasts of the Mediterranean is an unforeseen new habitat could indicate that certain population might already be established along the Levantine coasts, but probably undetected or neglected because of the very small size of this fish and lack of ichthyological investigation (Corsini – Foka *et al*. 2005; Corsini – Foka and Economidis, 2007). Other vectors different from usual pathways, like ship ballast and aquaculture, have probably to be evaluated for the introduction of this fish, as observed for other taxa in parts of the Mediterranean waters (Pancucci -Papadopoulou *et al*., 2005).

REFERENCES

Bilecenoglu M., 2003- Kizildeniz göçmeni balon baligi (*Torquigener flavimaculosus* Hardy & Randall, 1983), Türkiye kiyilarindan ilk gözlemler. *Sualti Dunyasi Dergisi* 74, 38-39. [In Turkish].

Bilecenoglu M., 2005- Observations on the burrowing behaviour of *Torquigener flavimaculosus* Hardy & Randall, 1983 (Osteichthyes: Tetradontidae) along Fethiye Coasts, Turkey. *Zoology in the Middle East* 35, 29-34.

Corsini-Foka M., Economidis P.S., 2007- Allochthonous and vagrant ichthyofauna in Hellenic marine and estuarine waters. *Mediterranean Marine Science* 8, 67–89.

Corsini- Foka M., Margies P., Kondilatos G., Economidis P.S., 2005- Lessepsian migration of fishes of the Aegean Sea: First record of *Tylerius spinosissimus* (Tetraodontidae) from the Mediterranean and six more fish records from Rhodes. *Cybium* 29, 347-354.

Corsini – Foka M., Margies P., Kondilatos G., Economidis P.S., 2006- *Torquigener flavimaculosus* Hardy and Randall, 1983 (Pisces: Tetraodontidae) off Rhodes island marine areas: a new alien fish in the Hellenic waters. *Mediterranean Marine Science* 7, 73-76.

Corsini – Foka M., Margies P., Kondilatos G., Economidis P.S., 2010- Tetraodontid colonizers in the Aegean Sea; second record of the spiny vlaadop, *Tylerius spinosissimus* (Actinopterygii: Tetraodontiformes: Tetraodontidae). *Acta Ichthylogica et Piscatoria* 40, 71–74.

Erguden D., Gurlek M., 2010- The presence of Indo-Pacific puffer fish *Torquigener flavimaculosus* Hardy and Randall 1983, in the Iskenderun Bay, the eastern Mediterranean coast of Turkey. *Cybium* 39, 111

Froese R., Pauly D., (eds.) 2013- Fishbase. World Wide Web electronic publication. www.Fishbase.org, version (06/2013).

Golani D., 1987- The Red Sea pufferfish, *Torquigener flavimaculosus* Hardy and Randall 1983, a new Suez Canal migrant to the eastern Mediterranean. (Pisces: Tetraodontidae). *Senckenbergiana Marit*ime 19: 339-343.

Golani D., Orsi-Relini L., Massuti E., Quignard J.P., 2009- Ciesm Atlas of exotic fishes in the Mediterranean. http://www.ciesm.org/atlas/appendix1.html visited 10/2009.

Hardy G.S., Randall J.E., 1984- The status of *Torquigener hypselogeneion* (Bleeker) (Tetraodontiformes: Tetraodontidae) and some related species, including a new species from Hawaii. *Pacific Science* 37: 65-74.

Pancucci- Papadopoulou M.A., Zenetos A., Corsini M., Politou C.Y., 2005- Update of marine aliens in Hellenic waters. *Mediterranean Marine Science* 6: 147–158.

Regan C. T., 1903 - On the classification of the fishes of the suborder Plectognathi; with notes and descriptions of new species from specimens in the British Museum Collection. *Proceedings of the Zoological Society of London* 2, 284-303, Pls. 24-25.

Saad A., 2005- Check - list of marine bony fish in Syria. *Turkish Journal of Fisheries and Aquatic science* 5: 99-106.

Saad A., 2009- Marine Biodiversity in Syria, Proceeding of the First Conference for Pan Arab biodiversity, Alexandria, 14-16 December, 2009, Egypt

Semmens B.X., Buhle E.R., Salomon A.K., Pattengill-Semmens C.V., 2004- A hotspot of non-native marine fishes: evidence for the aquarium trade as an invasion pathway. *Marine Ecology Progress Series* 266: 239–244

Tortonese E., 1986- Balistidae, Monacanthidae, Ostraciontidae, Tetraodontidae, Diodontidae, Molidae. *In:* Fishes of the north-Eastern Atlantic and the Mediterranean. Whitehead P.J.P., M.-L Bauchot J.-C. Hureau, J. Nielsen and E. Tortonese, (eds.), Paris, UNESCO pp. 1335 - 1350.

Zenetos A., Vassilopoulou V., Salomidi M., Poursanidis D., 2007- Additions to the marine alien fauna of Greek waters (2007 update). *Journal of Marine Biodiversity Record* Published on line 1-8.