

**NEW RECORD OF THE SPINY PUFFERFISH, *TYLERIUS SPINOSISSIMUS*
(REGAN, 1908), FROM ISRAEL, GULF OF AQABA, RED SEA
(ACTINOPTERYGII: TETRAODONTIFORMES: TETRAODONTIDAE)**

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Abstract. The spiny pufferfish, *Tylerius spinosissimus* (Regan, 1908), is recorded for the first time from the Gulf of Aqaba, Red Sea, based on a specimen collected off Eilat, Israel at a depth of 350–400 m. This finding also confirms the occurrence of the species in the Red Sea which was previously based on an unsubstantiated record.

Keywords: pufferfish, new record, Red Sea, Israel, distribution

The spiny pufferfish, *Tylerius spinosissimus* (Regan, 1908), is widely distributed in the Indo-West Pacific (Regan 1908, Saya-de-Malha Bank; Hardy 1981, off north-western Australia; Kyushin et al. 1982, South China Sea; Hardy 1984, Alas Strait, off Sumbawa, Indonesia; Smith and Heemstra 1986, KwaZulu-Natal, South Africa; Mohsin and Ambak 1996, Malaysia; Matsuura and Tyler 1997, New Caledonia; Shao et al. 2008, Taiwan; Fricke et al. 2009, Réunion; Larson et al. 2013, Northern Territory, Australia; Fricke 2015, Morobe, Papua New Guinea). Outside this range, the species was recorded from Hurghada, Red Sea by Budker and Fourmanoir (1954: 324, as “*Amblyrhynchotes spinosissimus*”), listing the species without any further data. This Red Sea record was cited but not discussed by several authors, but as no specimen was available and no information about the record had been provided, Golani and Bogorodsky (2010: 86) came to the conclusion that the record of *T. spinosissimus* could not be confirmed.

The genus *Tylerius* Hardy, 1984 is monotypic and contains *Tylerius spinosissimus* (Regan, 1904) as the single species (Hardy 1984). It is characterised from other tetraodontid genera, especially from the closely related genus *Amblyrhynchotes* Troschel [ex Bibron], 1856, by the nasal papilla bearing two nostrils, only the dorsal eye rim adnate, no ventrolateral fold of skin, and the presence of well developed upper and lower lateral lines extending along the body to the caudal-fin base.

A specimen of *Tylerius spinosissimus* from the northern Red Sea was recently identified in deep water materials of the HUI collection; it is described in the present paper. The earlier unsubstantiated Red Sea record of this species can now be confirmed.

On 9 July 1992, a 38.6 mm SL specimen of *Tylerius spinosissimus* was collected by Albert Baranes off Eilat, Israel, Gulf of Aqaba, Red Sea, with a beam trawl at 350–400 m depth. The specimen was deposited in the Hebrew University Fish Collection and registered under the

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catalogue number HJ 17441. Counts and measurements follow Hubbs and Lagler (1947); the classification follows Eschmeyer et al. (2016), description details follow Hardy (1981), fin-ray counts follow Fricke (1983), references according to Fricke (2016). The standard length is abbreviated as SL the head length as HL.

Family Tetraodontidae Bonaparte, 1831
Genus *Tylerius* Hardy, 1984
Tylerius spinosissimus (Regan, 1908)

Description of the Red Sea specimen: Proportions given in Table 1 are part of this description. Dorsal-fin rays viii, anal-fin rays vi, pectoral-fin rays xvi, caudal-fin rays xi. Body elongate, barely flattened ventrally, tapering to short, narrow caudal peduncle; mouth small, terminal; lips covered with numerous short papillae; chin lacking; nasal organ short, flattened papilla, set in slight depression just forward to eye, distally with 2 moderately separated, similarly sized opening; eye moderate, round and dorsally adnate only, upper border below dorsal profile, lower border well above corner of mouth; prebranchial margin smooth.

No obvious ventrolateral skin fold; lateral line fairly distinct, encircling eye with anterodorsal branch anterior to nasal organ but failing to meet in midline, and preopercular branch dropping towards lateral limit of belly, extending

along body to caudal fin, rising high over pectoral fin and gently dropping under dorsal fin; mid-dorsal branch of lateral line above pectoral fin not meeting in midline; second lateral line dropping from behind corner of mouth, extending along lateral region of belly except for break ventral to pectoral fin.

Body spines 2-rooted, well developed and moderately dense, extending dorsally and laterally from before nasal organs almost to caudal-fin base, and extending ventrally from chin region to anal fin.

Pectoral fins dorsally elongate and rounded; top of base well below lower margin of eye; first ray moderately long; dorsal fin elongate and bluntly pointed, based directly above vent; anal-fin base short, anal-fin rays partly fused; caudal fin truncate.

Colour after 24 years in preservative (Figs. 1–2): Head and body brown; lower sides of body and belly pale, scattered with minute dark brown spots; eye dark grey; fins yellowish, caudal fin distally dark grey.

Remarks. *Tylerius spinosissimus* was first described by Regan (1908: 253, pl. 31, fig. 5, “*Spheroides spinosissimus*”) from deep water off the Saya de Malha Bank, western Indian Ocean (holotype: BMNH 1908.3.23.299). The species was reviewed and redescribed in detail based on the holotype and additional specimens from off Western Australia by Hardy (1981: 313, as “*Amblyrhynchotes*

Table 1

Meristic data and proportions of two specimens of *Tylerius spinosissimus* (HJ 17441, 38.6 mm SL, 9 July 1992, Eilat, Israel, Gulf of Aqaba, Red Sea; HJ 19946, 27.3 mm SL, 5 May 2010, Tel Aviv-Ashdod, Israel, Mediterranean Sea)

	Measurement in mm		Proportion in SL:	
	HJ 17441	HJ 19946	HJ 17441	HJ 19946
Standard length (SL)	38.6	27.3	--	--
Head length (HL)	14.6	11.1	2.6	2.5
Snout to anterior of vent	27.7	19.9	1.4	1.4
Snout to origin of dorsal fin	27.4	18.7	1.4	1.5
Snout to origin of anal fin	30.8	20.7	1.3	1.3
Snout to origin of pectoral fin	16.5	12.6	2.3	2.2
Width at base of pectoral fin	12.6	5.6	3.0	4.9
Depth from dorsal-fin origin to anal-fin origin	5.1	5.1	7.6	5.4
Depth at posterior of dorsal fin	3.7	4.1	10.4	6.7
Caudal-peduncle length	4.8	6.7	8.0	4.1
Least depth of caudal peduncle	2.8	1.8	13.8	15.2
Maximum length of pectoral fin	5.9	2.6	6.5	10.5
Length of first pectoral-fin ray	3.8	0.5	10.1	54.6
Length of longest anal-fin ray	3.9	3.6	9.9	7.6
Length of anal-fin base	0.7	2.6	55.1	10.5
Length of longest pectoral-fin ray	5.1	3.3	7.6	8.3
Length of pectoral-fin base	3.3	1.9	11.7	14.4
Maximum caudal-fin length	11.5	9.2	3.4	3.0
			Proportion in HL:	
Mouth width	4.1	2.2	3.6	5.0
Nasal organ length	1.1	0.7	13.2	15.9
Snout to anterior edge of nasal organ	3.3	2.4	4.4	4.6
Posterior edge of nasal organ to anterior edge of eye	0.7	0.7	20.8	15.6
Horizontal eye diameter	7.9	4.3	1.8	2.6
Least fleshy interorbital distance	1.9	1.9	7.7	5.8
Posterior of eye to dorsal corner of gill opening	5.5	4.1	2.6	2.7

spinosissimus”). Hardy (1984: 32) placed the species in a separate, new genus *Tylerius* Hardy, 1984.

Budker and Fourmanoir (1954: 324, “*Amblyrhynchotes spinosissimus*”) were the first to report the species from Hurghada (Egypt, Red Sea) in a species list without a description or supporting specimens in a collection. This record was repeatedly listed by Dor (1984: 253) and Goren and Dor (1994: 74). Golani and Bogorodsky (2010: 86) noted that the species “does not occur in the Red Sea,” and that “Budker and Fourmanoir’s (1954) record is evidently a misidentification of *Arothron diadematus* (Rüppell, 1829).” However, several records of *Tylerius spinosissimus* from Rhodes (Corsini et al. 2005, Corsini-Foka et al. 2010), Israel (Golani et al. 2011), and Iskenderun Bay, Turkey (Turan and Yaglioglu 2011) in the eastern Mediterranean suggest that the species is a Lessepsian migrant and does occur in the Red Sea.

During the examination of tetraodontid fishes in the HUI collection, the authors of the present paper discovered a specimen from off Eilat, Israel, collected in 1992 which they identified as *Tylerius spinosissimus*. The Red Sea record of that species can therefore now be confirmed; this also represents a first record from Israel and the Gulf of Aqaba, and adds to the knowledge of deep water species of the Red Sea. The species has not yet been recorded from the coast of Jordan (Khalaf and Zajonz 2007), and is neither present in the German deep-sea expeditions to the Red Sea, MESEDA I–III and MINDIK (Türkyay 1996; fish identifications see Zajonz 2006, and an unpublished faunal account by Uwe Zajonz).

There are slight differences to the specimens described by Hardy (1981), i.e., in the anal-fin ray number (6 versus 7) and proportions of the caudal peduncle and the snout. Another specimen recently recorded from the Mediterranean coast of Israel by Golani et al. 2011 (HUI 19946, 1 specimen, 27.3 mm SL, Israel, Ashdod-Tel Aviv, trawl at 120–140 m depth, Dor Edelist, 5 May 2010; proportions see Table 1) shows similar differences to the specimens described by Hardy (1981). Additional material is needed to examine the variability of Red Sea/Mediterranean Sea populations, and to decide if they are distinct from *T. spinosissimus* sensu stricto.

The presently described specimen was collected with a beam trawl at 350–400 m depth, possibly above sand bottom. The new distribution record of *Tylerius spinosissimus* from the Red Sea adds to the picture of a wide Indo-West Pacific and Red Sea distribution range of this species (Fig 3). This deep water species is rarely collected, and apparent gaps in the known distribution range probably just reflect the absence of deep water fish collections in many parts of the range.

In the Red Sea, other suitable habitats for this species are found throughout the lower continental shelf of the main body and the Gulf of Aqaba. The species probably dispersed into the eastern Mediterranean Sea through the Suez Canal by means of its pelagic larvae; the existing records from three distant areas in the Mediterranean suggest that the species has already established reproducing populations, and additional records are expected.



Fig. 1. *Tylerius spinosissimus*, Lateral view; HUI 17441, 38.6 mm SL, 9 July 1992, Eilat, Israel, Gulf of Aqaba, Red Sea; Photograph by Daniel Golani



Fig. 2. *Tylerius spinosissimus*, Dorsal view; HUI 17441, 38.6 mm SL, 9 July 1992, Eilat, Israel, Gulf of Aqaba, Red Sea; Photograph by Daniel Golani

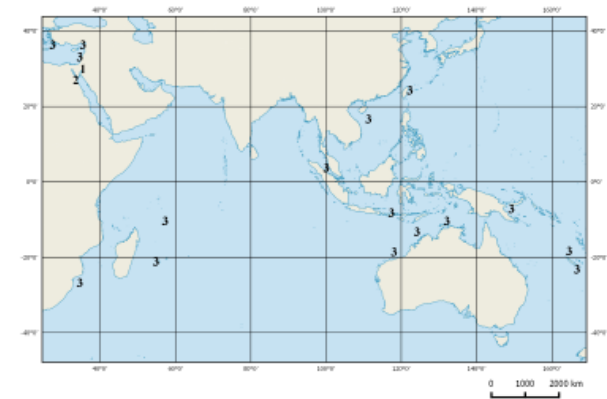


Fig. 3. *Tylerius spinosissimus*, map of the Indo-West Pacific, Red Sea and eastern Mediterranean Sea with the known distribution of the species; **1** = new record from Gulf of Aqaba; **2** = Egyptian record by Budker and Fourmanoir 1954; **3** = Other records [Map produced with QGIS 2.12.2]

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