

The short dragonfish *Eurypegasus draconis* (Linnaeus, 1766) in the Sea of Oman: a fourth record for the North-West Indian Ocean

Der Zwerg-Flügelrossfisch *Eurypegasus draconis* (Linnaeus, 1766) im Golf von Oman: ein vierter Nachweis für den nordwestlichen Indischen Ozean

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Summary: Two specimens of the short dragonfish *Eurypegasus draconis* were collected from the coast of Seeb City on the Sea of Oman, Sultanate of Oman. These specimens represent a fourth record for the North-West Indian Ocean and second record from Omani waters. The present study raises the number of species in Omani waters belonging to the family Pegasidae to two. The morphological characters are in agreement with those attained by previous studies. Lack of thorough ichthyological investigations in the region may be the cause of non-reporting of this species from Omani waters previously.

Keywords: Pegasidae, zoogeography, species range, Indian Ocean, Sea of Oman

Zusammenfassung: Zwei Exemplare des Zwerg-Flügelrossfisches *Eurypegasus draconis* wurden an der Küste von Seeb City im Golf von Oman, Sultanat Oman, gesammelt. Es handelt sich dabei um den vierten Nachweis dieser Art für den nordwestindischen Ozean und den zweiten Nachweis aus omanischen Gewässern. Mit der vorliegenden Studie erhöht sich damit die Anzahl der Arten in omanischen Gewässern, die zur Familie Pegasidae gehören, auf zwei. Die morphologischen Merkmale stimmen mit denen der vorherigen Studie überein. Der Mangel an gründlichen ichthyologischen Untersuchungen in der Region könnte die Ursache dafür sein, dass diese Art bisher nicht aus omanischen Gewässern gemeldet wurde.

Schlüsselwörter: Pegasidae, Zoogeografie, Artenspektrum, Indischer Ozean, Golf von Oman

1. Introduction

Probably the first records of fishes from the waters of Oman were published by BOULENGER (1887, 1889). During the twentieth century, more data, including taxonomy of various fish groups, became available (STEINDACHNER 1902; REGAN 1905). Remarkable fish surveys conducted off Oman are the John Murray Expedition reported by NORMAN (1939) and the Valdivia expedition 1933-1934, as well as the recent study by RANDALL (1995). More specific studies focusing on certain species were published from the late 1980s onward

(e.g. RANDALL 1986, 1994; HARE 1990; DEBELIUS 1993; AL-ABDESSALAAM 1995).

The marine fish family Pegasidae comprises three genera (VAN DER LAAN et al. 2014), *Eurypegasus* Bleeker, 1863 with two species, *E. draconis* (Linnaeus, 1766) and *E. papilio* (Gilbert, 1905); *Pegasus* Linnaeus, 1758 with three species, *P. lancifer* Kaup, 1861, *P. tetrabelos* Osterhage, Pogonoski, Appleyard & White, 2016 and *P. volitans* Linnaeus, 1758; and *Spinipegasus* Rendahl, 1930, encompassing a single species, *S. laternarius* (Cuvier, 1829). These species are widely distributed in the Indo-Pacific region (NAKABO 2002) and sometimes found in subtropical areas (KUITER 2000).

LINNAEUS (1766) was the first to describe *E. draconis* from specimens collected from Indian waters. Specimens obtained from Port Jackson, NSW Australia, were described as *Pegasus pauciradiatus* by Ogilby (1886) but later synonymized with *E. draconis* by PAXTON et al. (1989) and PALSSON & PIETSCH (1989). The later authors also synonymized *P. latirostris* from the Sea of China with *E. draconis*.

Records of *E. draconis* come from Ryukyu Island (NAKABO 2002), Oseaki, Japan (MASUDA et al. 1984; YAMAZAKI in KUITER 2000), Australia (KUITER 1993; ALLEN 1997; ALLEN & SWAINSTON, 1988; KUITER 2000; HUTCHINS 2001), Bali, Indonesia (KUITER 2000; ALLEN & ADRIM 2003), Raja Ampat Islands, Papua, Maumere Bay, Flores Island, Togean and Banggai Islands, Sulawesi (ALLEN & ADRIM 2003), and from Derawan Islands, Indonesia (PERISTIWADY 2007).

In the north-western Indian Ocean region three specimens of *E. draconis* were reported. These were from Gulf of Aqaba, Eilat (British Natural History Museum: BMNH 1967.5.13.23), Sudan Sukahin Harbour (BMNH 19904.37.4) and Gulf of Aden (BMNH 1939.5.24.1698). RANDALL (1995) suggested that the record of this species from the Gulf of Aden was from the Yemeni coasts. Information given in the data attached to the specimen of *E. draconis* (BMNH 1939.5.24.1698) showed that the specimen was collected from the coasts of Somalia, Africa, and not the Gulf of Aden coasts of Yemen. Therefore, the specimens examined in the present study are considered the fourth record of this species from the north-west region of the Indian Ocean and first record for the Omani waters in general. Such record is significant in regard to the zoogeography of this species.

2. Materials and Methods

Two specimens of *Eurypegasus draconis* were collected from the coasts of Seeb City (23° 41' 15.92" N, 58° 11' 36.04" E) (35 km north of the capital Muscat City, Sultanate of Oman). One of the specimens was complete in having a tail, with total length 152 mm (fig. 1) and the other was missing the caudal fin (160 mm TL) (fig. 2).

The specimens were caught using a seine net at a depth of 90-100 m on 21 December 2019, originating from a commercial catch. The fishes were fixed in 10% formalin and later preserved in 70% ethanol for deposit in the fish collection of the Omani Marine Science and Fisheries Centre, Ministry of Agriculture and Fisheries, Muscat, Sultanate of Oman (OMMSFC1415 and OMMSFC1416).

Standard length (SL), from the anteriormost extent of the maxillae (with the mouth closed) to the posteriormost margin of the hypural plate, was used for proportional measurements and total length (TL) for the maximum length of the specimen. Measurements were made with dial calipers to the nearest 1 mm. Morphometric and meristic details were recorded following PALSSON & PIETSCH (1989) and are presented in table 1.

3. Results

The identity of the specimens of *Eurypegasus draconis* was confirmed when morphological characters of these specimens were compared with the specimens of this species described by PALSSON & PIETSCH (1989) and PERISTIWADY (2007). The two specimens of *E. draconis* showed the following set of characters: head and body somewhat angular, depressed, entirely enclosed in dermal plates, head and carapace covering almost half length of the body; a pair of deep pits posterior to large orbit; suborbital shelf concave, eye visible in ventral view; infraorbital bones articulate with the preopercle. Nasal bones extend, united, creating rostrum, which is equipped with ventral ridges extended to a greater degree than dorsal ridges; mouth inferior. Gill opening limited to small hole on dorsolateral surface posterior to head. No spinous dorsal fin; there are five rays in the soft part of each of dorsal and anal fins, which are located posteriorly on body. No anal papillae. Caudal fin with 8 unbranched rays. Large pectoral fins, wing-like, inserted horizontally, composed of nine unbranched, spinous-soft rays; pectoral fin rays interconnected by broad, transparent membranes. Pelvic fins thoracic in position, tentacle-like, with one spine and two

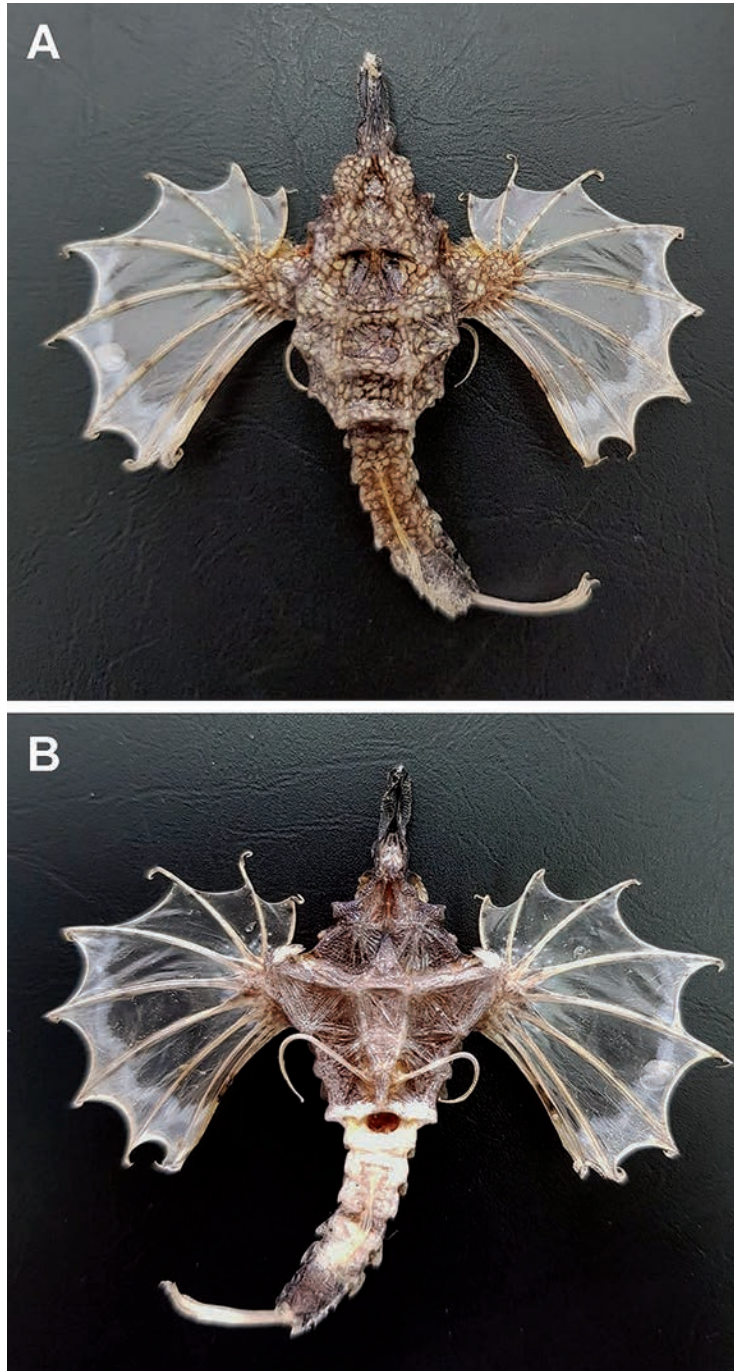


Fig. 1: *Eurypegasus draconis* from the Sea of Oman, SL=50.1 mm. **A** dorsal side; **B** ventral side (Photo: N. M. AL ABRI; OMMSFC1415).

Abb. 1: *Eurypegasus draconis* aus dem Golf von Oman, SL = 50,1 mm. **A** dorsale Seite; **B** ventrale Seite (Foto: N. M. AL ABRI; OMMSFC1415).

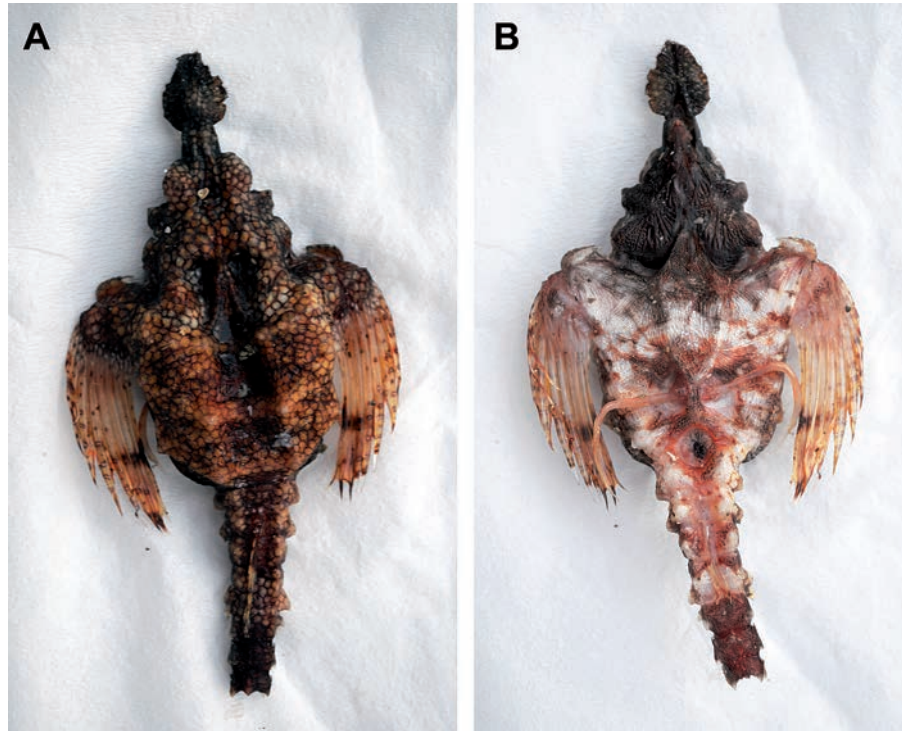


Fig. 2: *Eurypegasus draconis* from the Sea of Oman, SL=47.5 mm. **A** dorsal side; **B** ventral side (Photo: J. AL-MAMRY; OMMSFC1416).

Abb. 2: *Eurypegasus draconis* aus dem Golf von Oman, SL = 47,5 mm. **A** dorsale Seite; **B** ventrale Seite (Foto: J. AL-MAMRY; OMMSFC1416).

Tab. 1: Morphometric and meristic characters of *Eurypegasus draconis* collected from the Sea of Oman.

Tab. 1: Morphometrische und meristische Merkmale von *Eurypegasus draconis*, gesammelt aus dem Golf von Oman.

Characters	Present study Specimen no. 1	Present study Specimen no. 2	Peristiwady (2007) N = 3
Total length	62.5	-	-
Standard length (%TL)	50.1 (80.2)	47.5	46 - 69
Head length (%SL)	28.4 (56.7)	38.9 (81.9)	1.8 - 2.7
Eye diameter (%HL)	5 (17.6)	6 (15.4)	4 - 5
Body depth (%SL)	17 (59.9)	18 (37.9)	11 - 18
Body width (%SL)	26.5 (52.9)	27.3 (57.5)	18 - 28.5
Snout length (%HL)	19.5 (68.7)	15.6 (32.8)	8.5 - 15
Predorsal fin length (%SL)	36.3 (72.4)	35.7 (75.2)	32.5 - 49.5
Snout to pectoral fin insertion (%SL)	37.9 (75.7)	38.7 (81.5)	22.5 - 34.5
Snout to pelvic fin insertion (%SL)	36.3 (72.4)	26.6 (56)	27 - 38.5
Snout to anal fin insertion (%SL)	46.3 (92.3)	36.4 (76.6)	31.5 - 49
Pelvic fin insertion to anal fin insertion (%SL)	21.1 (42.1)	23.3 (49.1)	6 - 15
Pectoral fin insertion to pelvic fin insertion (%SL)	22.3 (44.5)	21.1 (44.4)	8 - 13.5
Number of dorsal fin ray	5	5	5
Number of pectoral fin rays	9	9	11
Number of pelvic fin rays	2	2	2
Number of anal fin rays	5	5	5
Number of caudal fin rays	8	8	8

unbranched soft rays. Body brownish, with dark reticulations on dorsal and lateral surfaces, abdomen light brown to whitish. Rostrum and last two or three caudal rings black. Pectoral fin rays brownish, rays spotted with fine brown dots, clear membranes joining rays.

4. Discussion

The standard lengths of the two specimens of *Eurypegasus draconis* described in the present study (50.1 and 47.5 mm) were less than the maximum size given by ALLEN & SWAINSTON (1988) (100 mm), but larger than that of the specimen collected during the John Murray Expedition 1933-1934 from the Somali coasts of the Gulf of Aden (31.8 mm). Their standard length falls within the range of the 97 specimens of this species collected from different localities in the Indo-Pacific regions (2.8-77 mm) (PALSSON & PIETSCH 1989) and that given by PERISTIWADY (2007) (46-69 mm). The size of the two specimens is smaller than that of the holotype ZMUC P8430 (64 mm).

The number of pectoral fin rays of the two specimens of *E. draconis* collected from the Sea of Oman showed 9 rays, which is lower than 10 or 11 given by PALSSON & PIETSCH (1989) and 11 given by PERISTIWADY (2007). Other meristic characters seem to be similar to those attained by PALSSON & PIETSCH (1989) and PERISTIWADY (2007).

The species *E. draconis* differs from *Eurypegasus papilio* in having a second dorsomedial tubercle height of 15.7-27.1% SL vs 12.0-15.9% SL. Ventral ridges of the rostrum are more expanded than dorsal ridges vs more expanded than dorsal ridges vs dorsal and ventral ridges of rostrum more or less equally expanded, bearing posteriorly directed denticles or spines; colour in life is brown, with dark reticulation on dorsal and lateral surfaces vs colour in life olivaceous, with white spots and orange mottling, dark reticulations not present; pectoral-fin rays usually 10 or 11 vs pectoral-fin rays usually 11 or 12.

In the north-western Indian Ocean region, three specimens of *E. draconis* were reported from the Gulf of Aqaba, Eilat (BMNH

1967.5.13.23), Sudan Sukahin Harbour (BMNH 19904.37.4) and Gulf of Aden (1939.5.24.1698). Therefore, the specimens examined in the present study are considered the fourth record of this species from the north-west region of the Indian Ocean and first record for Omani waters in general. Such a record is significant in regard to the zoogeography of this species.

There are only two species belonging to the family Pegasidae recorded from the north-western Indian Ocean. One is *Pegasus volitans*, recorded by RANDALL (1995), who did not specify from which sea around the Omani coasts this species was collected. The second is *Pegasus nathans* (= *P. volitans*) from the marine waters of Iraq at the north of the Arabian Gulf (AL-DAHAM (1975). Therefore, the present study adds a third pegasid species to the area, ranging from the north of the Arabian Sea southward to the southwest coasts of the Arabian Peninsula.

Acknowledgements, conflict of interests and ethical statement

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The research was done according to ethical standards. The article is the authors' original work which has not been published or under consideration for publication elsewhere.

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