SOME OBSERVATIONS ON THE DISTRIBUTION OF POLKA-DOT RIBBONFISH *DESMODEMA POLYSTICTUM* OGILBY, 1898 (PISCES: LAMPRIFORMIS: TRACHIPTERIDAE) IN THE OFFSHORE WATERS OF PAKISTAN, NORTHERN ARABIAN SEA

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ABSTRACT

Polka-dot ribbonfish (*Desmodema polystictum* Ogilby, 1898) which is a circum-tropical species was previously reported through only one specimen in 1994, from Pakistan. Present paper report occurrence of many specimens of this species from offshore waters of Pakistan indicating its wider distribution along Pakistan coast (Northern Arabian Sea). This species seems to occur in waters deeper than 1,300 m mainly in Murray Ridge and continental margin along Pakistan coast.

Keywords: Keyword: Polka-dot ribbonfish, Desmodema *polystictum*, Pakistan coast, Family Trachipteridae

INTRODUCTION

Family Trachipteridae which contains ribbonfish known to inhabit oceanic waters of Atlantic (including Mediterranean Sea), Pacific and Indian Oceans, characteristically have long-compressed-ribbon or tape-shaped body, short head, and narrow mouth. Their caudal fins have an upper lobe only and oriented perpendicularly to the body and very long dorsal fin which originates well behind tip of the snout. There are three genera in this family represented by 16 species (Nelson, 2006). Of these, four species are known from Indian Ocean (Froese and Pauly, 2022) including Mediterranean dealfish (*Trachipterus trachypterus*), blackflash ribbonfish (*Trachipterus jacksonensis*), scalloped ribbonfish (*Zu. cristatus*) and polka-dot ribbonfish (*Desmodema polystictum*); only the latter is known from Arabian Sea. During the research cruises of Norwegian/FAO research vessel Dr., Fridtjof Nansen in 1984 a specimen of this species was collected from off Karachi, Pakistan which was reported by Bauchot and Bianchi (1994). It was also reported from East Coast of India (Zacharia and Kannan, 2012). Present paper reports occurrence of 9 specimens in the offshore waters of Pakistan.

Fig 1. *Desmodema polistictum* Ogilby, 1898: 34.9 cm in length collected during R/V Dr. Fridtjof Nansen Survey (2010408)-Station 29.

MATERIALS AND METHOD

Specimens of this species collected from research cruise of R/V Dr. Fridtjof Nansen off the coast of Pakistan 2010 and commercial fishing trips (tuna gillnet operation) during 2015 to 2019 were photographed and salient

features and measurement are recorded, before, their preservation in 5 % neutralized formalin. In total nine specimens collected from Pakistan coast were examined (Table 1).

Table 1. Details of specimens of *Desmodema polistictum* Ogilby, 1898 collected/observed from Pakistan coast.

S. No.	Date	Latitude	Longitude	Depth (m)	Total Length (cm)	Remarks
1	22 October 2010	24°41.810' N	64°29.060' E	1,396	34.9	R/V Dr. Fridtjof Nansen Survey (2010408)-Station 29
2	23 March 2015	24°04.500'N	65°45.200'E	2,961	62.0 (broken)	Commercial tuna gillnet vessel
3	17 April 2016	23°22.092'N	63°55.928'E	2,964	59.1	Commercial tuna gillnet vessel
4	21 October 2016	24°30.487'N	65°20.814'E	2,135	97.5	Commercial tuna gillnet vessel
5	03 November 2016	23°48.215'N	65°22.000'E	1,811	88.0	Commercial tuna gillnet vessel Commercial tuna gillnet vessel
6	11 March 2017	24°16.065'N	64°49.743'E	2,466	47.2 (tail broken)	Commercial tuna gillnet vessel
7	09 November 2018	23°23.885'N	64°40.900'E	2,663	41.8	Commercial tuna gillnet vessel
8	21 April 2019	22°36.057'N	65°23.286'E	2,141	101.2	Commercial tuna gillnet vessel
9	27 April 2019	24°45.420'N	63°35.808'E	1,331	100.8	Commercial tuna gillnet vessel

RESULTS AND DISCUSSION

Synonymy

- *Trachypterus jacksoniensis polystictus* Ogilby 1897:649; Newcastle, New South Wales, Australia; holotype, Australian Museum.
- *Trachypterus misakiensis* Tanaka 1908:52, pl. IV, Figure 2, "shores of Misaki" Japan; holotype, Zool. Inst. University of Tokyo, No. 960. Herre and Herald 1951:318, Figure 3; 6"26'N, 121"35'E.
- *Trachypterus deltoideus* Clark 1938: 180; Rurutu Island, "Australs" (Tubuai Islands); holotype, CAS 5532.
- *Desmodema polysticta*. Walters 1963:260; 28"58'N, 88"18'W; Integumentary system. Fitch 1964:230; in part. Fourmanoir 1969:36. Legand *et al*. 1972:383. Rosenblatt and Butler, 1977:848
- *Trachipterus trachyurus*, not of Poey. Leapley 1953:236; Fort Lauderdale, Florida, USA
- *Trachipterus woodi* Smith, 1953, The sea fishes of southern Africa: 504, figure 264b (Xora River mouth, Transkei).

Description

Body strongly compressed laterally (Fig. 1-2). Dorsal spines absent; soft rays 121; post-anal portion of body narrowing into a whip-like tail. Caudal fin well-developed (Fig. 3), 4–10 unbranched rays parallel to axis of tail; ventral caudal lobe lacking. Fin rays with a lateral row of small spines, spines weak or absent on posterior pelvic rays, middle caudal rays and pectoral rays. Each dorsal ray anterior to elongated tail portion of body with a single laterally directed stout spine on either side of the base. Lateral line ends at caudal base, lateral-line scales with a pair of spines. Skin with cartilaginous tubercles and pierced by numerous pores which seems to be pores of the lateral line. Teeth restricted to one to four in each pre-maxilla and two enlarged, recurved fangs on mandible, one on either side of symphysis. Gill rakers of upper limb with few teeth. Pseudobranch well developed.

The specimens from Pakistan resembles with the description of the species given in Rosenblatt and Butler (1977) and Zacharia and Kannan (2012). Specimen reported from Tharuvaikulam landing centre, Tuticorin on the

south-east coast of India by Zacharia and Kannan (2012) was observed to be long (107 cm) whereas specimen reported by Bauchot and Bianchi (1994) from Northern Arabian Sea was only 19. 7 cm. Specimen examined by Fitch (1964) ranged between 29.6 cm and 111.5 cm whereas during the present study the specimens were examined having total lengths of 34.9 and 102.2 cm.

This species was originally described as *Trachypterus jacksoniensis polystictus* from off Newcastle, New South Wales, Australia by Ogilby (1898). Its holotype used to be housed in Australian Museum, Sydney which is presumeably lost (Frickle *et al*., 2022).

A comparison of Morphometric and meristic measurements of two specimens of *Desmodema polystictum* from Pakistan is made with those given by Zacharia and Kannan (2012) and Bauchot and Bianchi (1994) which revealed no major deviation among the various parameters (Table 2).

There are two species of genus *Desodema* known so far i.e. *D. polystictum* and *D. lorum* Rosenblatt and Butler, 1977. *D. lorum* has a longer snout (greater than eye diameter) whereas *D. polystictum* has short snout (smaller than eye diameter). *D. lorum* has 197 dorsal rays whereas *D. polystictum* has about 120-125 dorsal rays. The caudal structure of *D. polystictum* is unique in caudal rays that is borne on the terminal centrum and hypural of the first ural centrum does not have rays. It also has no scales whereas tubercles and pores are well developed.

Table 2. Morphometric and meristic counts of *Desmodema polystictum* from Indian Ocean.

Morphometric counts	Measurements				
	Zacharia and Kannan (2012)	Fishbase Zacharia and Kannan (2012)	Specimens from Pakistan		
			Bauchot and Bianchi (1994)	Specimen 1	Specimen 2
Total length (TL) cm	107	107.5	19.7	34.9	62 (broken)
Head length (HL) % of TL	9.1	8.6	14.7	9.1	
Body depth % of TL	10.7	12.6	28.4	11.8	
Pre-dorsal length % of TL	7.0	6.2		7.2	
Snout length % of HL	33.7		32.7	34.4	35.2
Pre-pectoral length % of TL	6.9	8.5		8.8	
Eye diameter % of HL	38.8	35.8	36.2	35.8	36.2
Pre-orbital length % of HL	30.6	28.4		30.1	29.6
Meristic counts					
Pectoral fin rays	14	14		14	
Dorsal fin rays	121	121		123	
Caudal Ray	8	8		8	
Gill rakers (total)	12	11-13			
• On upper limb	3	2-3			
• On lower limb	9	9-10			

CONCLUSION

Desmodema polystictum is considered to have a circumtropical distribution. Known from Japan, Taiwan, Philippines, Australia, New Zealand, Eastern Atlantic upto Namibia South Africa, Florida, USA and Cuba and in the. Arabian Sea and Bay of Bengal (Froese and Pauly, 2022). Its congener *D. lorum* which is commonly known as whiptail ribbonfish, is known from Eastern Central Pacific (off central California, USA to southern Baja California, Mexico) and Western Pacific (Japan and Kuril Island). Present paper reports its distribution in the Northern Arabian Sea. Along the coast of Pakistan, these are mainly found in the offshore waters of Pakistan It was found to be distributed mainly in Murray Ridge area and along continental margin of Balochistan and Arabian Sea Basin off Sindh coast between a depth range of 1,331 to 2,969 m (Fig. 4).

Fig. 2 . *Desmodema polistictum*: 62 cm (Tail broken)

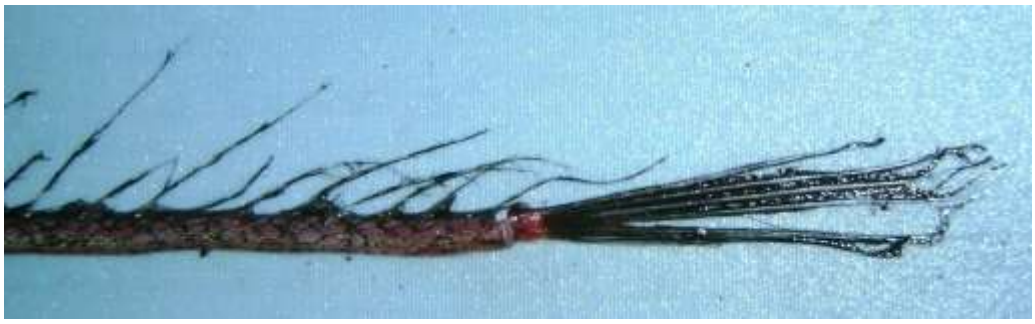

Fig. 3. *Desmodema polistictum*: (Specimen No.1): Caudal fin

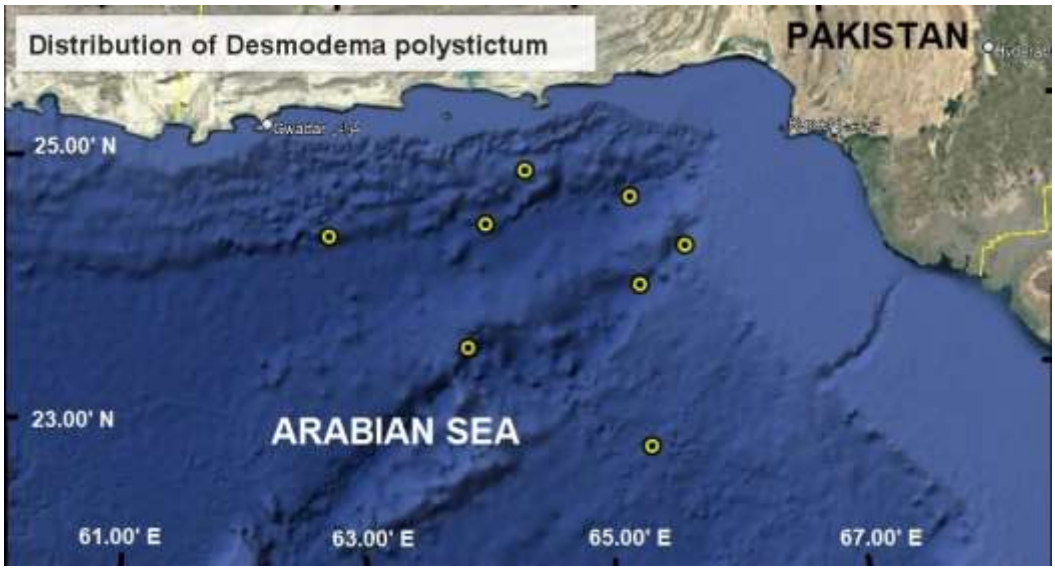

Fig. 4. Location in the Northern Arabian Sea for *Desmodema polystictum*

There was no seasonality observed, however, all the specimens were collected in Post South West Monsoon Period (October to November), Northeast Monsoon Period (December to February) and Pre-South West Monsoon Period (March and April). No record of occurrence in South West Monsoon Period (May to September) which is because of annual close season observed by the fishermen during this period. This species is pelagic in nature as all known specimens were caught by surface fishing gears (pelagic trawl or drift gillnet).

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