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Dusky Driftfish, *Psenes arafurensis* Gunther, 1889 (Scombriformes: Nomeidae): a new record from northwestern coast of India

S. Ragul*, H. L. Parmar and V. C. Bajaniya
College of Fisheries Science, Kamdhenu University, Veraval-362265, Gujarat, India.

*Correspondence e-mail: nivinragulsiva@gmail.com
ORCiD: https://orcid.org/0000-0003-3706-035X

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Short communication

Abstract

The present paper reports Dusky Driftfish, *Psenes arafurensis* Günther, 1889 from the coastal waters off Veraval, in the Northern Arabian Sea, India. *P. arafurensis* can be easily differentiated from its cogeners that hitherto to Indian coastal waters by the number of dorsal-fin rays 21 (*vs.* 21–28 in *P. cyanophrys, vs.* 22–24 in *P. maculatus, vs.* 26–33 in *P. pellucidus*). The present study provides detailed taxonomic information on morphometric measurements, species characteristics, and updated geographical distribution of *P. arafurensis*.

Keywords: *Arabian Sea, biodiversity, Gujarat, Nomeidae, Northwest coast, range expansion*

Introduction

Fishes of family Nomeidae (Scombriformes) are mostly deep-sea drift fishes found in tropical and subtropical waters worldwide, comprising 17 valid species under three valid genera (Fricke *et al.,* 2023) namely *Cubiceps* Lowe, *Nomeus* Cuvier, *Psenes* Valenciennes. Genus *Psenes* Valenciennes is characterized by a deep and compressed body, which comprises six valid species *i.e., P. arafurensis* Günther 1889; *P. cyanophrys* Valenciennes 1833; *P. hillii* Ogilby 1915; *P. maculatus* Lütken 1880; *P. pellucidus* Lütken 1880; *P. sio* Haedrich 1970. Among the above only four species namely: *P. arafurencis, P. cyanophrys, P. maculatus,* and *P. pellucidus* have been recorded from India (Silas and Prasad, 1996; Mahesh *et al.,* 2022). *P. arafurencis* is previously known from Australia, Africa, Brazil, Japan, Korea, Mexico, South China and recently from south India (Mahesh *et al.,* 2022).

During our regular fishery diversity monitoring survey, we collected a specimen of *P. arafurensis* from Veraval Fishing Harbour. The present study reports the occurrence of *P. arafurensis* for the first time from the Northern Arabian Sea.

Material and methods

In January 2024, a regular fishing diversity monitoring survey was conducted at Veraval Fishing Harbour to document the bycatch species assemblage. A single specimen of nomeid drift fish belonging to the genus *Psenes* was collected from the multiday trawler bycatch landed at Veraval Fishing Harbour, off Gujarat, Northwest Coast of India. The collected specimen was brought to the laboratory and photographed. The species-level identification was done by using a previously published key by Cabebe and Motomura (2019). The measurements were made using Mitutoyo 150 mm Vernier calipers to the nearest 0.1 mm. The specimen was preserved in 10% formalin for further studies. Material has been deposited in the Department of Fisheries Resource Management museum, College of Fisheries Science, Kamdhenu University, Veraval (KU/COFS/MUS/010224) for future reference.

Results and discussion

Systematics

Order : Scombriformes
Family : Nomeidae Günther, 1860
Genus : *Psenes* Valenciennes, 1833
Psenes arafurensis Günther, 1889 (Fig. 1, Table 1)

Psenes arafurensis -Günther 1889: pp 13, pl II fig. G; -Haedrich 1967: pp 41, 88; -Bianchi *et al.* 1993: pp 176; -Fricke 1999: pp 567; -Randall & Lim 2000: pp 644; -Nakabo 2002: pp 963-5; -Menezes *et al.* 2003: pp 104; -Parin & Piotrovsky 2004: S51;

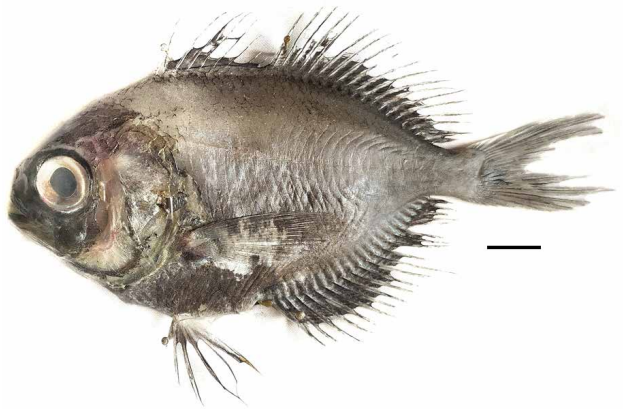

Fig. 1. Fresh colouration of *Psenes arafurensis* (101 mm SL) from Veraval Fishing Harbour, Northwest coast of India, Gujarat (Scale 10 mm)

-McEachran & Fechhelm 2005: pp 807; -Allen & Erdmann 2012: pp 1042; -Nakabo & Doiuchi 2013: pp 1081-3; -Lee *et al.,* 2016: pp 1-5, fig 2, 3; -Cabebe & Motomura, 2019: pp 117-123, fig. 4A, B, Table 1-8; -Kawai *et al.* 2020: pp 54, fig. 18; -Psomadakis *et al.* 2020: pp 579; -Sutton *et al.* 2020: pp 266; -Mahesh *et al.* 2022: pp 565–571, fig. 1–3a, 5, Table 1–3

Psenes benardi -Rossignol & Blache 1961: pp 384-386

Type locality: Arafura Sea, western Pacific.

Material examined

KU/COFS/MUS/010224, 1 probable female, 101 mm SL (Fig. 1), 21°38'49"N 67° 32' 42" E (pers. comm. with fishing crew), northwest coast of India, off Gujarat, landed at Veraval Fishing Harbour; leg. S. Ragul, 11 Jan. 2024.

Description

First dorsal spines X; second dorsal fin elements I+21; anal rays III+21, pelvic rays I+5; pectoral rays 20/20; caudal rays 12/12; lateral line scales 47; gill rakers on 1st arch 25. For a detailed comparison of meristics and morphometrics see Table 1. Body moderately deep, compressed laterally; body depth, 44.6 % of SL and body width, 16.0 % of SL at dorsal-fin base respectively. Head length 37.6 % of SL. Body scales ctenoid; predorsal scales lined up to mid-eye of the head. Distance between snout and origin of first and second dorsal fin, 35.4 and 56.5 in % of SL, between snout and origin of anal fin 60.1, between snout and origin of pelvic fins 38.2 and between snout and origin of pectoral fin 38.3, all in % of SL. The caudal peduncle is slender with a length of 10.8 % SL and with a short depth of 4.4 % SL.

Head round, with depth and width 93.2 and 47.6 % of HL at the posterior preopercular margin. Opercle with ctenoid scales, fully scaled cheek (*i.e.* behind the eye). Snout rounded which occupied 26.3 % of HL. Eyes relatively large, diameter width 32.8% of HL. Short terminal mouth, jaws reaching to a vertical before mid-eye region, upper jaw length 34.4% of HL. Maxilla extended up to posterior margin of the eye. Small teeth in jaws, with single row of canine teeth at both upper and lower jaws.

Table 1. Morphometric and meristic data for *P. arafurensis* from Gujarat, India, compared with previous studies

Parameters	Lee *et al.* (2016) (n=4)	Mahesh *et al.* (2022) (n=1)	Present study (n=1)
Total length (mm)	249.5–270.1	264	138
Standard length (mm)	184.8–199.0	190	101
Fork length (mm)	249.5–270.1	219	120
Counts			
Dorsal-fin elements	XI, I+20–21	X, I+20	X, I+21
Anal-fin elements	III, 21–22	III, 21	21
Pectoral-fin rays	19–20	19	20/20
Pelvic-fin rays	I, 5	I, 5	I, 5
Caudal-fin rays	-	-	12/12
Lateral line scales	46–48	48	47
Gill rakers on first arch	25–27	25	25
Measurements (in % of standard length)			
Head length	30.5–33.3	37.9	37.6
Body depth at dorsal-fin origin	41.5–44.8	43.7	44.6
Body width at dorsal fin origin	-	16.3	16.0
Pre- first dorsal length	-	36.3	35.4
Pre- second dorsal length	-	-	56.5
Pre- pectoral fin length	-	37.9	38.3
Pre- pelvic fin length	-	37.9	38.2
Pre- anal fin length	57.0–59.3	55.8	60.1
Length of 1st dorsal fin base	-	-	26.7
Length of 2nd dorsal fin base	-	-	42.5
Length of Anal fin Base	-	41	43.5
Pectoral-fin length	-	37.9	33.6
Pelvic-fin length	-	13.7	22.7
Caudal-fin length	-	37.4	34.6
Caudal peduncle length	10.3–10.6	-	10.8
Caudal peduncle depth	4.5–4.9	-	4.4
Measurements (in % of head length)			
Head depth	-	93.0	93.2
Head width	-	47.2	47.6
Snout length	29.5–31.9	15.2	26.3
Eye diameter	28.8–31.2	33.3	32.8
Inter orbital length	37.6–41.9	31.9	39.4
Upper jaw length	31.3–34.2	-	34.4

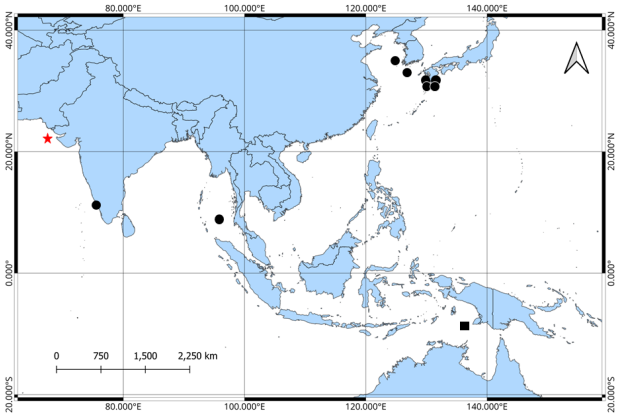

Fig. 2. Geographical distribution of *Psenes arafurensis* in the Indo-West Pacific: present record off Gujarat (red star), type locality (black square), other records (black circles)

Comparatively, short triangular first dorsal fin followed by steep second dorsal fin with base 26.7 and 42.5% of SL. Compressed oval shaped pectoral and short triangular pelvic fins with length of 33.6% of SL and 22.7% of SL; long elevated anal fin with base length of 43.5% of SL; forked caudal fin with two upper and lower tapered point, 34.6% of SL (Table 1).

Colouration

The fresh specimen (Fig. 1) has a pale grey body on the lateral side with a comparatively darker belly. Head blackish purple. The dorsal and anal fin are black at the base with a pale black at the distal tip. Caudal and pectoral fin translucent to opaque. The pelvic fin base is white with a distal portion black. Colouration (preserved specimen), body becomes paler than the fresh specimen.

Remarks

P. arafurensis differs from cogeners by the number of dorsal-fin rays and anal-fin rays, especially by length of pelvic and pectoral fins and by its colouration (Lee *et al.,* 2016; Cabebe and Motomura, 2019; Mahesh *et al.,* 2022). It is distinguished from congers by its dorsal fin elements X, I+21 (*vs.* IX–XI, I+21-28 in *P. cyanophrys, vs.* IX–XI, I+22–24 in *P. maculatus, vs.* IX–XII, I–II+26–33 in *P. pellucidus*) and by sharing anal fin rays count, III, 21 (*vs.* III, 23-28 in *P. cyanophrys*; *vs.* III, 21-23 in *P. maculatus*; *vs.* III, 26-33 in *P. pellucidus*) and relatively smaller number of lateral line scales 47 (*vs.* around 60–63 in *P. cyanophrys*, 67-70 in *P. maculatus* and 115-125 in *P. pellucidus*). The most closely related species *P. cyanophrys,* is differentiated by its arrangement of pre-dorsal scales (scaled up to snout nostrils in *P. cyanophrys vs.* scales ends at midline of eye in *P. arafurensis*).

Distribution

P. arafurensis has been known from tropical and subtropical which includes Indo-West Pacific and Atlantic (Kawai *et al.,* 2020; Sutton *et al.,* 2020; Psomadakis *et al.,* 2020): Australia (Gunther, 1889; Allen and Erdmann, 2012); Japan (Haedrich, 1967; Nakabo, 2002; Nakabo and Doiuchi, 2013; Cabebe and Motomura, 2019); South China (Randall and Lim, 2000); Korea (Lee *et al.,* 2016); Brazil (Menezes *et al.,* 2003); Mexico (McEachran and Fechhelm, 2005); Africa (Bianchi *et al.*, 1993; Fricke, 1999). In Indian waters, this species was only known from the south coast (Mahesh *et al.,* 2022; Parin and Piotrovsky, 2004). The present study expands its distribution to the northwest coast of India from the Gujarat waters (Fig. 2).

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Author contributions

Conceptualization: SR, HLP, VCB; Methodology: SR; Data Collection: SR; Data Analysis: SR; Writing Original Draft: SR; Writing Review and Editing: HLP, VCB; Supervision: HLP.

Data availability

All relevant data supporting this article are included within the article.

Conflict of interests

The authors declare that they have no conflict of financial or non-financial interests that could have influenced the outcome or interpretation of the results.

Ethical statement

The study does not include activities that require ethical approval or involve protected organisms/ human subjects/ collection of sensitive samples/ protected environments.

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