

REDESCRIPTION OF *BLEEKERIA KALLOLEPIS* (ACTINOPTERYGII: PERCIFORMES: AMMODYTIDAE) FROM CHENNAI, EASTERN INDIAN OCEAN

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Abstract. The yellow-striped sandlance, *Bleekeria kallolepis* Günther, 1862, is a poorly known ammodytid fish from the eastern Indian Ocean, known from fewer than five specimens. No detailed description or colour images of *B. kallolepis* have previously been available. We hereby provide a short taxonomic account of the species from its type locality Chennai, India with morphometrics and colour description.

Keywords: sandlance, *Bleekeria kallolepis*, Ammodytidae, Indian Ocean, Bay of Bengal, diversity

INTRODUCTION

The family Ammodytidae (Perciformes), known as sandlances or sand eels, comprises 7 genera and at least 31 species (Randall and Ida 2014, Fricke et al. 2018). They are small (<30 cm TL) coastal fishes, with an elongate body and occur mostly in tropical or temperate waters. Some specialized fishes of the genera *Ammodytes* and *Hyperoplus*, however, occur in sub-boreal regions (Randall and Ida 2014). They form an important link in the marine ecosystem and food web where they are present (Harwood and Croxall 1988, Wanless et al. 1998, 2005).

Bleekeria Günther, 1862 is a genus native to the Indian and western Pacific Oceans. There are currently six recognized species in this genus: *Bleekeria kallolepis* Günther, 1862 from Chennai (India), eastern Indian Ocean; *Bleekeria mitsukurii* Jordan et Evermann, 1902 from Taiwan; *Bleekeria viridianguilla* (Fowler, 1931) from Hong Kong; *Bleekeria murtii* Joshi, Zacharia et Kanthan, 2012 from Tuticorin, Gulf of Mannar (India); *Bleekeria estuaria* Randall et Ida, 2014 from Pomene Estuary (Mozambique), and *Bleekeria profunda* Randall et Ida, 2014 from Saya de Malha Bank, south-western Indian Ocean (Randall and Ida 2014, Fricke et al. 2018).

Bleekeria kallolepis Günther, 1862 was originally described based on material from Chennai, India (previously Madras). Since then, reports of the species have been rare (Day 1878, 1889, Pillay 1931, Krishnan and

Mishra 1993, Ida et al. 1994) possibly due to the limited commercial importance of this fish in the region or the lack of concentrated fish diversity studies in the Indian part of the Bay of Bengal. Since no detailed description with colour images of *B. kallolepis* has hitherto been available, we provide here a detailed taxonomic description of the species from its type locality, Chennai, India.

MATERIALS AND METHODS

Specimens of *Bleekeria kallolepis* were collected on 6 April 2018 during observations of fish landings at Chennai, on the south-east coast of India. The fish were captured by trawl boats that operate in shallow waters off Chennai in the western Bay of Bengal. The catch was dominated by *B. kallolepis*. The species were identified following Günther (1862), Day (1889), and Ida et al. (1994). Measurements of formalin-preserved specimens were taken following Randall and Ida (2014). Fin length was measured from base of first ray to the tip of last ray. The specimens are deposited in the fish collections of the ICAR–Central Marine Fisheries Research Institute (CMFRI), Mumbai, India.

Material examined. Four specimens: BNHS MF 16, 138.4 mm TL, collected at Chennai Fisheries harbour, Chennai, Tamil Nadu, India, 6 April 2018; BNHS MF 17, 140.1 mm TL, CMFRI M-BK-3, 139.6 mm TL, CMFRI M-BK-4, 127.6 mm TL (Collection details are the same for all material).

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RESULTS

Family Ammodytidae

Bleekeria Günther, 1862

Bleekeria kallolepis Günther, 1862

Proposed new common name: yellow-striped sandlance

Figs. 1–5, Table 1

Bleekeria kallolepis Günther, 1862; Günther 1862: p. 387; Pillay 1929: p. 362; (?) Krishnan and Mishra 1993: p. 232; Ida et al. 1994; Joshi et al. 2012;

Ammodytes kallolepis; Day 1878: p. 420, pl. XCI, fig. 3;

Ammodytes callolepis; Day 1889: p. 437, fig. 154.

Holotype. British Museum Natural History, BMNH 1846.11.22, from Chennai (previously Madras).

Diagnosis. Dorsal fin rays 40; pectoral fin rays 13–14; pelvic fin absent; anal fin rays 15–16; lateral line 98–105, gill rakers 6 + 1 + 19–20 = 26–27; branchiostegal rays 7. Body depth at dorsal origin 11.1%–11.8%SL; head length 4.6–4.8 in SL; eyes large, eye diameter 3.35%–4.4%SL. Body with 3–4 broken, discontinuous yellow stripes.

Description. Small fish (maximum size 150 mm TL) with elongate cylindrical body, single long dorsal fin, all dorsal and anal rays segmented, and all but last eight dorsal rays branched; pectoral-fin rays 13–14, upper and lower 2–3 rays unbranched; pectoral axillary scale well developed; anal fin rays 15–16; lateral-line scales 98–105; head naked; scales on body thin and weakly ctenoid; scales rows above lateral-line 3–4/17–19; branchiostegal rays 6; body depth at dorsal-fin origin 11.05%–11.8%SL, 8.4–9.0 in SL; body elongate and subcylindrical, width at dorsal-fin origin 1.4–1.5 in body depth at dorsal origin, becoming progressively more compressed posteriorly; head length 4.6–4.8 in SL, snout length 3.7–4.0 in HL; mouth large, terminal; lower jaw strongly projecting, lower jaw protruding 8.6%–9.1%HL before front of snout, triangular in dorsal view, mouth moderately large, minute teeth present in jaws, upper-jaw length 3.5–3.6 in HL, and oblique, forming an angle of about 30° to horizontal axis of body; gill opening broad, gill rakers long, eye large, 5–6 in HL; interorbital width 5.0–5.7 in HL; caudal-peduncle depth 3.0–3.4 in HL; caudal-peduncle length 7.3–8.0 in SL. predorsal length 4.2–4.5 in SL; first dorsal ray 9.4 in HL; 16th to 20th dorsal rays longest, 1.9–2.9 in HL; preanal length 1.5–1.6 in SL; anal fin half length

of dorsal, caudal fin shallowly forked, caudal fin length 5.9–7 in SL; pectoral fins below level of ventral edge of orbit, middle rays longest, 1.6–1.8 in HL.

Distribution: Western Bay of Bengal to south-west coast of India. Reported from Visakhapatnam (earlier also known as Waltair), Chennai (Madras), Tuticorin (Bineesh K.K, pers. comm. and image) and Trivandrum (Gunther 1862, Day 1878, Pillay 1929). Ida et al. (1994) also mentioned a sandlance species, identified as *Bleekeria kallolepis*, from the Andaman Sea. However, this distribution record needs to be confirmed, as there is a possibility of misidentification with other similar species.

Colour. Generally light bluish or light bluish green background in the upper part of body; pale or pinkish ventrally. Three or four thin broken/irregular bright to golden yellow stripes on body (stripes clearest mostly in anterior dorsal region, fading towards caudal region); of these, three yellow stripes below lateral line, stripe just below lateral line slightly wider, stripe on lateral line extending to upper caudal peduncle (Fig. 1); lateral line stripe, forming a partial 'X' cross in the caudal peduncle region with lower stripes. Upper portion of dorsal fin membranes yellowish, basal region fin membrane pale. Opercular region with a clear yellow spot, laterally in line with eye. Posterior margin of the caudal fin with a thin black border.

Colour after preservation. Dorsal half of body olive brown, scales narrowly edged in blackish, lateral line clearly pale; 3–4 pale/light yellow stripes visible in upper part of body. Ventral half of body pale/yellowish (Fig. 2).

REMARKS AND DISCUSSION

Bleekeria kallolepis, locally called “*aruna*” (in Tamil), are regularly caught by trawlers operating within 80 m (mostly within 40 m) depth along the east coast of India and locally marketed for domestic consumption (Rajapackiam and Mohan 2012). After the original description, species name was rarely used in the scientific literature. Ida et al. (1994) mentioned a 103 mm SL specimen in the BMNH from Madras as the holotype and Fricke et al. (2018) provided holotype details of BMNH 1846.11.22 (Fig. 3–4), other *B. kallolepis* material mentioned in Ida et al. (1994) came from Torutua National Park, Andaman Sea, Thailand, which needs verification.



Fig. 1. Lateral image (freshly caught) of *Bleekeria kallolepis* (BNHS MF 17, 140.1 mm TL)

Table 1
Measurements of *Bleekeria kallolepis* from Chennai, eastern Indian Ocean (measurements expressed in %SL) and compared with *Bleekeria murtii* from Joshi et al. (2012)

	<i>Bleekeria kallolepis</i>	<i>Bleekeria kallolepis</i>	<i>Bleekeria kallolepis</i>	<i>Bleekeria kallolepis</i>	<i>Bleekeria murtii</i>
	BNHS MF 16	BNHS MF 17	CMFRI M BK3	CMFRI M BK4	CMFRI GB.5.1.1
Total length [mm]	138.4	140.1	139.6	127.6	144.6
Standard length [mm]	120.3	121.4	122.1	110.4	126.5
Fork length [mm]	126.5	129.1	130.2	118.0	135.0
Body depth (D origin)	11.8	11.8	11.1	11.3	—
Body width (D origin)	7.8	8.1	7.9	8.2	—
Body depth (A origin)	11.7	12.7	11.5	11.9	—
Body width (A origin)	8.8	8.4	8.5	8.1	—
Greatest body width	9.1	8.9	9.0	9.1	6.2
Greatest body depth	12.1	12.9	12.5	12.8	13.0
Head length	20.9	21.4	21.2	21.9	21.1
Head width at gill	7.9	7.5	7.9	8.0	8.2
Snout length (pre orbit)	5.7	5.3	5.4	5.5	7.0
Orbit diameter	3.5	4.0	4.0	4.4	3.7
Interorbital width	3.6	4.3	4.2	3.9	3.6
Post orbital length	12.0	11.9	11.9	12.2	11.0
Upper jaw length	5.8	5.9	6.1	6.0	2.9
Lower jaw length	6.4	6.3	6.8	6.8	3.5
Caudal peduncle depth	7.0	6.7	6.5	6.3	6.7
Caudal peduncle length(lower)	12.6	13.5	13.7	13.2	11.8
Caudal peduncle width	4.6	4.2	3.9	3.6	—
Predorsal length	23.8	22.2	23.3	23.6	21.6
Preanal fin length	63.9	64.2	64.0	64.9	64.0
Dorsal fin length	65.5	64.4	61.8	63.3	—
Dorsal height	10.8	8.0	8.0	7.3	6.6
Dorsal fin base length	62.1	61.5	60.2	60.1	59.8
First dorsal ray length	—	2.3	—	—	—
Second dorsal ray length	—	4.0	4.7	—	—
Longest dorsal ray length	11.1	7.9	7.6	7.6	—
Anal fin length	21.3	21.8	22.2	22.6	—
Anal fin base	18.3	20.3	19.3	19.8	19.8
First anal ray length	5.3	4.0	3.9	5.7	—
Second anal ray length	6.0	—	7.0	7.0	—
Longest anal ray	6.8	7.4	7.5	7.1	—
Last anal ray length	3.0	2.8	3.1	2.9	—
Caudal fin length	15.3	17.1	14.3	16.3	12.6
Pectoral fin length	12.6	12.1	11.8	13.4	8.9
Pectoral fin base length	2.9	2.8	2.8	3.2	2.9

The characters and colour description of *Bleekeria murtii* provided in Joshi et al. (2012; table 5) match well *B. kallolepis* of the presently reported study from its type locality, except for few morphometrics (e.g., jaw length). However, the authors were unable to examine the

type material or collect additional material of *B. murtii* from Tuticorin (type locality of *B. murtii*) to ascertain the status of this species. The general colour pattern of currently examined *B. kallolepis* specimens well fit with the drawing, description, and counts of Günther

(1862), Day (1878, 1889, Fig. 5), and Ida et al. (2004). Hora and Mukerji (1934) reported another ammodytid fish, *Ammodytes lanceolatus* Le Sauvage, 1824 from Maungmagan, Myanmar (previously Burma) which needs to be verified since *A. lanceolatus* (currently *Hyperoplus lanceolatus*) is an Atlantic Ocean species. Moreover, during the surveys of R/V *Dr. Fridtjof Nansen* in the Myanmar waters in 2018 (2018411), ammodytid fishes of genus *Bleekeria* were collected at station 79 at 115 m depth and appear to be different from known *Bleekeria*

fishes from region (Collette 2001, Ida et al. 2004) in their colour pattern and several morphometrics including eye diameter, dorsal and anal base lengths, etc. (AKV pers. obs.). A detailed study of ammodytid fishes in the Indian Ocean region could reveal more diversity and clarify the status of the species of sandlance reported from the region.

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Fig. 2. Lateral image (formalin preserved) of *Bleekeria kallolepis* (BNHS MF 17, 140.1 mm TL)

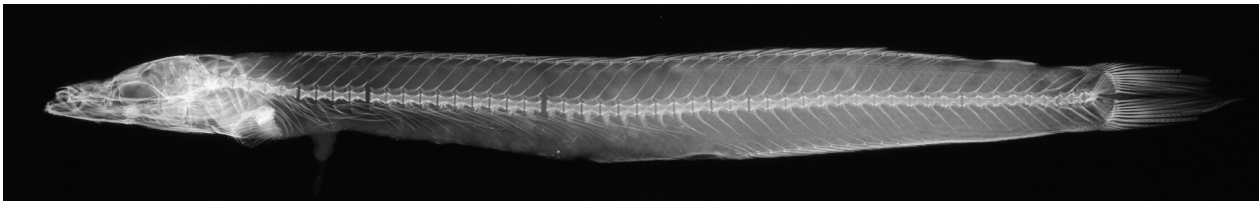


Fig. 3. X ray of Holotype of *Bleekeria kallolepis* (103 mm SL, BMNH 1846.11.22 Anonymous 2014)



Fig. 4. Holotype of *Bleekeria kallolepis* (103 mm SL, BMNH 1846.11.22 Anonymous 2014)

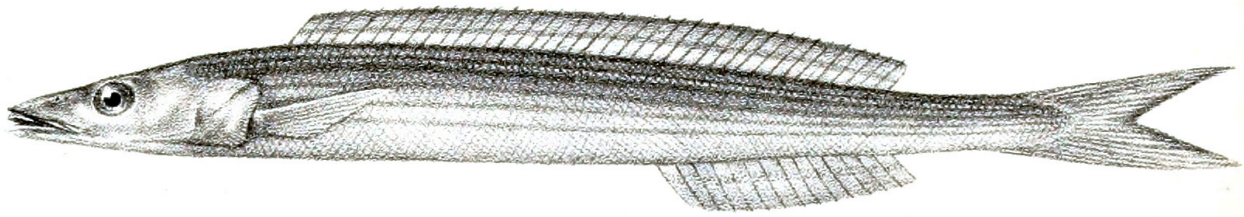


Fig. 5. Image of *Bleekeria kallolepis* from Day (1889, fig. 154)

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