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Three new species of sand lances (Perciformes: Ammodytidae) from the southwest Indian Ocean

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Abstract

Protammodytes ventrolineatus is described as a new species of sand lance (Ammodytidae) from a single specimen from a trawl haul in 240 m (the deepest record for the family) on the Saya de Malha Bank in the southwest Indian Ocean. It has 36 dorsal-fin rays (the lowest count in the family), 16 anal-fin rays, ten scales dorsally on opercle, no teeth in the jaws; a large eye (6.4% SL), and long pelvic fins (3.75 in HL; the longest in the genus; absent in most species). We also describe *Bleekeria profunda* from a single specimen taken in the same trawl haul: it has 49 dorsal-fin rays (other species of the genus with fewer than 43), 16 pectoral-fin rays (other species with 15), teeth present in the jaws, short pelvic fins (4.2 in HL), and 151 lateral-line scales (other species with fewer than 118). The third new species, *Bleekeria estuaria*, named for its unusual habitat for an ammodytid, the Pomene Estuary in Mozambique, has 42 dorsal-fin rays, 15 anal-fin rays, 14 pectoral-fin rays (other species with 15), a short head (4.9 in SL vs. 4.75 in SL shortest for congeners), long pectoral fins (5.7 in SL vs. 7.35 in SL longest for congeners), no pelvic fins, 99 lateral-line scales, a single scale dorsally on the preopercle, two scales dorsally on the opercle, and teeth present in the jaws.

Key words: taxonomy, Ammodytidae, *Protammodytes*, *Bleekeria*, new species, Indian Ocean, Saya de Malha Bank, Mozambique estuary

Introduction

The small fishes of the sand lance family Ammodytidae were named for their ability to dive into sand to escape predation, as well as to sleep at night (*ammo* from the Greek means sand, and *dytes* translates to diver). They have the specializations for this unique mode of life: a long slender body (hence an increased number of vertebrae), a forked caudal fin and an expansion of the neural and haemal spines in the last several vertebrae (presumably to strengthen the caudal fin for more rapid swimming); a pointed head, usually with a projecting, pointed, and strong

lower jaw; small scales, usually cycloid and strongly adherent; the partial loss of the cephalic lateralis system; an adipose eyelid; low dorsal and anal fins, without spines, that fit into grooves; and usually no pelvic fins (but present in some species of the genera *Bleekeria* and *Protammodytes*). They feed in aggregations on zooplankton well above the substratum for such small fishes, thus they need to be alert for predators both above and below. As a result, their eyes are large and near the center of the head; they lack a swimbladder; their gill rakers are long; their premaxilla is protrusible, and, in the more specialized genera (*Lepidammodytes*, *Gymnammodytes* and *Ammodytes*), the premaxilla is separate from the ascending process. The family consists of seven genera, and with the description of the three new species herein, a total of 31 species. Ammodytid fishes are represented from arctic to tropic seas, most are from shallow water. Exceptional are two species described here from a trawl haul in 240 m. The third species is unusual in being collected from an estuary.

Materials and Methods

The three type specimens are deposited in the South African Institute for Aquatic Biodiversity, Grahamstown, South Africa (SAIAB). Reference specimens used in the present study are from the School of Marine Biosciences (formerly School of Fisheries Sciences), Kitasato University, Sagamihara, Japan.

Standard length (SL) is measured from the front of the upper lip in the median plane to the midbase of the caudal fin (end of hypural plate). Body depth is the maximum depth from the base of the dorsal fin to the ventralmost edge of the abdomen, and body width the greatest width. Head length (HL) is measured from the front of the upper lip to the posterior end of the opercular membrane. Orbit diameter is the maximum fleshy diameter (measured to edges of the adipose eyelid), and interorbital width the least fleshy width. Caudal-peduncle depth is the least depth, and caudal-peduncle length the horizontal distance between verticals at the rear base of the anal fin and the caudal-fin base. Lengths of dorsal and anal rays are measured from their tips to the body contour (not to the ray bases within the groove into which the fins fold); caudal-fin length is taken horizontally from the caudal-fin base to a vertical at the tip of the longest ray. Proportional measurements are rounded to the nearest 0.05.



Figure 1. Holotype of *Protammodytes ventrolineatus*, gravid female, SAIAB 84113, 138 mm SL, trawl, Saya de Malha Bank, 237–240 m (Oddgeir Alvheim).

Protammodytes ventrolineatus, n. sp.

Figures 1, 2, 5–7, Table 1.

Holotype. SAIAB 84113, gravid female, 138 mm SL, Saya de Malha Bank, 13° 21.92' S, 60° 32.10' E, 237–240 m, bottom trawl, Station 13, *Dr. Fridtjof Nansen*, Oddgeir Alvheim and Denis Tweddle, 23 October 2008.

Diagnosis. Dorsal-fin rays 36; anal-fin rays 16; pectoral-fin rays 17; pelvic fin rays 5; lateral-line scales 86; no gap in subocular sensory canal (Fig. 5A); gill rakers 3 + 21; vertebrae 53; body depth at dorsal-fin origin 10.9 in



Figure 2. Ventral view of holotype of *Protammodytes ventrolineatus* showing dark abdominal lines (Helen A. Randall).

SL: head length 3.75 in SL; eye large, 4.15 in HL; mouth large and slightly oblique, the upper-jaw length 3.05 in HL; lower jaw projecting, the tip narrowly rounded; no teeth in jaws; pelvic fins present (one of four species of the family retaining these fins), 3.75 in HL; color when fresh as illustrated by Fig. 1; color in alcohol: body yellowish brown dorsally, the scales narrowly rimmed in black; a broad light purplish gray zone on side of body, abruptly pale tan ventrally below level of lower edge of pectoral-fin base, with a series of 22 oblique black lines on each side of abdomen, and three longitudinal black lines midventrally (Fig. 2); fins pale yellowish.

Description. Dorsal-fin rays 36 (lowest count of the family; 36 or 37 in *P. brachistos*); anal-fin rays 16; all dorsal and anal rays segmented, and all but first three dorsal and anal rays branched; principal caudal rays 15, the middle 13 branched; upper and lower procurrent caudal rays 16, the posterior 2 segmented; pectoral-fin rays 17, upper and lower two unbranched; pelvic-fin rays 5, all segmented; lateral-line scales 86; median predorsal scales 17, ending above posterior margin of preopercle; head naked, except for 10 scales dorsally on opercle; scales on body weakly ctenoid anteriorly, cycloid posteriorly; scales rows above lateral-line 4; lateralis system on head complete (no gap in subocular sensory canal; see Fig. 5A); gill rakers 3+21; branchiostegal rays 7; vertebrae 29 + 24 = 53; first dorsal pterygiophore between fifth and sixth neural spines; two predorsal bones (one before second neural spine, and one before third); nasal cavity in posterior half of snout, divided by a thin septum into narrow upper and broad lower parts; olfactory organ on septum large, composed of 10 heart-shaped lamellae (Fig. 7 top).

Body depth at dorsal-fin origin 7.7 in SL; body subcylindrical, body width at dorsal-fin origin 1.4 in body depth, becoming progressively more compressed posteriorly; body without a ventrolateral skin fold; head length 3.75 in SL; front of snout rounded, its length 11.8 in SL, 3.05 in HL; lower jaw strongly protruding, extending medially one-half eye diameter anterior to mouth, lower jaw tip slightly rounded; mouth large, the upper-jaw length 3.05 in HL, slightly oblique, forming an angle of about 15° to horizontal axis of body; no teeth in jaws; gill opening broad, upper end at level of dorsal edge of orbit, lower end extending forward to a vertical slightly anterior to center of eye; gill membranes not attached to isthmus; gill rakers long, longest raker at angle, equal to length of longest gill filament; eye large, 4.15 in HL; interorbital width 6.05 in HL; nostrils like enlarged pores with a slight rim, on a line from top of orbit to front of snout; posterior nostril one-half pupil diameter in front of anterior margin of orbit; caudal-peduncle depth 5.4 in HL; caudal-peduncle length 5.05 in SL.

Origin of dorsal fin above eleventh lateral-line scale, predorsal length 3.2 in SL; first dorsal ray 11 in HL; twenty-fourth dorsal ray longest, 3.3 in HL; origin of anal fin below fifty-eighth lateral-line scale, preanal length 1.6 in SL; caudal fin forked, fin length 5.7 in SL; pectoral fins on lower side at level of ventral edge of orbit, middle rays longest, 2.45 in HL; pelvic fins below base of pectoral fins, prepelvic length 4.1 in SL; pelvic fins 3.75 in HL.

Color in alcohol. Yellowish brown dorsally on body, scales narrowly edged in black; a broad light purplish gray zone on side of body, abruptly pale tan ventrally below level of lower edge of pectoral-fin base, with a series of 22 oblique black lines on side of abdomen, and three longitudinal black lines midventrally (Fig. 2); fins pale yellowish.

Color when fresh. Bluish gray dorsally on body to one scale row below bluish white lateral line, the scale edges black; a broad bluish white zone on side of body, ending ventrally in an indistinct stripe of brown blotches

beginning at base of pectoral fin, becoming blackish posteriorly, and ending ventrally on caudal peduncle and base of caudal fin; body below stripe light gray; snout reddish gray; iris pale yellowish; dorsal fin whitish; caudal fin reddish on basal half, except for a rectangular white bar at base, whitish distally.

Etymology. This species is named *Protammodytes ventrolineatus*, in reference to the black lines ventrally on the abdomen.

Remarks. The genus *Protammodytes* contains two other species: the type species *P. brachyistos* Ida,

TABLE 1

Proportional measurements of holotypes of three new ammodytid species as percentage of the standard length

	<i>Protammodytes ventrolineatus</i>	<i>Bleekeria profunda</i>	<i>Bleekeria estuaria</i>
	SAIAB 84113	SAIAB 84114	SAIAB 186240
Sex	female	male	subadult
Standard Length (mm)	138	120.5	63.1
Body depth (D origin)	12.7	11.2	10.5
Body depth (A origin)	12.2	10.3	9.5
Body width (D origin)	9.8	6.4	6.1
Head length	26.6	24.3	20.3
Snout length	8.2	7.5	4.9
Orbit diameter	6.4	6.4	4.7
Interorbital width	5.7	5.1	3.0
Upper-jaw length	8.7	6.7	6.1
Caudal-peduncle depth	4.9	5.5	6.4
Caudal-peduncle length	19.8	11.8	15.4
Predorsal length	31.2	23.5	21.4
Preanal length	63.2	67.2	65.6
Prepelvic length	24.4	20.3	none
Dorsal-fin base	49.7	62.0	68.0
First dorsal ray	2.4	2.8	6.6
Longest dorsal ray	8.0	8.3	9.6
Anal-fin base	18.5	15.7	15.7
First anal ray	4.7	2.4	broken
Longest anal ray	10.5	5.9	9.5
Caudal-fin length	17.5	broken	broken
Pectoral-fin length	10.9	13.2	17.5
Pelvic-fin length	7.1	5.8	none

Sirimontaporn & Monkolprasit 1994, described from a specimen taken from the stomach of a species of *Etelis* caught in about 200 m off Taiwan (also known from one other specimen collected from the Hawaiian Islands); and *P. sarisa* Robins & Böhlke 1970 from a specimen collected off St. Vincent in the Lesser Antilles at a depth of 270 m. These three species are the least specialized of the family, sharing a more stocky body with fewer than 57 vertebrae, fewer dorsal and anal rays, the presence of pelvic fins (lost in species of presumably more advanced genera), ctenoid scales, and a complete set of olfactory lobes. They fit the common pattern of the more primitive species of a family persisting only in deeper water habitats. One might hypothesize that an early lineage of sand lances was able to dive into the soft substratum of deeper water, but could not invade shallow water with sand bottom like its more elongate, streamlined, younger relatives.



Figure 3. Holotype of *Bleekeria profunda*, male, SAIAB 84114, 121 mm SL, same locality as Fig. 1 (Oddgeir Alvheim).

***Bleekeria profunda*, n. sp.**

Figures 3, 5–7, Table 1.

Holotype. SAIAB 84114, male, 121 mm SL, Saya de Malha Bank, 13° 21.92' S, 60° 32.10' E, 237–240 m, bottom trawl, Station 13, *Dr. Fridtjof Nansen*, Oddgeir Alvheim and Denis Tweddle, 23 October 2008.

Diagnosis. Dorsal-fin rays 49; anal-fin rays 20; pectoral-fin rays 16; pelvic fins present, with 5 rays; lateral-line scales 151; gill rakers 8 + 21; no gap in subocular sensory canal (Fig. 3B); vertebrae 62; body depth at dorsal-fin origin 8.95 in SL; head length 4.15 in SL; eye large, 4.4 in HL; mouth oblique and moderately large, the upper-jaw length 3.65 in HL; lower jaw projecting a half eye diameter anterior to opening of mouth, the tip narrowly rounded; mouth forming an angle of about 40° to axis of body; small, slender, well-spaced teeth in jaws; pelvic fins small, 4.2 in HL; color in alcohol: dorsal half of body pale yellowish brown, the scales narrowly edged in blackish, except on lateral line; ventral half of body pale yellowish white; color when fresh as in Fig. 3.

Description. Dorsal-fin rays 49; anal-fin rays 20; all dorsal and anal rays segmented, and all but first three branched; caudal fin largely missing; pectoral-fin rays 16, upper and lower two rays unbranched; pelvic-fin rays 5, all segmented and unbranched; lateral-line scales 151 (highest number for the genus); median predorsal scales 13, ending slightly anterior to posterior margin of preopercle; head naked; scales on body thin and weakly ctenoid; scales rows above lateral-line 3.5; gill rakers 8 + 21; cephalic sensory pores as illustrated in Fig. 5B (no gap in subocular sensory canal); branchiostegal rays 7; vertebrae 32 + 30 = 62; first dorsal pterygiophore between fifth

and sixth neural spines, the next two between sixth and seventh neural spines; nasal cavity in posterior half of snout, divided into two parts; olfactory lobes vestigial, consisting of four small heart-shaped lamellae (Fig. 7 middle) that occupy about one-fourth of the anterior cavity.

Body depth at dorsal-fin origin 8.95 in SL; body subcylindrical, the width at dorsal-fin origin 1.75 in body depth, becoming progressively more compressed posteriorly; body with a slight ventrolateral skin fold; head length 4.15 in SL, largest of the genus; front of snout rounded except for a median truncate part about two-thirds pupil diameter in width; snout length 3.25 in HL; lower jaw protruding a half orbit diameter before front of snout, triangular in dorsal view, the narrow tip rounded; mouth moderately large, upper-jaw length 3.65 in HL, and oblique, forming an angle of about 40° to horizontal axis of body; small, slender, conical teeth well-spaced in jaws, 23 on side of upper jaw and 30 on lower; gill opening broad, the upper end at level of dorsal edge of orbit, the lower end extending forward to a vertical at anterior edge of pupil; gill membranes not attached to isthmus; gill rakers long, the longest at angle equal to length of longest gill filaments; eye large, 3.8 in HL; interorbital width 5.55 in HL; nostrils anterior to upper fourth of eye, nearly half distance to front of snout; anterior nostril like an enlarged pore with a slight rim separated by a gap nearly half pupil diameter from slit-like posterior nostril; caudal-peduncle depth 4.2 in HL; caudal-peduncle length 8.4 in SL.

Origin of dorsal fin above tenth lateral-line scale, the predorsal length 5.15 in SL; first dorsal ray 8.7 in HL; sixteenth dorsal ray longest, 2.45 in HL; origin of anal fin below thirty-third lateral-line scale, the preanal length 1.5 in SL; caudal fin largely missing; pectoral fins on lower side at level of ventral edge of orbit, the middle rays longest, 1.85 in HL; prepelvic length 4.95 in SL, pelvic fins below base of pectoral fins, the third ray longest, 4.2 in HL.

Color in alcohol. Light yellowish brown dorsally, grading to straw color ventrally, the scale edges on upper half of body narrowly rimmed with dark brown, except those of lateral line; head pale yellowish; a large triangular silvery area on opercle, with a silvery spot at the same level on preopercle; fins pale yellowish.

Color when fresh. Grayish blue on about dorsal third of body anteriorly, progressively less posteriorly, with whitish lateral line visible within the blue, extending behind upper end of gill opening, progressively fainter posteriorly; interorbital blue, grading to gray on nape; operculum and chest white; snout, jaws, and ventral head mainly dark red, the front of lower jaw blue, except for a small gray anterior nodule. We are unsure if the deep red coloration on the snout, ventrally on the head, and as an oblique band from the opercle to the pectoral-fin base are natural or from the trauma of the trawl.

Etymology. This species is named *Bleekeria profunda* from the Latin meaning deep, in reference to its capture by trawl at a depth of 237–240 m, the deepest known for an ammodytid fish (along with *Protammodytes ventrolineatus*).

Remarks. Less specialized characters such as the presence of pelvic fins (though small), ctenoid scales, teeth in the jaws, relatively deep body, relatively few vertebrae, low counts of dorsal and anal fin rays, complete cephalic sensory lateralis system, and degenerate olfactory organ are present in *Bleekeria profunda*, thus clearly showing its presumed primitive status within the genus.

The genus *Bleekeria* is represented by four other species: the type species *B. kallelepis* Günther (type locality Madras, now Chennai, India), known from the eastern Indian Ocean; *B. mitsukurii* Jordan & Evermann 1902 (type locality Giran, Taiwan), wide-ranging in the Indo-Pacific; *B. murtii* Joshi, Zakaria & Kanthan 2012 (type locality Tuticorin, India); and the following new species of the genus from Mozambique.

Bleekeria profunda is easily distinguished from these species by its more elongate body, which correlates with its higher count of 62 vertebrae (the other species with fewer than 58). Also it has 49 dorsal rays, compared to fewer than 43 for the other species of the genus.



Figure 4. Holotype of *Bleekeria estuaria*, SAIAB 186240, 63 mm SL, Pomene Estuary, Mozambique (Allan D. Connell).

Bleekeria estuaria, n. sp.

Figures 4, 5–7, Table 1.

Holotype. SAIAB 186240, 63 mm SL, Mozambique, Pomene Estuary, 22° 54.53' S, 35° 33.322' E, 5 m, multi-prong spear, Allan D. Connell, Nov. 20, 2010.

Diagnosis. Dorsal-fin rays 42; anal-fin rays 15; pectoral-fin rays 14, the fins 5.7 in SL (longest of the genus); pelvic fins absent; lateral-line scales 99; scales weakly ctenoid; a single scale dorsally on opercle; no gap in subocular sensory canal (Fig. 3C); vertebrae 53; body depth 9.5 in SL; short head, head length 4.9 in SL; eye moderately large, 4.3 in HL; mouth moderately large and oblique, the upper-jaw length 3.35 in HL; lower jaw strongly projecting, the tip narrowly rounded; 22 small slender teeth on side of upper jaw, 2 or 3 anteriorly on side of lower jaw; color in alcohol yellowish brown, the scales dorsally on body to and including those of lateral-line scales very finely stippled with black; scales below lateral line with progressively less dark pigment; operculum with silvery patches; fin rays pale yellowish, the anterior edge of dorsal rays finely dotted with black; fin membranes translucent; color when fresh as in Fig. 4.

Description. Dorsal-fin rays 42; anal-fin rays 15; all dorsal and anal rays segmented, and all branched, except first four dorsal rays and last anal ray; principal caudal rays 15, the middle 13 branched; upper procurrent caudal rays 15, the posterior 2 segmented; lower procurrent caudal rays 16, the posterior 2 segmented; pectoral-fin rays 14, the uppermost and lower two unbranched; pelvic fins absent; scales weakly ctenoid; lateral-line scales 99 (plus 3 on caudal-fin base); lateral line curving upward from origin at dorsal end of gill opening to continue 2.5 scale rows below dorsal fin, curving down posteriorly, and ending at midbase of caudal fin; median predorsal scales 17, ending above posterior margin of preopercle; head naked, except for 1 scale dorsally on opercle; scales weakly ctenoid; lateralis system on head complete (no gap in subocular sensory canal; see Fig. 5C); gills badly damaged by large parasitic copepod (no count of gill rakers possible); branchiostegal rays 7; vertebrae 29 + 24 = 53; first two dorsal pterygiophores between fourth and fifth neural spines; two predorsal bones (one before tip of second neural spine, and one before tip of third neural spine); nasal cavity in posterior half of snout, divided by a thin septum into narrow upper and broad lower parts; olfactory lobes vestigial, consisting of four small heart-shaped lamellae (Fig. 7 bottom) that occupy about one-fourth of the anterior cavity.

Body depth at dorsal-fin origin 9.5 in SL; body subcylindrical, the width at dorsal-fin origin 1.65 in body depth, becoming progressively more compressed posteriorly; body with a slight ventrolateral skin fold; head length 4.9 in SL; front of snout narrowly truncate in dorsal view, its width two-thirds pupil diameter; snout length 4.15 in HL; lower jaw strongly protruding, extending medially one-half eye diameter anterior to mouth, the tip slightly rounded; mouth oblique, forming an angle of about 35° to horizontal axis of body; 22 small slender teeth on side of upper jaw, 2 or 3 comparable teeth anteriorly on side of lower jaw; gill opening broad, the upper end slightly ventral to level of dorsal edge of orbit, the lower end extending forward to a vertical at anterior edge of

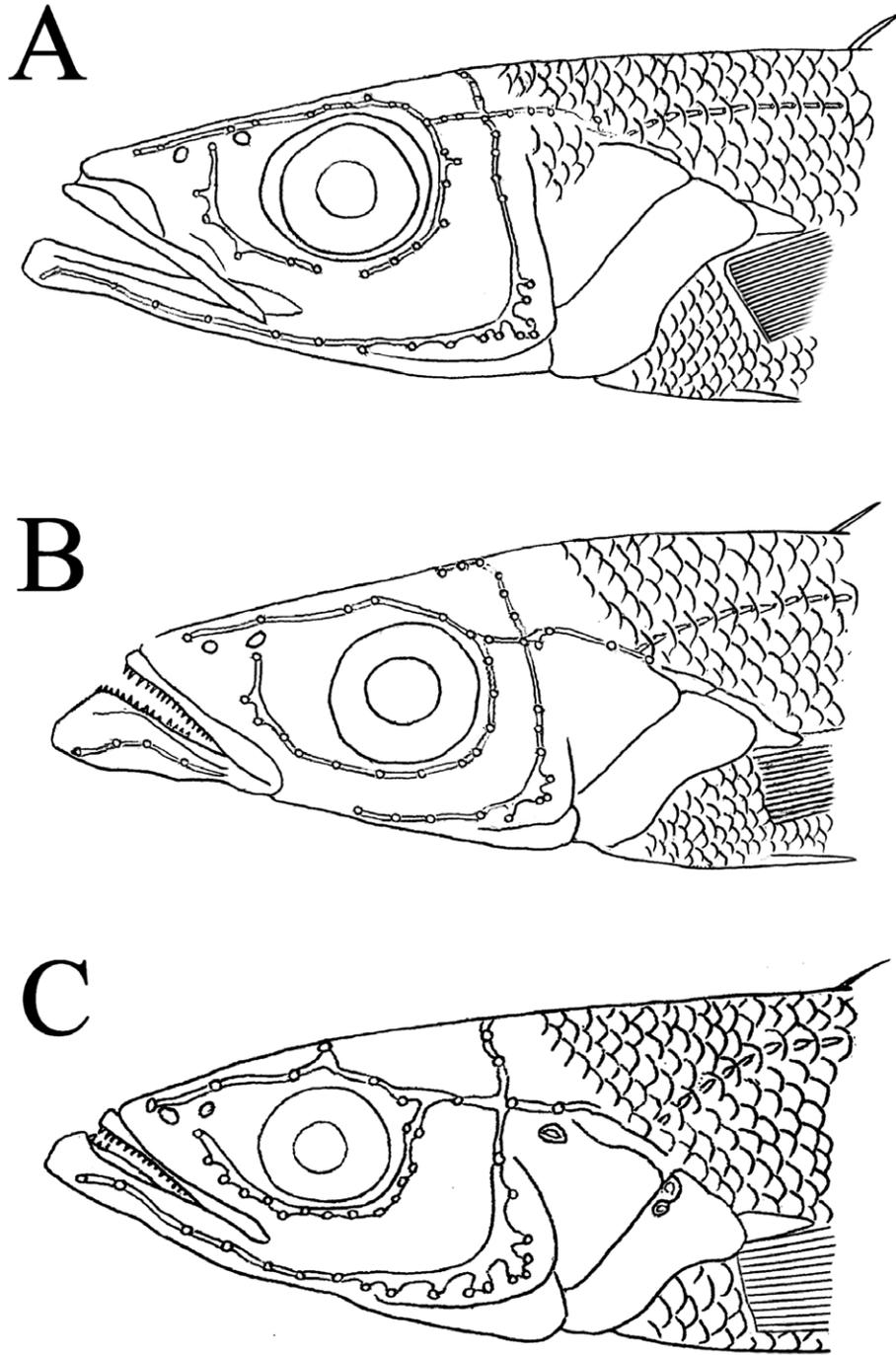


Figure 5. Drawings of the cephalic sensory system-rays of *Protammodytes ventrolineatus* (A), *Bleekeria profunda* (B), and *Bleekeria estuaria* (C) (Hitoshi Ida).

pupil; gill filaments and gill rakers too damaged by parasite for measurements; eye moderately large, 4.3 in HL; interorbital width 6.75 in HL; nostrils horizontally elliptical with a fleshy rim, on a line from top of orbit to front of upper lip, half way from front of orbit to front of lip, and separated by a nostril width; caudal-peduncle depth 3.2 in HL; caudal-peduncle length 6.5 in SL.

Origin of dorsal fin above tenth lateral-line scale, the predorsal length 4.65 in SL; first dorsal ray 3.1 in HL; thirty-second dorsal ray longest, 2.1 in HL; origin of anal fin below fifty-eighth lateral-line scale, the preanal length 1.6 in SL; caudal fin damaged, the length based on photograph about 8 in SL; caudal fin deeply forked, the caudal concavity 2.2 in HL; pectoral fins on lower side of body, slightly falcate, 1.15 in HL, 5.7 in SL; no pelvic fins.

Color in alcohol. Yellowish brown, the scales dorsally on body to and including those of lateral-line very finely stippled with black; scales below lateral line with progressively less dark pigment; opercle translucent with a large silver triangular area, its lower point touching an oblique silvery white ventral streak; preopercle with a semicircular silvery spot of about one-fourth eye diameter, ending at margin; iris silvery; fin rays pale yellowish, the anterior edge of dorsal rays finely dotted with black; iris mainly silvery white; fin rays pale yellowish, the anterior edge of dorsal rays finely dotted with black; fin membranes translucent.

Color when fresh. Light olive-gray, the scale edges narrowly blackish dorsally on body, progressively less ventrally; abdomen silvery white with a broad dorsal iridescent blue zone containing a central dusky reddish area;

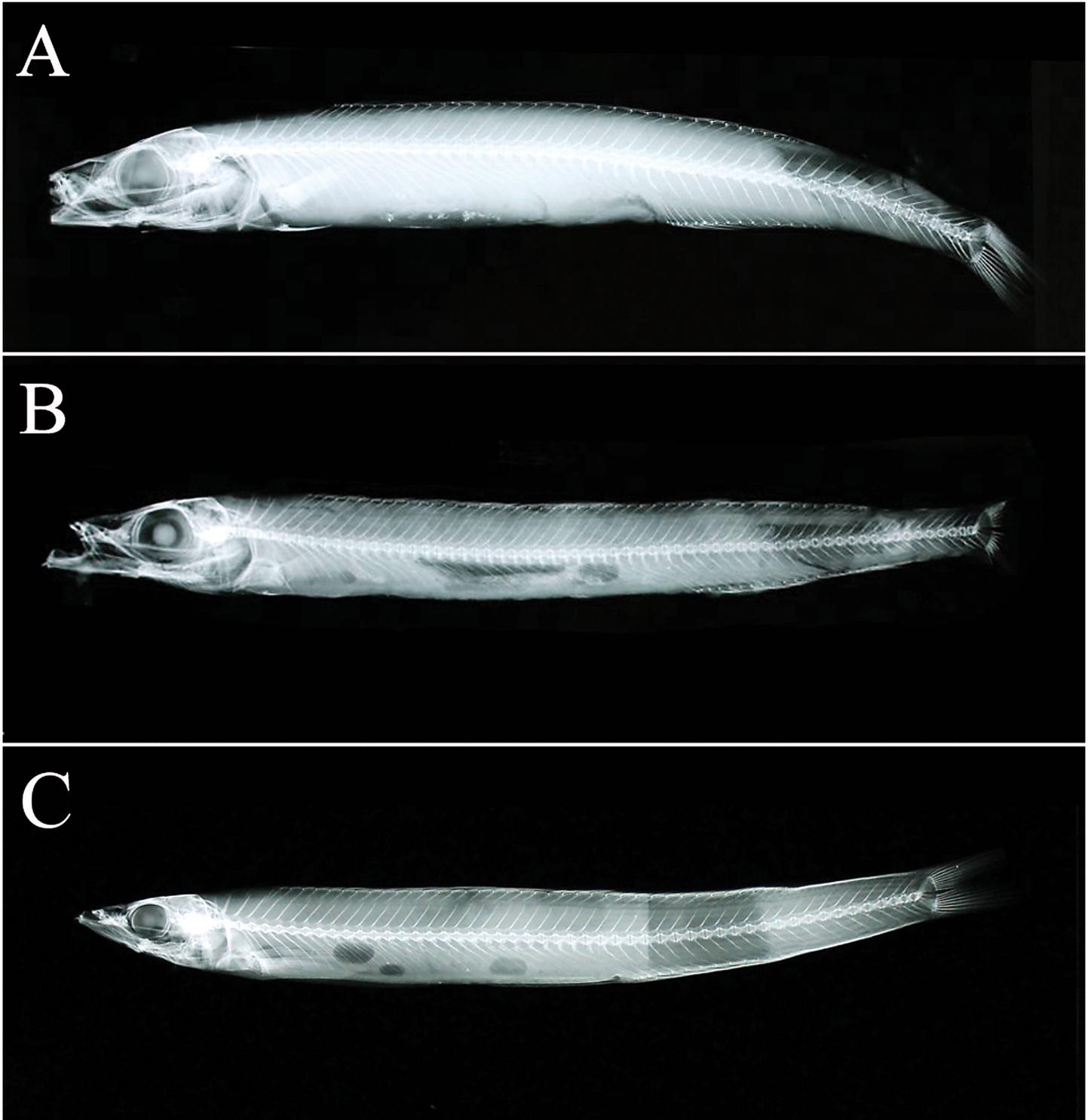


Figure 6. X-rays of *Protammodytes ventrolineatus* (A), *Bleekeria profunda* (B), and *Bleekeria estuaria* (C). The large dark areas posteriorly on the three figures (rectangular on C) are from tissue removal. Tissue samples are available at the South African Institute for Aquatic Biodiversity (Hitoshi Ida).

operculum and isthmus silvery and blue; a large orange-yellow area before pectoral fin; snout dusky olive; caudal fin gray with a narrow blackish posterior margin, the rays with blackish edges; pectoral fins whitish.

Etymology. This species is named *Bleekeria estuaria* in reference to its being collected from an estuary, an unexpected habitat for an ammodytid fish.

Remarks. The collector of the holotype, Dr. Allan D. Connell, was asked to provide details of the habitat, etc. His response was “Date was 20 November 2010, in the Pomene Estuary, water depth about 5 m (almost slack high). I was lying in a dune trough about 0.5 m; current was running in, and I was watching *Trichonotus marleyi* feeding on zooplankton in the current when I suddenly noticed a shoal of about 50 skinny little fish above the trichonotids. I fired into them with my multiprong spear.”

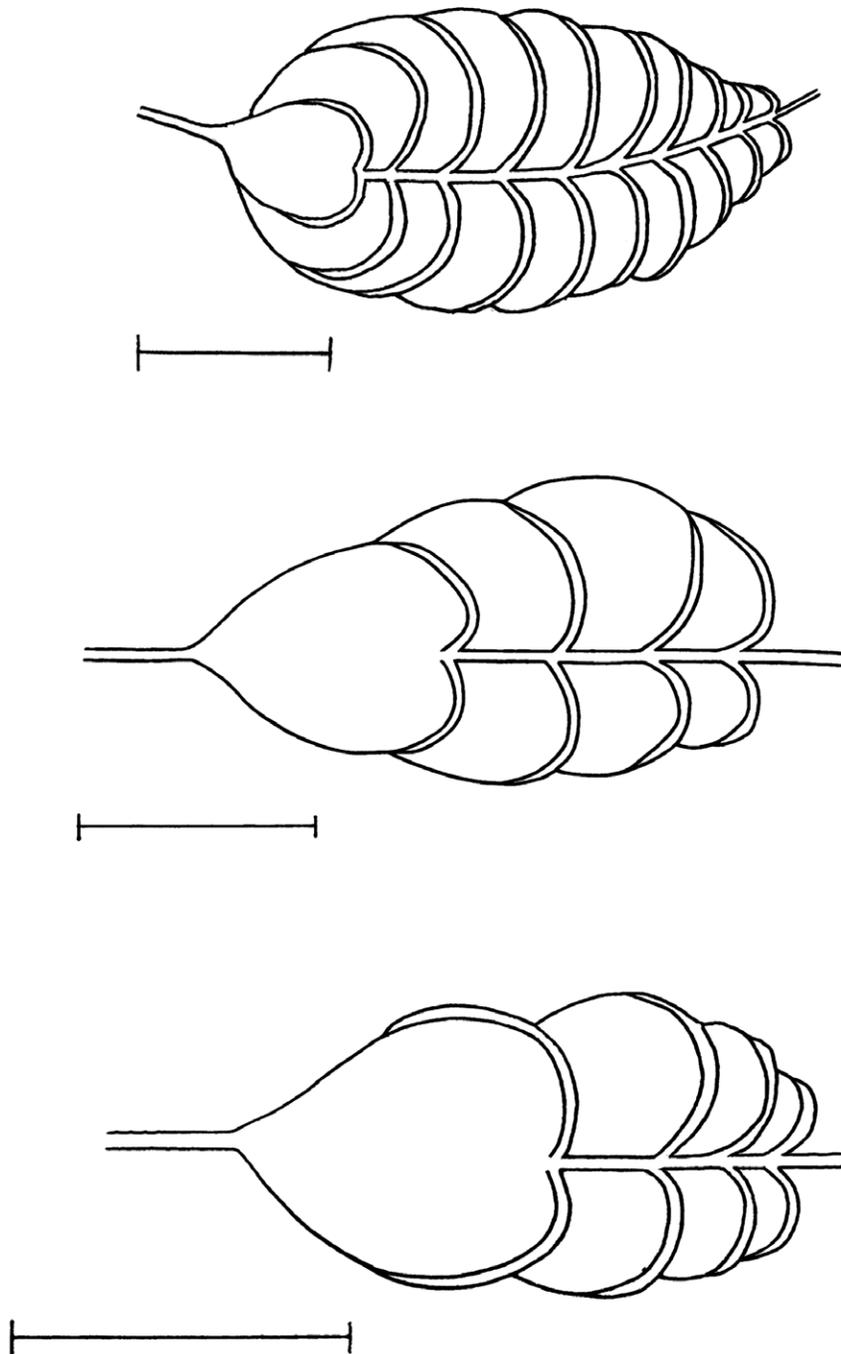


Figure 7. Olfactory organ of of *Protammodytes ventrolineatus* (top), *Bleekeria profunda* (middle), and *Bleekeria estuaria* (bottom); scale bar represents 1 mm. Drawn from the right side, i.e. anterior is to the right of the figure (Hitoshi Ida).

It took some time for the authors to find where the little fish was speared. Finally we found a small hole on the right side, just behind the margin of the preopercle that led toward the brain.

The fish appears to be a subadult; we could not detect a gonad. We regret not having additional material to describe the species (as well as the preceding two new species). We have encouraged Dr. Connell to make a return visit to the estuary, but it has not been possible. With the publication of this paper, we will be able to complete our revision of the Western Indian Ocean ammodytid fishes for the series of volumes planned for the coastal fishes of the region by the South African Institute for Aquatic Biodiversity.

The gill chamber of this specimen contains an enormous parasitic copepod that has inflicted major damage to the gill filaments and gill rakers. Knowing the speed that these small fishes swim in schools, it is difficult to understand how this individual managed to remain in the school.

Bleekeria estuaria is one of seven species of the genus. It may be distinguished from other species by having the shortest head, 4.9 in SL (shortest head for other species is 4.75 in SL, in *B. murtii*); the longest pectoral fins, 5.7 in SL (longest for other species is 7.35 in SL, in *B. kallolepis*); and by 3/17 transverse scales (other congeners with more than 4/19 transverse scales).

Acknowledgments

We thank Oddgeir Alvheim and Denis Tweddle for photographing and preserving the type specimens of the first two ammodytid fishes described above, and Allan D. Connell for collecting and photographing our third new species of the family. Dr. Keiichi Matsuura and Gento Shinohara of NSMT and Dr. Izumi Akagawa of Tokai University graciously assisted in preparation of the manuscript and figures. We are also grateful to Roger Bills and Bafo Konqobe of the South African Institute for Aquatic Biodiversity for the loan of the specimens, Helen A. Randall for the photograph of Figure 2, Elaine Heemstra for comments, and Blake L. Randall and Sean O'Hara for computer assistance. The manuscript was reviewed by David W. Greenfield, Wouter Holleman, and Helen A. Randall.

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