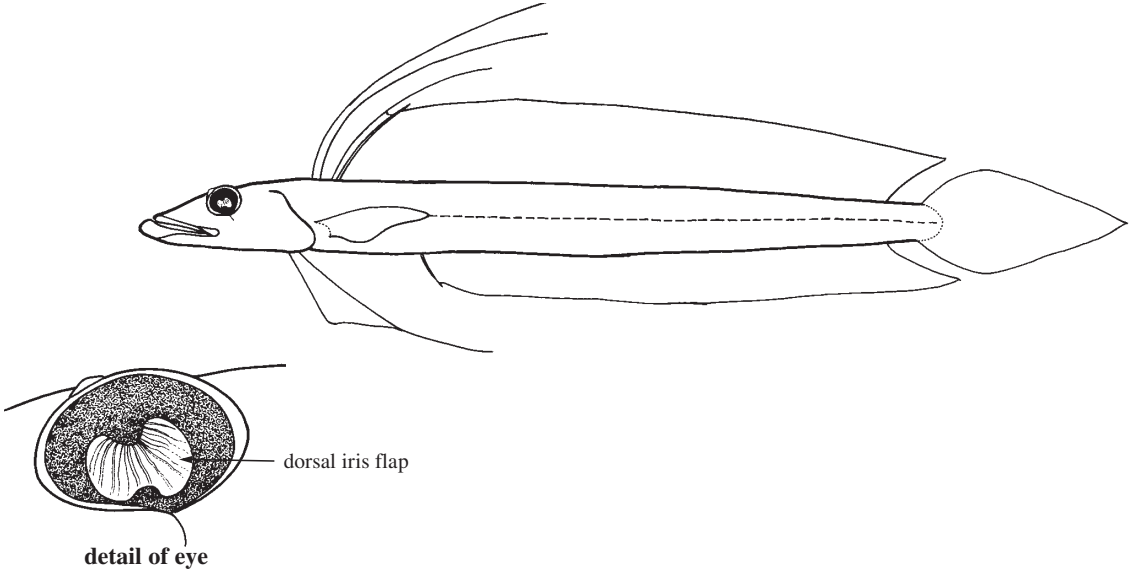


TRICHONOTIDAE

Sanddivers

J.S. Nelson

Diagnostic characters: Elongate, cylindrical (compressed posteriorly) trachinoid fishes (to about 16 cm standard length). **Eye with dorsal iris flap consisting of numerous elongate strands extending ventrally.** Snout pointed. **Lower jaw with fleshy extension (usually surrounding tip of upper jaw) and projecting beyond upper jaw.** Row of cirri bordering lower jaw; symphysis of lower jaw with ventral and smaller dorsal projection. Opercular flap enlarged ventrally, overlapping branchiostegal membrane. Branchiostegal rays 7. Gill membranes extending far forward, free from isthmus. **Dorsal fin single, continuous, with III to VIII spines (some or all of which are elongated in males of some species) and 39 to 47 soft rays;** anal fin with I spine and 34 to 42 soft rays; pectoral fins with 11 to 15 soft rays; pelvic fins with I spine and 5 soft rays; principal caudal-fin rays 13. Lateral line along midbody; lateral-line scales 52 to 59, cycloid. **Colour:** series of blotches or saddle bands along body above lateral line; membrane of spinous dorsal fin usually black; live specimens with colourful markings.



Habitat, biology, and fisheries: Benthic, mostly near the substrate over sand, into which they dive, from inshore to depths of about 50 m. In tropical waters of the Indo-West Pacific (including the Red Sea). Feeding is mostly on crustaceans and zooplankton. Males larger than females. Not usually taken in commercial trawls and seine nets because of their small size; no commercial value.

Remarks: The distribution and validity of the nominal species is uncertain and a revision of this small family is overdue.

Similar families occurring in the area

Creediids, some percophids, and the single known pseudotrachonotid (an aulopiform) resemble trichonotids. However, the unique dorsal iris flap with its numerous strands will readily distinguish trichonotids from all other fishes.

Key to the species of Trichonotidae occurring in or near the area (see comment in species list)

- 1a. Body scaleless above and below lateral line on anterior half; dorsal-fin spines III . . . *Trichonotus elegans*
- 1b. Body completely scaly; dorsal-fin spines more than III → 2
- 2a. Dorsal-fin rays 43 or 44; lateral-line scales 52 to 57 *Trichonotus filamentosus*
- 2b. Dorsal-fin rays 39 to 41; lateral-line scales 55 to 57 → 3
- 3a. Lateral-line scales 52 to 55; 1 or 2 free pterygiophores under dorsal fin. *Trichonotus setiger*
- 3b. Lateral-line scales 56 or 57; no free pterygiophores under dorsal fin *Trichonotus halstead*

List of species occurring in the area

(provisional - the distribution of the 8 nominal species of trichonotids is poorly known; undescribed species probably exist)

- Trichonotus elegans* Shimada and Yoshino, 1984
- Trichonotus filamentosus* (Steindachner, 1867)
- Trichonotus halstead* Clark and Pohle, 1996
- Trichonotus setiger* Bloch and Schneider, 1801

References

- Clark, E. and M. Pohle. 1996. *Trichonotus halstead*, a new sand-diving fish from Papua New Guinea. *Envir. Biol. Fish.*, 45:1-11.
- Nelson, J.S. 1986. Some characters of Trichonotidae, with emphasis to those distinguishing it from Creediidae (Perciformes: Trachinoidei). *Japan. J. Ichthyol.*, 33(1):1-6.

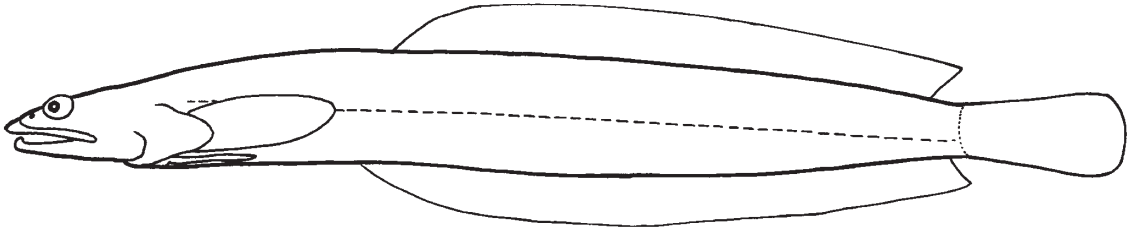
CREEDIIDAE

(= Limnichthyidae)

Sandburrowers

by J.S. Nelson

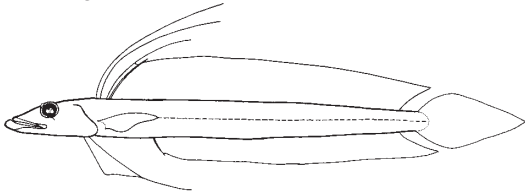
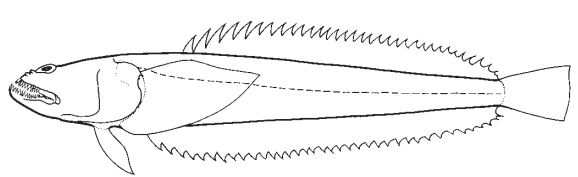
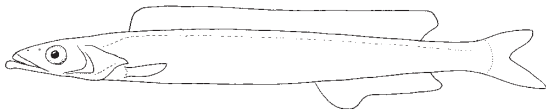
Diagnostic characters: Elongate, compressed, small (to about 8 cm) trachinoid fishes. Eyes slightly protruding, near dorsal profile of head. **Snout fleshy, projecting beyond lower jaw.** Mouth cleft almost horizontal. **Row of cirri bordering lower jaw;** symphysis of lower jaw with dorsal projection. Opercular flap enlarged ventrally, usually overlapping branchiostegal membrane. Branchiostegal rays 7. Gill membranes not united, free from isthmus. Dorsal fin single, continuous, with 12 to 43 soft rays; anal fin with 22 to 40 soft rays; pectoral fins with 11 to 16 soft rays; pelvic fins with I spine and 3 to 5 soft rays, or absent, in front of pectoral fins and with space between pelvic fins very small; caudal fin rounded, usually with 8 branched rays (rarely 9). Scales cycloid. Lateral-line scales about 35 to 60, **all except anterior lateral-line scales with posterior extension, often trilobed.** **Lateral line descending abruptly or gradually from above operculum to ventral surface near base of caudal fin.** **Pelvic girdle uniquely shaped, like an inverted bowl.** Bone of operculum highly splintered. **Colour:** when preserved, most species have 5 to 18 saddle marks along upper part of body, a dark horizontal band may also be present. In life the body tends to be translucent with some colour.



Habitat, biology, and fisheries: Mostly near the substrate over sand or broken coral, from inshore to depths of about 150 m. In tropical to warm-temperate waters of the Indian and Pacific oceans (east to Hawaii and Easter Island). Little is known of the biology of these sand diving fishes. Not usually taken in commercial trawl and seine nets because of their small size; no commercial value.

Similar families occurring in the area

Some species of several other trachinoid families, Trichonotidae, Percophidae, Leptoscopidae, and Ammodytidae, and of certain families of Blennioidei and Gobioidi (e.g., Microdesmidae), although bearing a superficial resemblance to creediids, may be readily distinguished from them by their absence of the above noted diagnostic features.

**Trichonotidae****Leptoscopidae****Ammodytidae****Microdesmidae**

Key to the species of Creediidae occurring in or near area

- 1a.** Pelvic fins with I spine and 4 soft rays → **2**
1b. Pelvic fins with I spine and 5 soft rays → **3**
- 2a.** Dorsal fin with 12 to 16 soft rays; anal fin with 23 to 26 soft rays *Creedia haswelli*
2b. Dorsal fin with 35 to 37 soft rays; anal fin with 36 to 38 soft rays *Chalixodytes tauensis*
- 3a.** Anal-fin rays branched *Schizochirus insolens*
3b. Anal-fin rays unbranched → **4**
- 4a.** Body scaleless except for lateral line *Crystalloodytes cookei*
4b. Body fully scaly → **5**
- 5a.** At least some of the dorsal saddles reaching a distinct lateral band; combined number of soft rays in dorsal and anal fins usually 49 to 55 *Limnichthys fasciatus*
5b. Dorsal saddles not reaching, even if present, a lateral band; combined number of soft rays in dorsal and anal fins usually 44 to 51. *Limnichthys nitidus* complex

List of species occurring in the area

(validity of some species in the area questioned by Lucena Rosa, 1993)

Chalixodytes tauensis Schultz, 1943

Creedia haswelli (Ramsay, 1881)

Crystalloodytes cookei Fowler, 1923

Limnichthys fasciatus Waite, 1904

Limnichthys nitidus Smith, 1958 - *donaldsoni* Schultz, 1960 complex
 (synonymized in the 1993 PhD thesis of Dr I. Lucena Rosa, with *L. nitidus* the senior name).

Schizochirus insolens Waite, 1904

References

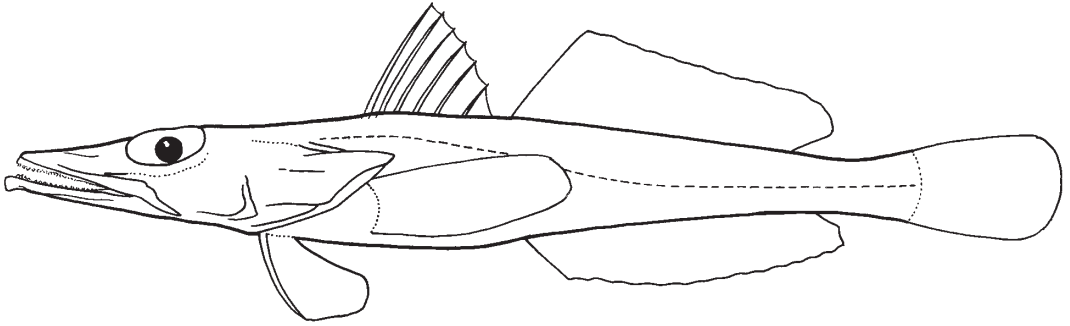
- Lucena Rosa, I.M. 1993. *Systematic study of the family Creediidae (Perciformes: Trachinoidei)*. PhD thesis, Dept. Zoology, University of Alberta, Edmonton, 188 p.
- Nelson, J.S. 1985. On the interrelationships of the genera of Creediidae (Perciformes: Trachinoidei). *Japan. J. Ichthyol.*, 32(3):283-293.

PERCOPHIDAE

Duckbills

by J.S. Nelson

Diagnostic characters (for species found in the area): Elongate trachinoid fishes, head depressed anteriorly (to about 30 cm standard length). Eyes usually large, usually with dorsal iris flap. Interorbital space narrow. Mouth large; jaws about equal or either upper or lower jaw projecting past other. Branchiostegal rays usually 7. **Two separated dorsal fins, the first with II to VI spines (at least first 2 usually crowded at base) and the second with 13 to 23 soft rays; anal fin with 15 to 29 soft rays; pectoral fins with 16 to 28 rays; pelvic fins with I spine and 5 soft rays, placed in front of pectoral fins and with space between pelvic fins comparatively wide. Lateral-line scales either 31 to 36 and trilobed or serrated, or 42 to 87 and ctenoid. Lateral line along midbody. Colour:** generally brownish with large dusky blotches along lateral line; spinous dorsal fin often with at least some black; soft dorsal fin usually with dark bands.



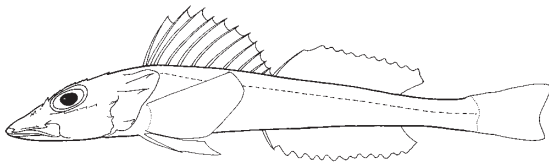
Habitat, biology, and fisheries: Mostly benthic fishes found from off shore to 600 m. Occurring in Atlantic, Indo-West Pacific, and southeastern Pacific. Carnivorous. Little is known of their biology. Not usually taken in commercial trawl and seine nets because of their relatively small size; no commercial value.

Remarks: The distribution and taxonomy of duckbills are poorly known in area. Most species are known from only a few specimens.

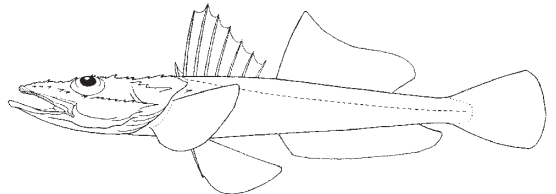
Similar families occurring in the area

Some species of several other perciform families show a general resemblance to percophids; the combination of diagnostic characters in boldface will permit family identification.

Bembridae and Platycephalidae: scorpaeniform families which also have a superficial resemblance to Percophidae, but they can be most easily distinguished by their pelvic fins being behind the pectoral-fin bases.



Bembridae



Platycephalidae

Key to the species of Percophidae occurring in or near area (see note in species list)

- 1a. Lower jaw projecting beyond upper; prominent keel on anteriormost lateral-line scales; lateral line originating high on body and descending to midline or lower in area of hind portion of pectoral fins → 2
- 1b. Lower jaw not projecting beyond upper, usually shorter; keel absent on lateral-line scales, posterior border serrated or trilobed; lateral line in midportion of body for entire length → 6

- 2a. Maxilla without tentacle; spinous dorsal fin never jet black *Chrionema chryseres*
 2b. Maxilla with well-developed tentacle at posterior tip; at least part of spinous dorsal fin jet black in some species → 3
- 3a. Lateral-line scales 60 to 69 *Bembrops filifera*
 3b. Lateral-line scales 40 to 57 → 4
- 4a. Lateral line sloping abruptly, descent occurring primarily in anterior half *Bembrops curvatura*
 4b. Lateral line sloping gradually, descent occurring primarily in hind half of pectoral fin → 5
- 5a. Anterior portion of first dorsal fin darkish; usually 6 scale rows between lateral line and origin of anal fin *Bembrops caudimacula*
 5b. Distal margin of first dorsal fin darkish; usually 5 scale rows between lateral line and origin of anal fin *Bembrops platyrhynchus*
- 6a. Anteriorly directed maxillary spine externally apparent; anterior nostril lacking projections; first dorsal fin usually black or dusky → 7
 6b. Maxillary spine not externally apparent; anterior nostril with 1 or more projections; first dorsal fin not jet black → 9
- 7a. Barbel at tip of snout *Spinapsaron barbatus*
 7b. Barbel absent at tip of snout → 8
- 8a. Dorsal fin with V or VI spines and 20 to 23 soft rays *Acanthaphritis grandisquamis*
 8b. Dorsal fin with IV spines and 14 or 15 soft rays *Pteropsaron neocaledonicus*
- 9a. Anterior nostril with 2 projections *Enigmapercis reducta*
 9b. Anterior nostril with single projection *Squamiceedia obtusa*

List of species occurring in the area

Note: this list is provisional; the distribution of most percophids is very poorly known and several other species may occur in area; some authors recognize additional nominal species as valid; the study of Suzuki and Nakabo (1996) arrived too late to be incorporated.

Acanthaphritis grandisquamis Günther, 1880

Bembrops caudimacula Steindachner, 1876

Bembrops curvatura Okada and Suzuki, 1952

Bembrops filifera Gilbert, 1905

Bembrops platyrhynchus (Alcock, 1894)

(= *B. aethalea* McKay 1971 and *B. philippinus* Fowler, 1939 following 1993 PhD thesis of M. Das)

Chrionema chryseres Gilbert, 1905

Enigmapercis reducta Whitley, 1936

Pteropsaron neocaledonicus Fourmanoir and Rivaton, 1979

Spinapsaron barbatus Okamura and Kishida, 1963

Squamiceedia obtusa Rendahl, 1921

References

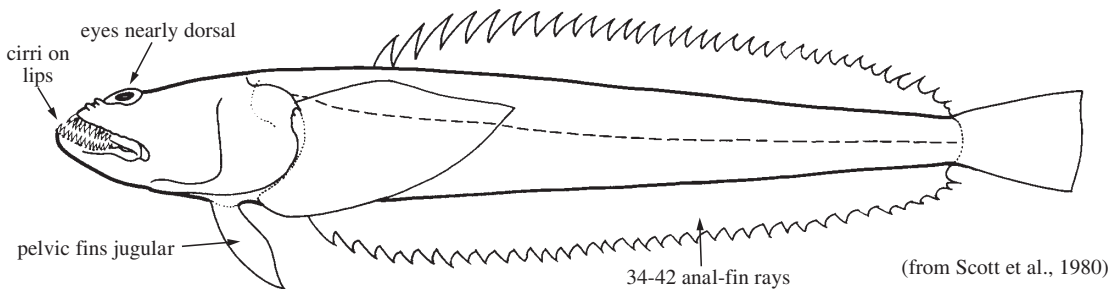
- Das, M.K. and J.S. Nelson. 1996. Revision of the percophid genus *Bembrops* (Actinopterygii: Perciformes). *Bull. Mar. Sci.*, 59(1):9-44.
- Suzuki, T. and T. Nakabo. 1996. Revision of the genus *Acanthaphritis* (Percophidae) with the description of a new species. *Ichthyol. Res.*, 43(4):441-454.

LEPTOSCOPIDAE

Southern sandfishes

by P.R. Last

Diagnostic characters: Elongate perciform fishes with a broad, flattened or subcircular head and compressed body (size to about 40 cm). No prominent spines on head; **cleithral spines usually absent** (rudimentary in *Leptoscopus*, not known from the area). **Eye small, situated dorsal or nearly so; interorbital space narrow.** Mouth moderately large, superior or terminal, extending to mideye or beyond; **angle of jaw moderate to very oblique;** dense fringe of **cirri bordering lips of jaws and along upper opercular margin.** Teeth villiform to caniniform, sometimes greatly elongate near symphysis of upper jaw, usually present on palatines and vomer. **Dorsal and anal fins single, low, very elongate, without spines; dorsal-fin origin over mid-third of pectoral-fin base,** anal-fin origin between middle of pectoral fins to just before their base; **dorsal- and anal-fin rays unbranched,** dorsal fin with 28 to 38 soft rays, **anal fin with 34 to 42 soft rays, their tips filamentous, recurved;** pectoral fins with 16 to 24 rays, the mid-upper rays longest, lower rays usually incised with short, broad, filamentous tips; pelvic fins with I spine and 5 soft rays; **pelvic fins jugular, widely separated;** caudal fin of adults truncate or slightly rounded. Scales small to large; head mostly naked. **Lateral line on midside of body;** lateral-line scales 42 to 54. **Colour:** mostly pale with fine greenish, greyish, brownish, or pinkish reticulations or speckles dorsally; otherwise with greyish green spots, reticulations and stripes above lateral line; fins typically translucent or finely spotted; in *Leptoscopus*, upper and lower rays of caudal fin and upper half of pectoral fins dark.



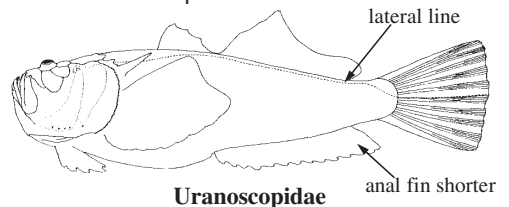
Habitat, biology, and fisheries: Benthic on the continental shelf of Australasian seas. Most species occur in sandy and muddy habitats of the coastal zone. All are burrowers and appear to exhibit preferences for different substrate coarseness. Predators on small fishes, crustaceans, and worms. Largest species are excellent eaters. Caught in commercial quantities off New Zealand but not important elsewhere.

Similar families occurring in the area

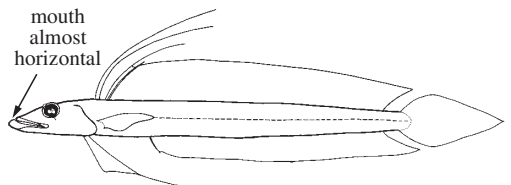
Uranoscopidae: separate spinous dorsal fin sometimes present (dorsal fin single in leptoscopids); anal fin shorter, with less than 20 soft rays (rather than 34 or more); lateral line on upper part of side (rather than on midside); pelvic fins narrowly separated (widely separated in leptoscopids).

Trichonotidae: body extremely elongate and slender (much less so in leptoscopids); mouth almost horizontal (rather than oblique); median fins with spines (spines absent).

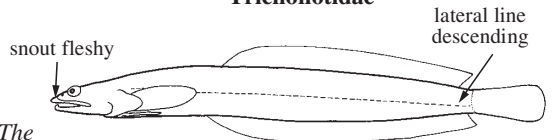
Creediidae: snout fleshy, projecting beyond lower jaw (mouth terminal or superior); lateral line descending gradually to ventral surface (rather than on midside); pelvic fins close together (widely separated in leptoscopids).



Uranoscopidae



Trichonotidae



Creediidae

A single species occurring in the area

Lesueurina platycephala Fowler, 1907

Reference

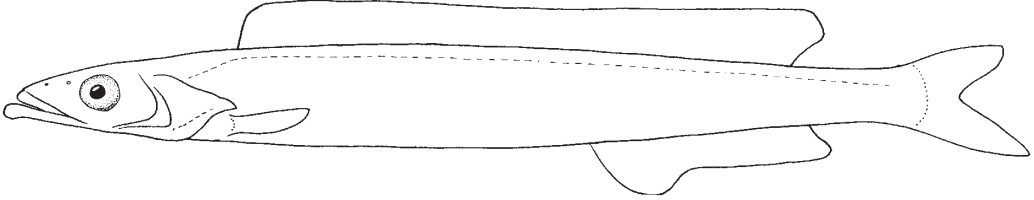
Gomon, M.F., C.J.M. Glover, and R.H. Kuitert (eds). 1994. *The fishes of Australia's south coast*. Adelaide, State Print, 992 p.

AMMODYTIDAE

Sandlances

by B.B. Collette

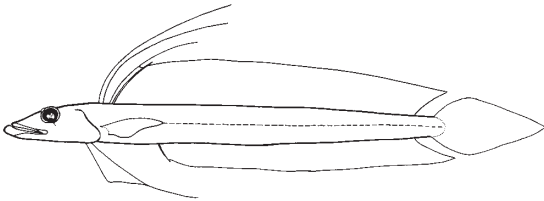
Diagnostic characters: Small fishes (to about 15 cm) with **very elongate cylindrical bodies**, with or without scales. **Mouth large, terminal; lower jaw strongly projecting; upper jaw protrusible; teeth present or absent. Gill rakers 22 to 32. Dorsal fin continuous, with 36 to 67 soft rays and no spines; anal fin 1/2 the length of dorsal fin, with 14 to 35 soft rays, also spineless;** caudal fin shallowly forked; pectoral-fin rays 13 to 17; pelvic fins rudimentary or absent. Vertebrae 27-49 + 24-28 = 52-78. **Colour:** in life, dorsum greyish green, sides silvery, and ventrum iridescent; fins with little pigmentation.



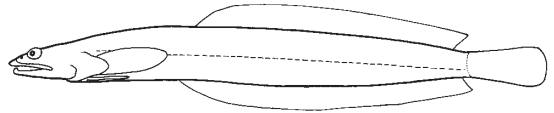
Habitat, biology, and fisheries: Sandlances occur in sandy areas of most seas, and are able to burrow rapidly head first. They are excellent bait and good eating, but the species that may occur in the area are too small and rare to be of significant commercial importance.

Similar families occurring in the area

Trichonotidae and Creediidae: anal fin subequal to dorsal fin; anus anterior to middle of body; caudal fin rounded or pointed. Also, a few spines in dorsal and anal fins in Trichonotidae.



Trichonotidae



Creediidae

Key to the genera of Ammodytidae

- 1a.** Teeth present on both jaws; dorsal-fin rays 39 to 43; anal-fin rays 13 to 18; subocular canal continuous below eye; vertebrae 51 to 55 (Fig. 1) *Bleekeria*
- 1b.** Teeth absent from both jaws; dorsal-fin rays 44 to 53; anal-fin rays 21 to 25; subocular canal interrupted below eye; vertebrae 58 to 63 (Fig. 2) *Ammodytoides*

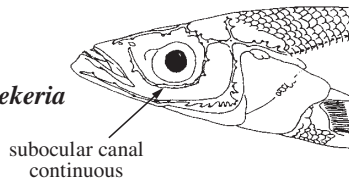


Fig. 1 *Bleekeria*

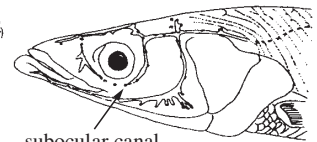


Fig. 2 *Ammodytoides*

List of species potentially occurring in the area

- Ammodytoides leptus* Collette and Randall, 2000
- ? *Ammodytoides renniei* (Smith, 1957)
- ? *Bleekeria mitsukurii* Jordan and Evermann, 1902
- ? *Bleekeria viridianguilla* (Fowler, 1931)

References

- Collette, B.B. and J.E. Randall. 2000. *Ammodytoides leptus*, a new species of sand lance (Teleostei: Ammodytidae) from Pitcairn Island. *Proc. Biol. Soc. Washington*, 113:397-400.
- Ida, H., P. Sirimontaporn, and S. Monkolprasit. 1994. Comparative morphology of the fishes of the family Ammodytidae, with a description of two new genera and two new species. *Zool. Stud.*, 33(4):251-277.