

Diagnosis and description: Skin over head and fin bases thick, less so over body, **body covered with tiny scales arranged in regular rows**; small imbedded scales on head but snout naked, **eye diameter less than snout length**; branchiostegal rays 7; **live specimens red to brown dorsally, pink to white ventrally, fins with pale margins**; **anal-fin origin at about midlength of fish**; pectoral fins on a broad peduncle; pectoral-fin rays 26; dorsal-fin rays 99 to 105; anal-fin rays 73 to 81; caudal-fin rays 16 or 17; precaudal vertebrae 16 or 17.

Revisions: None; but Follett (1970) and Hart (1973) present information.

Geographical distribution: Southeast Alaska to northern Baja California.

Habitat and biology: Rocky areas at depths of 3 to 256 m, usually below 15 m. Cryptic in habit.

Interest to fisheries: None.

Size: At least 460 mm.

List of species

Brosomphycis marginata (Ayres, 1854). Information see above. Common.

Lucifuga Poey, 1858

Type species: *Lucifuga subterranea* Poey, 1858 by subsequent designation of Jordan and Evermann (1896).

Synonyms: *Stygicola* Gill, 1863a. Type species *Lucifuga subterranea* Poey, 1858.

Number of recognized species: 6.

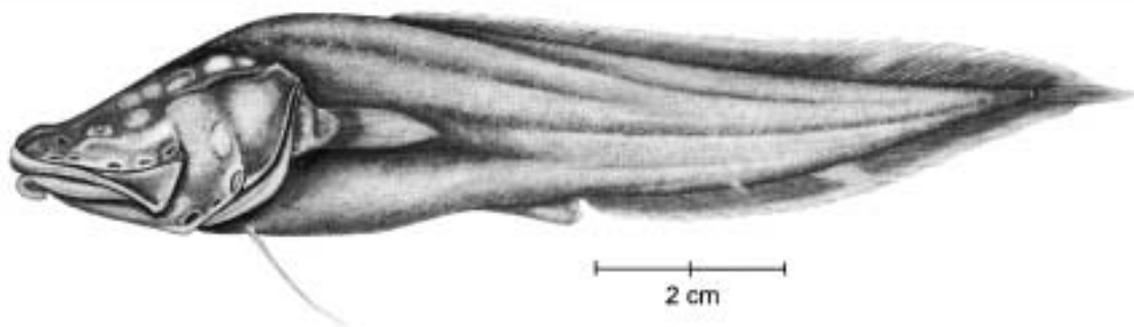


Fig. 118 *Lucifuga spelaeotes* (from Cohen and Robins, 1970)

Diagnosis and description: **Body covered with imbricate scales; scales present on head; eyes small, often not externally visible; snout depressed**; branchiostegal rays 7; **all or some of lateral-line canals on head cavernous**; caudal-fin rays 8 to 11, may be free from dorsal and anal fins, partly connected, or completely connected; **pectoral-fin peduncle broader than long**, pectoral-fin rays 10 to 22; precaudal vertebrae 11 to 14.

Revisions: Cohen and McCosker (1998).

Geographical distribution: Bahamas, Cuba and Galapagos Archipelago.

Habitat and biology: Marine, brackish and fresh-water caves, sinkholes and crevices at depths from about 0 to 21 m in the western Atlantic, to 202 m in the Galapagos. Individuals appear to avoid light. Both darkly pigmented and pale individuals may exist in the same population. An excellent account of the biology of 2 Cuban species, *L. dentata* and *L. subterranea* was presented by Eigenmann (1909).

Interest to fisheries: None.

Size: The largest known specimen (of an apparently undescribed Cuban species) is 156 mm.

Key to species

- 1a. Short sharp spine at lower angle of preopercle *L. inopinata*
 1b. No spine at lower angle of opercle → 2
- 2a. Palatine with no teeth → 3
 2b. Palatine with teeth → 4
- 3a. Upper jaw length 6.1 to 8.7 in standard length; dorsal-fin rays 80 to 87; pectoral-fin rays 11 to 14 *L. subterranea*
 3b. Upper jaw length 5.4 to 5.6 in standard length; dorsal-fin rays 78 to 80; pectoral-fin rays 10 or 11 *L. teresinarum*
- 4a. Dorsal-fin rays 70 to 77; anal-fin rays 57 to 60; pectoral-fin rays 11 to 14 *L. simile*
 4b. Dorsal-fin rays 83 to 95; anal-fin rays 66 to 78; pectoral-fin rays 15 to 20 → 5
- 5a. Pectoral-fin rays 15 to 17; vertebrae 46 to 48; area between preopercular and lateral head canals naked *L. dentata*
 5b. Pectoral-fin rays 18 to 20; vertebrae 52 or 53; area between preopercular and lateral head canals covered with scales *L. spelaeotes*

List of nominal species

Lucifuga dentata Poey, 1858. North and south slopes of west-central Cuba. It has been caught with *L. subterranea* and *L. teresinarum*. Apparently common in appropriate habitats.

L. inopinata Cohen and McCosker, 1998. Under a rock ledge at 202 m depth on a sea mount in the Galapagos Archipelago. Rare.

L. simile Nalbant, 1981. Found in several caves in Matanzas Province, Cuba, at salinities ranging from fresh water to 22 ppm. Co-occurs with *L. subterranea* and *L. teresinarum*. Uncommon.

L. spelaeotes Cohen and Robins, 1970. Widely distributed in the Bahamas, where it lives in brackish to marine waters at depths ranging from about 1 to 21 m in marine and inland caves and sinkholes in total darkness or reduced light. Common.

L. subterranea Poey, 1858. Found at shallow depths in caves, sinkholes and crevices in southwestern Cuba, sometimes sympatrically with *L. dentata* and *L. teresinarum*. Common.

L. teresinarum Diaz Perez, 1988. Known from 2 specimens, each from a different Cuban cave, where it lives with *L. subterranea* and *L. dentata*. Rare.

Remarks: Neither amount of pigmentation nor degree of eye development are good taxonomic characters. Colour may vary within species from dark brown to pale, with dark and light individuals occurring together; in some species pigmentation increases with age. In some species degree of eye development decreases with age.

Melodichthys Nielsen and Cohen, 1986

Type species: *Melodichthys hadrocephalus* Nielsen and Cohen, 1986 by original designation.

Synonyms: None.

Number of recognized species: 2.

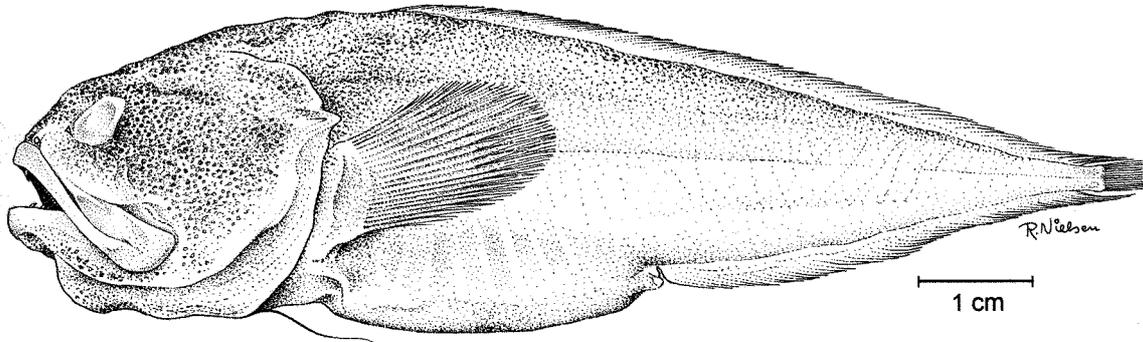


Fig. 119 *Melodichthys hadrocephalus* (from Nielsen and Cohen, 1986)

Diagnosis and description: **Body short** with indistinct lateral line; **small imbricate scales on body**, head with non-imbricate scales or naked; anal-fin origin well behind midpoint of fish; upper jaw ends well behind eye; opercular spine strong; **palatines with teeth**; **anterior gill arch with 11 to 15 developed rakers**; pectoral radials somewhat elongated but peduncle broader than long; **pelvic fins with 1 ray in each, not reaching end of pectoral-fin rays**; 12 or 13 precaudal vertebrae.

Revision: None.

Geographical distribution: Known from the holotypes only, off Brittany and New South Wales.

Habitat and biology: Benthopelagic at 165 and 400 m.

Interest to fisheries: None.

Key to species

- 1a.** Scales present on head; skin thick *M. hadrocephalus*
1b. Scales absent from head; skin thin *M. paxtoni*

List of species

Melodichthys hadrocephalus Nielsen and Cohen, 1986. Off Brittany, France at 300 to 400 m. Rare.

M. paxtoni Nielsen and Cohen, 1986. Off New South Wales at 165 to 275 m. Rare.

Remarks: The 2 species differ so much from each other that it may be necessary to classify them in separate genera. Inasmuch as *Melodichthys* is known from only the 2 female holotypes, it is not possible to decide in which of the 2 brosmophycine tribes it belongs, as their separation is based on the male intromittent organ.

Parabrosmolus Machida, 1996

Type species: *Parabrosmolus novaeguineae* Machida, 1996 by original designation.

Synonyms: None.

Number of recognized species: 1.

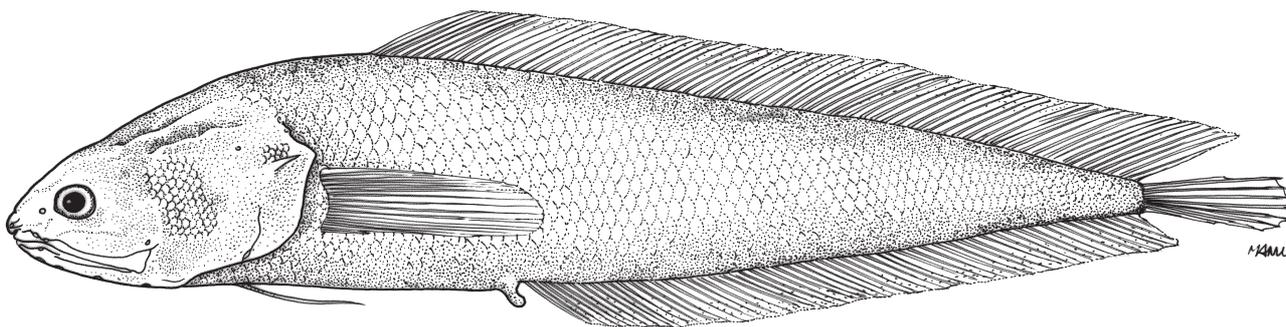


Fig. 120 *Parabrosmolus novaeguineae* (after Machida, 1993)

Diagnosis and description: Body covered with small imbricate scales; head with patch of scales on cheek and another above opercle spine; eye diameter less than snout length; teeth sharp-pointed and separate; developed gill rakers 3; **branchiostegal rays 6**; **anal fin originating close to midline of body**, 63 fin rays; dorsal-fin rays 76; caudal-fin rays 16; **vertebrae 10+33=43**.

Revisions: None.

Geographical distribution: Madang Harbor, Papua New Guinea.

Habitat and biology: Taken at 5 to 25 m on a coral-sand bottom.

Interest to fisheries: None.

Size: The only known specimen is 37 mm.

List of species

Parabrosmolus novaeguineae Machida, 1996. Information see above. Rare.

Tribe Dinematichthyini Cohen and Nielsen, 1978

Number of recognized genera: 10 + 2?

Diagnosis: Male intromittent organ with 1 or more pairs of ossified pseudoclaspers.

Beaglichthys Machida, 1993b

(Treated under the tribe Brosmophycini on page 117.)

Brotulina Fowler, 1946

Type species: *Brotulina fusca* Fowler, 1946 by original designation.

Synonyms: *Calcarbrotula* Fowler, 1946. Type species *Calcarbrotula erythrea* Fowler, 1946.

Number of recognized species: 1 to 3.

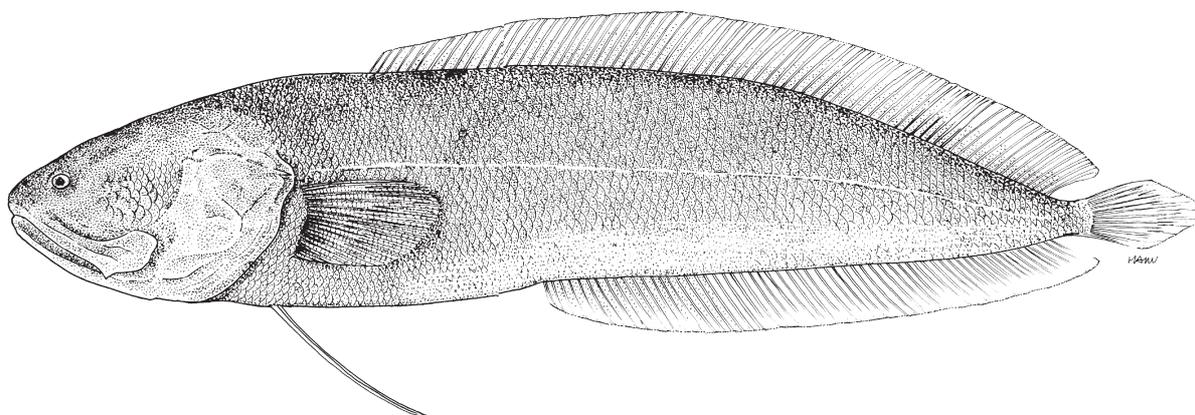


Fig. 121 *Brotulina erythrea*

Diagnosis and description: Body covered with small imbricate scales; head scales present on cheeks, absent from opercle; a sharp spine present on opercle; gill membranes free from isthmus; anterior nostril close to upper lip; maxilla expanded posteriorly, its posterior margin rounded; developed gill rakers on first arch 3; branchiostegal rays 7; male intromittent organ with 2 pairs of pseudoclaspers, the largest one rounded and prong-like; caudal-fin rays 12; precaudal vertebrae 10 or 11.

Revisions: None, but see Machida *in* Masuda et al. (1984).

Geographical distribution: Ryukyu Islands; perhaps more widely distributed in Indo-Pacific seas.

Habitat and biology: Lives on coral reefs.

Interest to fisheries: None.

Size: At least 70 mm.

Key to species: Not possible at present.

List of nominal species

Brotulina erythrea Fowler, 1946. Original description based on a single female specimen. Possibly a junior synonym of *B. fusca*: although, Machida *in* Masuda et al. (1984) recognizes it as a distinct species. Ryukyu Islands. Rare.

B. fusca Fowler, 1946. Based on a single male specimen. Ryukyu Islands. Rare.

?*B. piger* (Alcock, 1890). Bay of Bengal. Rare.

Dermatopsis Ogilby, 1896

Type species: *Dermatopsis macrodon* Ogilby, 1896 by monotypy.

Synonyms: None.

Number of recognized species: 2.

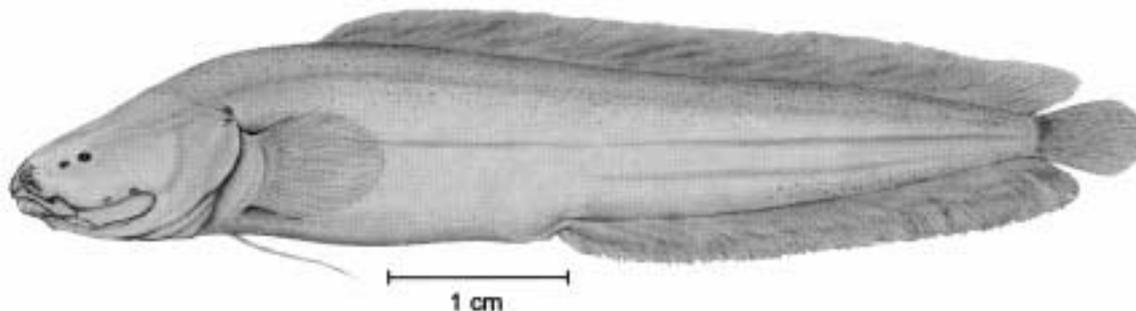


Fig. 122 *Dermatopsis macrodon* (from Cohen, 1966)

Diagnosis and description: Scales on body non-imbricate, absent from head; gill membranes broadly joined to isthmus anteriorly; eye tiny, 8 to 14 in head length, sunk beneath surface of head and covered by a window that is clear or translucent; opercle with a sharp spine; anterior nostril low, close to upper lip; maxilla relatively narrow posteriorly, not expanded, with a ventrally directed pointed process that is anterior to the rear margin of the bone; developed rakers on first gill arch 2 to 4; branchiostegal rays 7; male intromittent organ with a single pair of prong-like pseudoclasps directed laterally at their ends; pectoral-fin rays 17 to 24; caudal fin rounded with 16 or more rays.

Revisions: Cohen (1966).

Geographical distribution: Tropical and temperate Australian waters, Lord Howe Island, and the North Island of New Zealand.

Habitat and biology: Secretive reef-dwellers.

Interest to fisheries: None.

Size: Reaches about 100 mm.

Key to species

- 1a.** Body depth at anus 4.5 to 6.9 in standard length; dorsal-fin rays 71 to 80; anal-fin rays 45 to 57; total vertebrae 39 to 45 *D. macrodon*
- 1b.** Body depth at anus 8.5 to 11.4 in standard length; dorsal-fin rays 98 to 114; anal-fin rays 64 to 72; total vertebrae 51 to 55 *D. multiradiatus*

List of species

Dermatopsis macrodon Ogilby, 1896. Tropical to temperate Australia; North Island, New Zealand. Found on inshore reefs. Common.

D. multiradiatus McCulloch and Waite, 1918. Temperate waters in South and Western Australia. Found on inshore reefs. Locally abundant.

Remarks: The New Zealand population of *D. macrodon* may represent a distinct species.

Dermatopsoides Smith, 1947

Type species: *Dermatopsis kasougae* Smith, 1943 by original designation.

Synonyms: None.

Number of recognized species: 2.

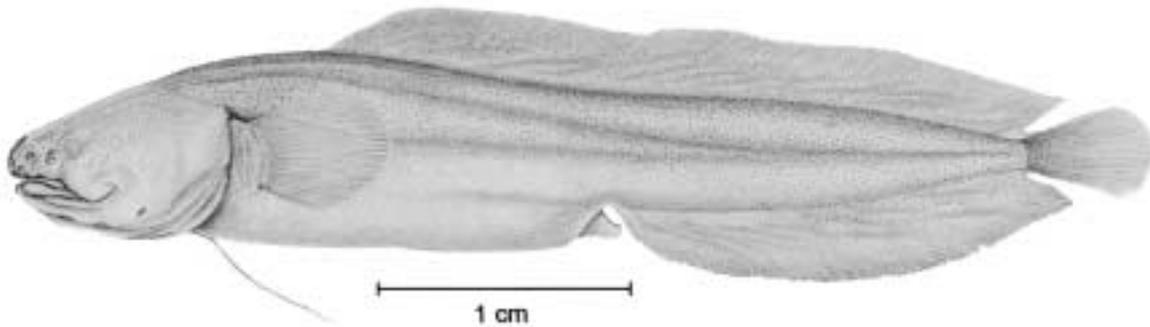


Fig. 123 *Dermatopsoides talboti* (from Cohen, 1966)

Diagnosis and description: Scales absent or non-imbricate on body, absent or widely scattered on head; eye tiny, 10 or more times in head length, in some specimens skincovered and sunk below surface of head; opercle spine absent; anterior nostril tubular, located immediately above upper lip; maxilla narrow, not vertically expanded posteriorly, almost completely sheathed; gill rakers reduced to short stubby tubercles; branchiostegal rays 6; male intromittent organ with 2 rounded, recurved pseudoclasps directed dorsally at their tips; pectoral-fin rays 17 to 24; caudal-fin rays 16.

Revisions: Cohen (1966).

Geographical distribution: South Africa.

Habitat and biology: Secretive shallow-water fishes.

Interest to fisheries: None.

Size: At least 63 mm.

Key to species

- 1a.** Pelvic fins reaching beyond tips of pectoral fins; pectoral-fin rays 24; dorsal-fin rays 100; anal fin-rays 71; salmon pink in life *D. kasougae*
- 1b.** Pelvic fins not reaching beyond tips of pectoral fins; pectoral-fin rays 17 or 18; dorsal-fin rays 59 to 80; anal fin-rays 36 to 54; pale orange in life *D. talboti*

List of species

Dermatopsoides kasougae (Smith, 1943). A restricted distribution, from Algoa Bay to Port Alfred along the southeast coast of South Africa. Shallow water. Rare.

D. talboti Cohen, 1966. From Algoa Bay to Saldanha Bay along the south coast of South Africa. Uncommon.

Diancistrus Ogilby, 1898

Type species: *Diancistrus longifilis* Ogilby, 1898 by monotypy.

Synonyms: None.

Number of recognized species: 1.

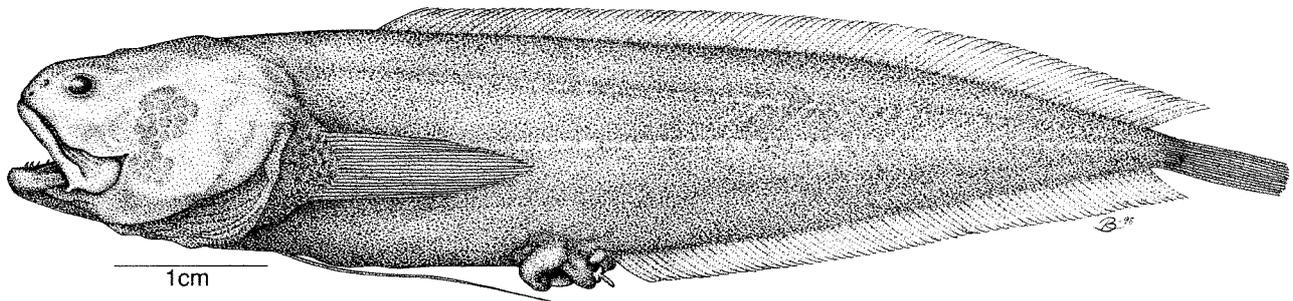


Fig. 124 *Diancistrus longifilis*

Diagnosis and description: Scales present on body and in patches on head; eye smaller than snout, 8.7 in head; spine present on opercle; maxilla spatulate; branchiostegal rays 6; male intromittent organ with a single pair of curved pseudoclaspers; pectoral-fin rays 20; pelvic fin long, reaching anus; anal-fin origin anterior to midpoint of body, fin rays 48; dorsal-fin rays 62.

Revisions: None.

Geographical distribution: Great Barrier Reef and Lord Howe Island, Australia.

Habitat and biology: Found on tropical reefs.

Size: At least 76 mm.

List of species

Diancistrus longifilis Ogilby, 1898. Information see above. Rare.

Dinematichthys Bleeker, 1855

Type species: *Dinematichthys iluocoeteoides* Bleeker, 1855 by monotypy.

Synonyms: None.

Number of recognized species: 7.

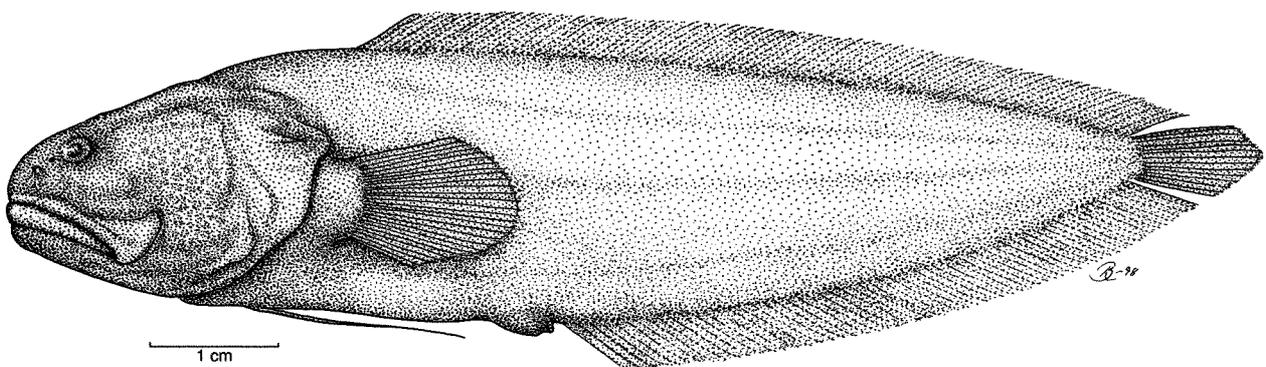


Fig. 125 *Dinematichthys riukuensis*

Diagnosis and description: Body covered with small imbricate scales; head squamation variable, ranging from the cheeks only to the entire head; **anterior nostril relatively high, about midway between upper lip and posterior nostril** (Fig. 111); a sharp spine present on opercle, sometimes buried; **posterior end of maxilla expanded vertically; intromittent organ of male with 2 or more pairs of pseudoclaspers, the largest a compressed ear-shaped lobe; some precaudal neural spines rounded or truncate.**

Revisions: None.

Geographical distribution: Specimens identified as *Dinematichthys* have been recorded from most tropical and some subtropical seas except for the eastern Atlantic. A better understanding of the taxonomy of this genus is required before its distribution can be described.

Habitat and biology: Shallow water reefs. Aspects of the reproductive biology of specimens identified as *D. ilucoeteoides* have been described by Turner (1946) and Wourms and Bayne (1978).

Size: Apparently reaches 100 mm or more, although, some species here assigned to this genus appear to be sexually mature at half the size.

Key to species: Not possible at present.

List of species

Dinematichthys dasyrhynchus Cohen and Hutchins, 1982. Rottnest Island, Western Australia. Shallow reefs. Uncommon.

D. ilucoeteoides Bleeker, 1855. Although reported as widely distributed on Indo-Pacific reefs, this species has apparently been caught only at the Batu Islands off Sumatra. Unfortunately there is no type specimen and none of the specimens subsequently reported in the literature under this name agree with the original description. Rare.

D. indicus Machida, 1994. Tropical Indian Ocean at Chagos Archipelago and Comoros. To 15 m on coral reefs. Rare.

D. megasoma Machida, 1994. Northern Territory, Australia. 0 to 15 m. Rare.

D. minyoma Sedor and Cohen, 1987. Bay Islands, Honduras in the western Caribbean. Collected on a coral reef at 0 to 9 m. Uncommon.

D. randalli Machida, 1994. Kosrae Island, Micronesia. Collected at 6 to 9 m on coral reefs. Rare.

D. riukiensis Aoyagi, 1952. Ryukyu Islands; Queensland, Australia; Fiji. Collected on reefs at 0 to 3 m. Uncommon.

Remarks: The limits of this genus are not clear due to uncertainty about the identity of the type species (see above and Cohen and Nielsen, 1978). Aspects of the reproductive biology of species identified as *D. ilucoeteoides* have been described by Turner (1946) and Wourms and Bayne (1978).