

Descriptions of Three New and One Resurrected Species of the Bythitid Genus *Dinematichthys* (Ophidiiformes)

Yoshihiko Machida

Department of Biology, Faculty of Science, Kochi University,
2-5-1 Akebono-cho, Kochi 780, Japan

(Received May 24, 1993; in revised form October 23, 1993; accepted December 3, 1993)

Abstract Three new species of the free-tailed bythitid fish genus *Dinematichthys* are described. *Dinematichthys indicus* from Chagos and Comoros and *D. randalli* from Kosrae differ from their congeners in the absence of the tenth preoperculomandibular pore at the anterior upper angle of the opercle, and in the presence of scales on the cheek, opercle and occiput. Both species are separable according to lateral scale counts and the presence or absence of cirri on the head. *Dinematichthys megasoma* from Australia is unique in the genus in having a short, tubular, posterior nostril, scales on the cheek and opercle, and 125-135 scale rows. *Dinematichthys riukuensis* Aoyagi, 1952, is redescribed. This species, presently known from Japan, Australia and Fiji, is similar to *D. megasoma* and *D. minyomma* in having the tenth preoperculomandibular pore, but differs from them in having a small scale patch above the opercular spine, 11-12 precaudal vertebrae and 110-120 lateral scale rows. It further differs from *D. minyomma* in having a larger eye (8.3-10.1 in head length, cf. 10.2-15.0).

The problematical status of the small, free-tailed bythitid genus *Dinematichthys* was discussed in detail by Cohen and Nielsen (1978), who pointed out that most occurrences of *D. iluocoeteoides* Bleeker, 1855, in the literature were probably referable to other species or genera. *Dinematichthys* is well defined by having an anterior nostril positioned high above the upper lip (Cohen and Nielsen, 1978; Sedor and Cohen, 1987). Sedor and Cohen (1987) restricted the genus to three species, *D. iluocoeteoides* Bleeker, 1855, *D. dasyrhynchus* Cohen et Hutchins, 1982 and *D. minyomma* Sedor et Cohen, 1987. Although Aoyagi (1952) believed *D. riukuensis* to be specifically distinct, Matsubara (1955) considered it to be a junior synonym of *Brotulina fusca*, without examining the type specimen of the former. Machida (1992) mentioned the validity of *D. riukuensis*, but no detailed description of the species was given.

In this study, 53 specimens referable to *Dinematichthys* were examined, including the type specimen of *D. riukuensis*, from the Indian and Pacific oceans. These specimens represented four species distinguished by the following combination of character: morphology of the dermal rim of the posterior nostril, eye diameter, lateral scale row counts, head squamation, the presence or absence of cirri on the

head, precaudal vertebral counts and the presence or absence of the tenth preoperculomandibular pore (Table 1). This paper provides descriptions of three new species, *D. indicus*, *D. randalli* and *D. megasoma*, and a redescription of *D. riukuensis*.

Counting and measuring methods follow Sedor and Cohen (1987). The following abbreviations are used in the text: SL, standard length; HL, head length; BPBM, Bernice P. Bishop Museum, Honolulu; BSKU, Department of Biology, Faculty of Science, Kochi University, Kochi; LACM, Los Angeles County Museum of Natural History, Los Angeles; NTM, Northern Territory Museum, Darwin; ROM, Royal Ontario Museum, Toronto; WAM, Western Australian Museum, Perth; and YCM, Yokosuka City Museum, Yokosuka.

Dinematichthys indicus sp. nov.

(Figs. 1-3)

Dinematichthys iluocoeteoides: Winterbottom et al., 1989: 14, fig. 67.

Holotype. ROM 37813-1, 94.8 mm SL, ♂, Chagos Archipelago, 7°17'30"N, 7°23'56"E, coral reefs, depths 1-2 m, rotenone, 22 May 1980.

Table 1. Comparison of the seven species of *Dinematichthys*

Character	<i>D. indicus</i> sp. nov.	<i>D. randalli</i> sp. nov.	<i>D. megasoma</i> sp. nov.	<i>D. riukuensis</i>	<i>D. minyomma</i> ***	<i>D. dasyrhynchus</i> **	<i>D. iluocoeteoides</i> *,**
Head length/eye diameter	7.8–9.4	9.4	8.7–10.5	8.3–10.1	10.2–15.0	6.9–9.4	A little over 5
Lateral scale rows	85–100	107–113	125–135	110–120	79–89	About 140	About 100
Dorsal fin rays	78–86	83–84	82–87	76–88	73–80	96–103	83
Anal fin rays	62–69	63–65	64–66	60–69	55–62	62–69	69
Pectoral fin rays	21–23	23	21–22	21–23	22–24	25–28	22–23
Posterior end of maxillary	Unsheathed	Unsheathed	Unsheathed	Unsheathed	Unsheathed	Unsheathed	Sheathed
Vertebrae	10–11 + 30–31	10 + 32	11 + 30–31	11–12 + 29–32	10 + 28–30	13–14 + 33–34	—
Lateral pores	1	1	1	1	1	2	—
Supraorbital pores	2–3	1–2	2–3	3	3	4	—
Infraorbital pores	4–5	5	4–5	5–6	5	6–8	—
10th preoperculomandibular pore	Absent	Absent	Present	Present	Present	Present	—
Scales on cheek	Present	Present	Present	Present	Present	Present	Present
Scales above opercular spine	Present	Present	Present	Present	Absent	Present	—
Scales below opercular spine	Present	Present	Present	Absent	Absent	Present	—
Scales on occiput	Present	Present	Absent	Absent	Absent	Present	—
Cirri on head	Present	Absent	Present	Present	Present	Present	—
Dermal rim of posterior nostril	Anterior half raised	Anterior half raised	Evenly raised	Anterior half raised	Anterior half raised	Evenly raised	—

* Comparative data from Bleeker (1855), ** Cohen and Hutchins (1982), and *** Sedor and Cohen (1987)

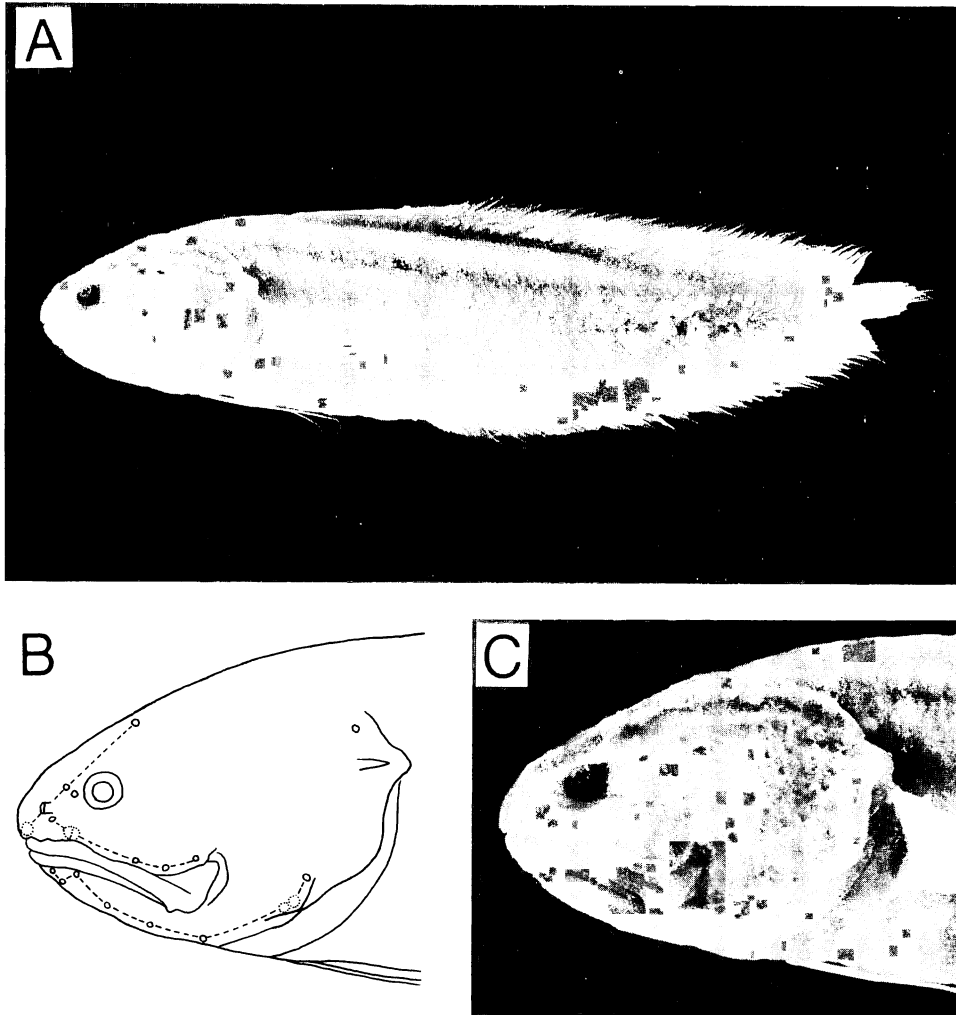


Fig. 1. *Dinematichthys indicus* sp. nov., ROM 37813-2, paratype, male, 93.5 mm SL, from Chagos. A) Entire body; B) arrangement of cephalic sensory pores; C) view of head.

Paratypes. ROM 37813-2, 3♂ + 11♀, 45.5–79.6 mm SL, collected with holotype; BSKU 81515, ♂, 54.7 mm SL, collected with holotype; ROM 58269, 5♂ + 3♀, 36.2–80.3 mm SL, Comoros, 12°23'52''S, 43°39'24''E, coral reefs, depths 6–15 m, rotenone, 25 Nov. 1988.

Diagnosis. A species of *Dinematichthys* (Cohen and Nielsen, 1978) with: unsheathed maxillary; non-tubular posterior nostril, eye 7.9–9.4 in HL; cheek, opercle and occiput scaly; cirri present on head; 10th preoperculummandibular pore absent; 78–86 dorsal fin rays; 62–69 anal fin rays; 10–11 precaudal vertebrae; and 85–98 lateral scale rows.

Description. Proportional measurements and

meristics are given in Table 2.

Head and body compressed. Body deepest near dorsal fin origin (Figs. 1A, 2A). Head 3.2–3.7 in SL. Snout short, round in lateral view, overhanging upper jaw. Jaws equal in length. Anterior nostril tubular, high in position, about midway between upper lip and posterior nostril. Posterior nostril adjacent to eye, bearing semicircular dermal flap on its anterior margin. Eye small, round, 7.9–9.4 in HL. Interorbital region convex. Mouth nearly horizontal, large, about 1/2 HL. Posterior part of maxillary largely exposed. A bony knob at lower part of maxillary end, conspicuous in large specimens. Opercle with a sharp, strong spine. Gill opening large; gill

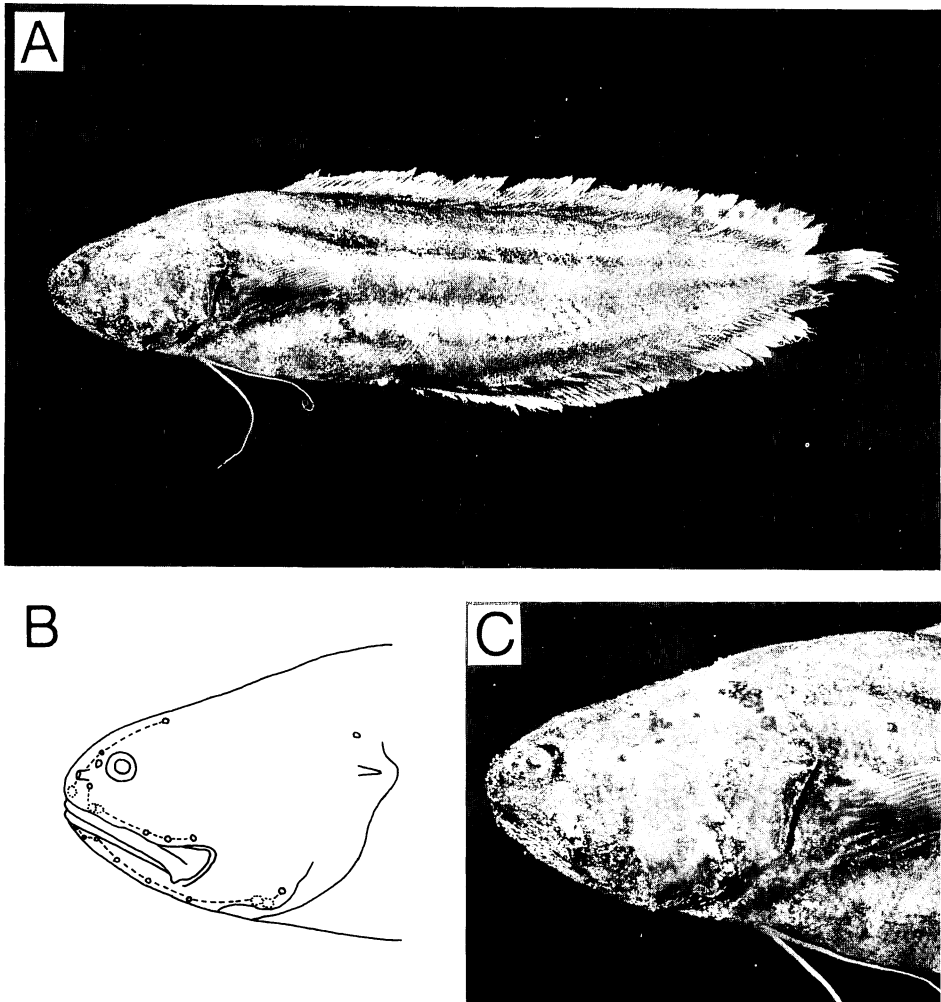


Fig. 2. *Dinematchichthys indicus* sp. nov., ROM 58269, paratype, male, 79.6 mm SL, from Comoros. A) Entire body; B) arrangement of cephalic sensory pores; C) view of head.

membranes free from isthmus, united to each other slightly behind a vertical through posterior margin of eye.

Supratemporal pore absent. Single lateral line pore slightly above upper angle of gill opening. Supraorbital pores 2 or 3 (mostly 3); 1 large pore at inner base of dermal fold overhanging upper lip, not externally visible, 1 tiny pore medial to anterior nostril, sometimes absent, and 1 on top of head one eye diameter behind posterior margin of eye (Figs. 1B, 2B). Infraorbital pores 4 or 5 (mostly 5); 1 at base of short, vertical dermal fold on snout tip, below outer rim of anterior nostril, 1 large slit-like and vertically bisected, on margin of dermal flap below

level of and equidistant to anterior and posterior nostrils, 3 (rarely 2) evenly spaced pores on lower margin of dermal cheek fold behind a vertical through posterior margin of eye. Preoperculo-mandibular pores 9, rarely 8; 1 large pore on inner surface of dentary near tip of isthmus, 1 small pore (rarely absent) on anterior outer mandibular margin below a vertical through anterior nostril, 1 on mandible below between anterior and posterior nostrils, 1 on mandible slightly before bony knob of maxillary, 1 rather large pore slightly above lower jaw articulation, 2 large, slit-like, adjacent pores beneath skin flap at lower angle of preopercle, not externally visible, 1 large pore about 1/2 eye diameter above

lower angle of preopercle, 10th preoperculomandibular pore absent.

Head skin rather smooth in small specimens. Many papillae on head, especially on anterior margin of upper and lower jaw tips, and margins of dermal folds on snout tip in large specimens. Cirri present around eye and on top of head.

Teeth small, sharp-pointed, forming bands in jaws and on prevomer and palatine. Inner teeth on premaxillary before a vertical through anterior margin of eye longer anteriorly. Inner teeth on dentary large, widely spaced. Head of prevomer broadly V-shaped, with 3–4 granular tooth rows, teeth in hindmost row appearing longer. Palatine with 3–4 tooth rows, teeth in innermost row longer. Tongue long, tip round; lingual teeth absent. Three developed rakers on 1st gill arch, 1 at angle, 2 on lower arm. Pseudobranchial filaments 2, short.

Body scales small, cycloid, imbricate. Head scaly; scales present on cheek, opercle and occiput (Figs. 1C, 2C). Lateral line indistinct.

Dorsal fin origin slightly behind pectoral axil. Anal fin origin at about midpoint of body. Caudal fin well developed, free from dorsal and anal fins, with 14 principal and 2 procurrent rays. Pectoral fin round, 5.8–8.6 in SL, reaching below 14th–17th dorsal fin rays. Pelvic fin ray single, filamentous, falling well short of vent in large specimens. Pelvic fin base close to midline, slightly behind lower angle of preopercle.

Precaudal vertebrae 10 in 21, 11 in 3 type specimens. Caudal vertebrae 30 in 3, 31 in 21 type specimens.

Male copulatory apparatus with a single pair of sclerotized pseudoclaspers consisting of inner and outer lobes; inner lobe large, ear-shaped in lateral view, outer lobe uneven in lateral view, front section shorter, tips of both front and rear sections depressed, circular to oblong in ventral view (Fig. 3).

Color in alcohol.—Head and body pale yellow in specimens from Chagos, pale brown in specimens from Comoros. Rugged regions of head of large specimens whitish. All fins whitish to pale in specimens from Chagos, brownish, except for whitish pelvic fins, in specimens from Comoros.

Distribution. Know only from coral reefs of Chagos and Comoros, at depths from 1 to 15 m.

Etymology. Named *indicus* in reference to its type locality, the Indian Ocean.

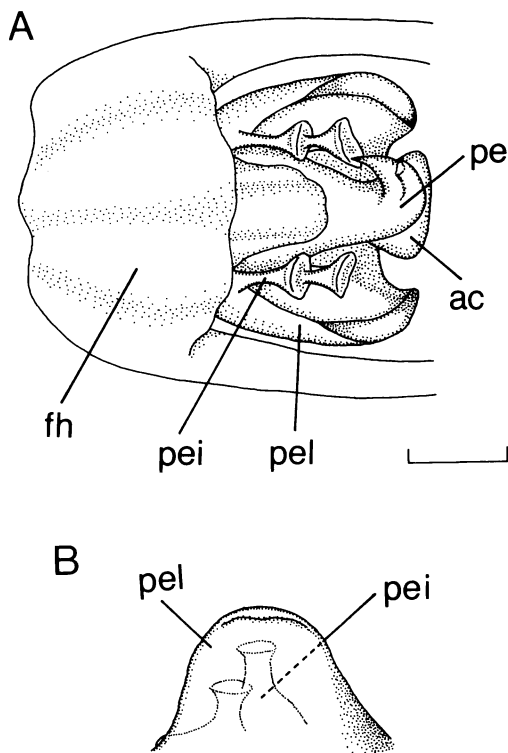


Fig. 3. Male copulatory apparatus of *Dinematchthys indicus* sp. nov., ROM 37813-2, paratype, 93.5 mm SL. A) Entire view; B) lateral view. Abbreviations: *fh*—fleshy hood; *pe*—penis; *pei*—pseudoclasper, internal lobe; *pel*—pseudoclasper, external lobe; *ac*—accessory body. Scale bar indicates 0.5 mm.

Remarks. *Dinematchthys iluocoeteoides* Bleeker, 1855, the type species of the genus, clearly differs from the other six nominal species by having a larger eye, being contained a little over 5 times in HL, and a sheathed maxillary (Table 1). *Dinematchthys dasyrhynchus* Cohen et Hutchins, 1982, is unique in the genus in its higher counts of lateral scale rows (about 140) and dorsal fin rays (96–103), and also differs from other species, except for *D. iluocoeteoides*, in having more precaudal vertebrae (13–14) (Table 1).

Although *D. indicus* resembles *D. randalli* in head squamation and the absence of the tenth preoperculomandibular pore, it differs from the latter in having both lower scale row counts and cirri on the top and sides of the head behind the eye (Table 1).

The coloration of the alcohol-preserved specimens differs between those from Chagos and Comoros.

However, this was considered to represent intraspecific, geographical variation only, because the meristic and morphometric characters of the specimens from both localities were similar (Table 2).

Dinematichthys randalli sp. nov.
(Figs. 4, 5)

Holotype. BPBM 28305-1, 72.4 mm SL, ♂, south side of Mwot Passage, Kosrae, Micronesia, live coral on reef terrace, depths 6–9 m, rotenone, 9 Aug. 1981.

Paratype. BPBM 28305-2, 73 mm SL, ♀, collected with holotype.

Diagnosis. A species of *Dinematichthys* (Cohen and Nielsen, 1978) with: unsheathed maxillary, non-

tubular posterior nostril; eye 9.4 in HL; cheek, opercle and occiput scaly; cirri absent from head; 10th preoperculomandibular pore absent; 83–84 dorsal fin rays; 63–65 anal fin rays; 10 precaudal vertebrae; and 107–113 lateral scale rows.

Description. Proportional measurements and meristics are given in Table 3.

Head and body compressed. Body deepest slightly behind dorsal fin origin in holotype (Fig. 4), at vent in paratype (Fig. 5A). Dorsal contour from snout tip to dorsal fin origin steep, at an angle of about 45° to body axis in holotype, gently curved in paratype. Tip of snout nearly vertical in holotype, round in paratype. Jaws equal in length. Anterior nostril tubular, about midway between upper lip and posterior nostril. Posterior nostril just in front of mid-eye, not tubular, with a short dermal flap. Eye small,

Table 2. Proportional measurements and meristics of *Dinematichthys indicus*

Locality	Holotype Chagos	15 paratypes Chagos	8 paratypes Comoros
SL (mm)	94.8	45.5–93.9	36.2–80.3
In % of SL			
HL	27.2	25.8–28.0	27.2–31.0
Predorsal length	32.1	30.7–33.4	30.4–35.5
Preanal length	48.2	45.1–48.6	45.3–53.5
Prepelvic length	23.8	20.8–23.3	21.3–24.3
Body depth at dorsal fin origin	23.5	19.9–23.3	19.5–22.8
Body depth at anal fin origin	20.8	18.7–22.5	17.7–21.2
Maximum body width	14.2	12.3–14.5	9.9–14.1
Pectoral fin length	15.6	14.9–17.4	11.6–17.3
Depth of pectoral peduncle	6.9	6.0–7.2	5.1–6.2
Pelvic fin length	19.3	18.8–24.7	21.4–27.0
In % of HL			
Snout length	22.7	20.6–24.0	18.8–23.8
Eye diameter	11.0	11.3–12.9	10.6–12.6
Postorbital length of head	72.5	69.1–72.6	70.1–72.8
Interorbital width	26.7	26.2–29.0	25.3–29.6
Upper jaw length	54.8	48.2–54.0	47.2–53.0
Depth of maxillary end	19.6	16.3–20.0	15.3–19.6
Counts			
Dorsal fin rays	80	78–86	78–86
Anal fin rays	62	62–69	65–68
Caudal fin rays	14+2	14+2	14+2
Pectoral fin rays	22	22–23	21–22
Pelvic fin ray	1	1	1
Vertebrae	11+31	10–11+30–31	10–11+30–31
Developed gill rakers	3	3	3
Branchiostegal rays	7	7	7
Lateral scale rows	100	90–100	85–98
Supraorbital pores	3	2–3	3
Infraorbital pores	5	4–5	4–5
Preoperculomandibular pores	8	8–9	8–9

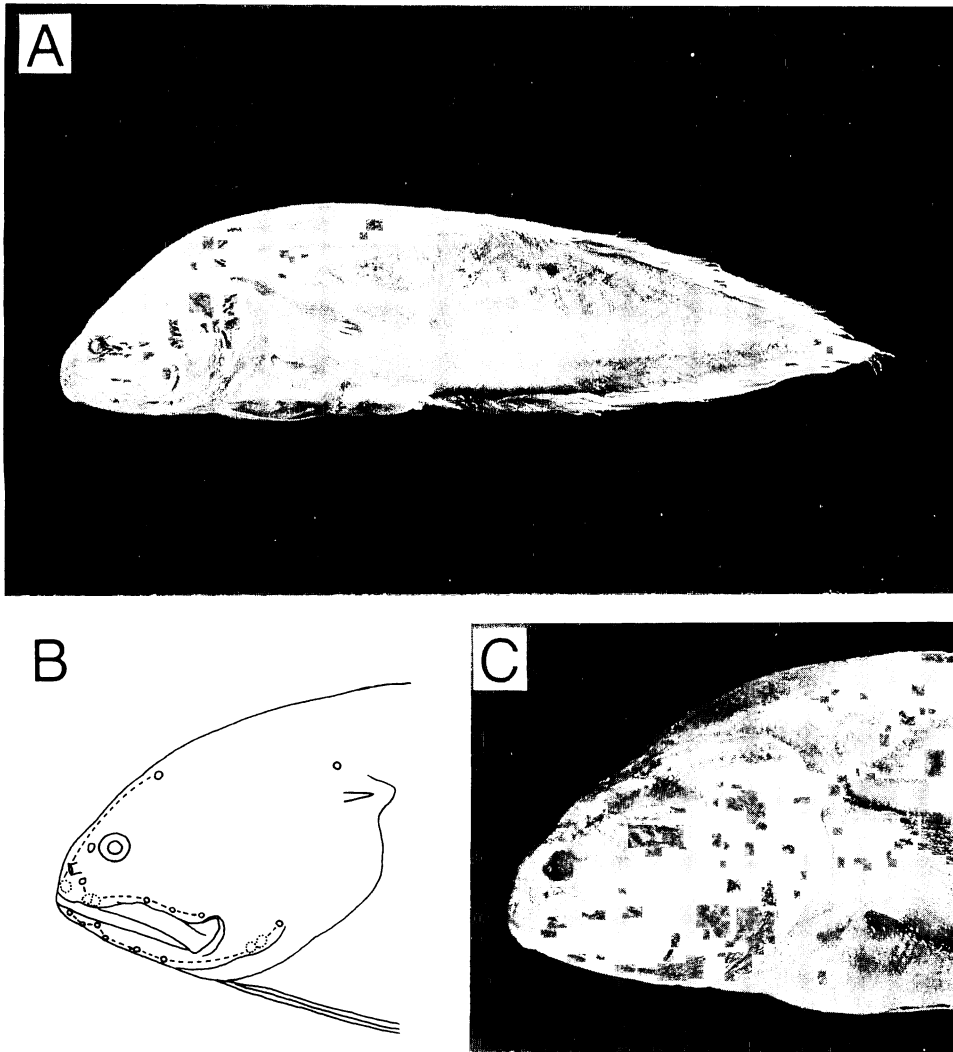


Fig. 4. *Dinematchthys randalli* sp. nov., BPBM 28305-1, holotype, male. 72.4 mm SL, from Kosrae. A) Entire body; B) arrangement of cephalic sensory pores; C) view of head.

round, 9.4–9.5 in HL. Interorbital region weakly convex. Mouth nearly horizontal, extending backward more than twice eye diameter from a vertical through posterior margin of eye. Posterior part of maxillary not covered by dermal cheek fold. Opercular spine strong, sharply pointed. Gill membranes free from isthmus, united to each other slightly behind posterior margin of eye.

Arrangement of cephalic sensory pores, except for supraorbital, as in *D. indicus*, 10th preoperculo-mandibular pore absent. Supraorbital pores 2 in holotype, 2nd pore medial to anterior nostril absent (Fig. 4B). Paratype with 1 supraorbital pore only,

just above tip of upper lip (Fig. 5B).

Head skin smooth, no distinct cirri on head. Short papillae on anterior tip of both jaws.

Teeth in jaws granular, forming bands, except for conical, sharp-pointed teeth in innermost row, teeth on lower jaw widely spaced, longer than upper jaw teeth. Head of prevomer broadly V-shaped, with short, conical teeth arranged in 3–4 rows, teeth in hindmost row longer. Teeth on palatine short, conical, arranged in 3–4 rows, teeth in innermost row longer. Tongue long, tip round. Lingual teeth absent.

Body scales small, cycloid, imbricate. Cheek, oper-

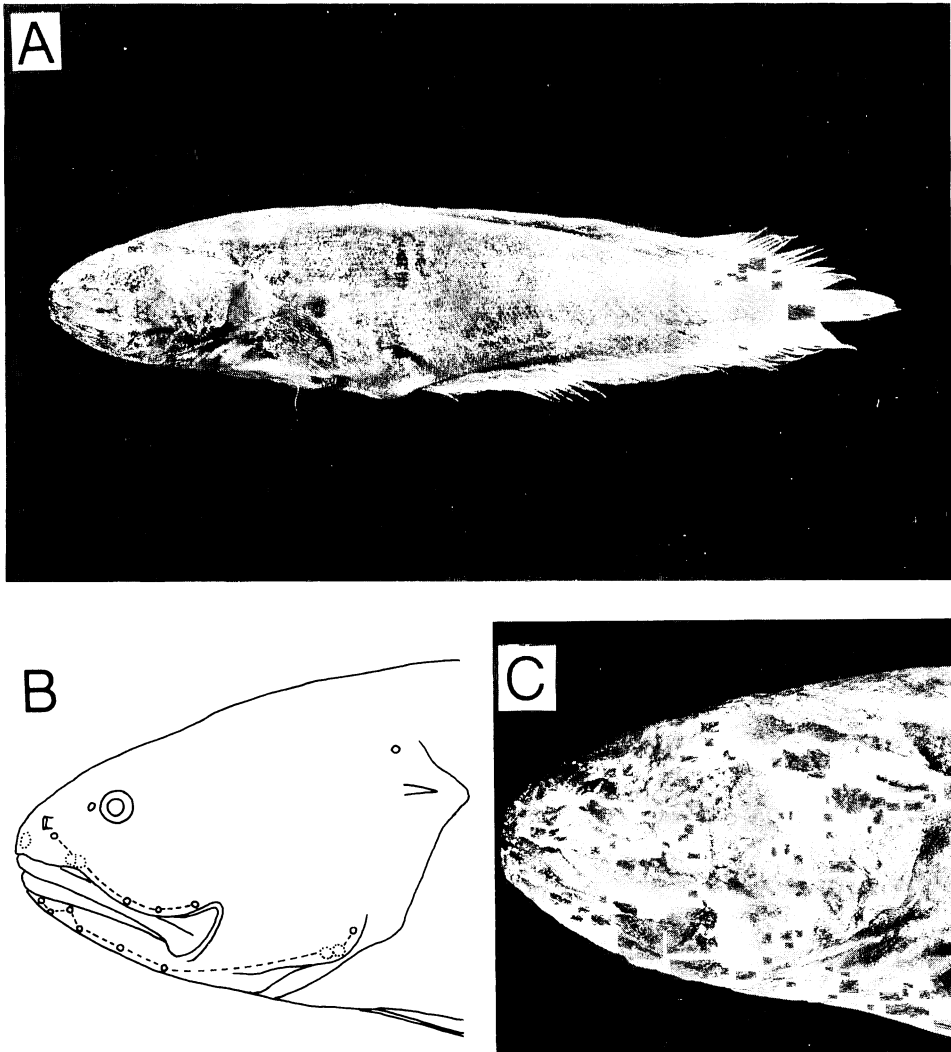


Fig. 5. *Dinematchthys randalli* sp. nov., BPBM 28305-2, paratype, female, 73.0 mm SL, from Kosrae. A) Entire body; B) arrangement of cephalic sensory pores; C) view of head.

cle and occiput with small scales (Figs. 4C, 5C). Lateral line indistinct.

Three developed rakers on 1st gill arch, 1 at angle, 2 on lower arm. Pseudobranchial filaments 2, short.

Dorsal fin origin one eye diameter behind pectoral fin base. Anal fin origin slightly anterior to middle of SL. Pectoral fin round, 4.9–5.9 in SL, reaching below base of 15th–16th dorsal fin rays. Pelvic fin base slightly behind lower angle of preopercle. Pelvic fin ray single, filamentous, extending beyond tip of pectoral fin, falling short of vent.

Male copulatory apparatus as in *D. indicus*.

Color in alcohol.—Head and body uniformly pale

brown. All fins pale.

Distribution. Known only from coral reefs of Kosrae I., Micronesia, at depths from 6 to 9 m.

Etymology. Named *randalli* in honor of Dr. John E. Randall (BPBM) in recognition of his many contributions to the knowledge of coral reef fishes, being a noun in the genitive case.

Remarks. This species is most similar to *D. indicus*. Characters distinguishing the two are given under “remarks” for the latter.

The dorsal profile before the dorsal fin origin is quite different between the holotype (male) and paratype (female), the former being the only hump-backed individual amongst the specimens examined in this study. This condition may represent sexual dimorphism in *D. randalli*, which is unknown in other congeneric species.

Dinematichthys megasoma sp. nov.

(Fig. 6)

Holotype. NTM S.11253-019-1, 104.2 mm SL, ♂, Table Head, Cobowg Pen., Northern Territory, Australia, depths 2–3 m, rotenone, 12 May 1983.

Paratypes. NTM S.11253-019-2, ♂ + 2 ♀, 64.7–120.3 mm SL, collected with holotype; NTM S.10417-023-1, 84 mm SL, ♀, Dudley Point Reef, 12°25'S, 130°49'E, Darwin, Northern Territory, Australia, depths 0–5 m, rotenone, 28 Dec. 1981.

Diagnosis. A large species of *Dinematichthys* (Cohen and Nielsen, 1978) with unsheathed maxillary; short tubular posterior nostril; eye 8.7–10.9 in HL; cheek and opercle scaly; cirri present on head; 10th preoperculomandibular pore present; 82–87 dorsal fin rays; 64–66 anal fin rays; 11 precaudal vertebrae; and 125–135 lateral scale rows.

Description. Proportional measurements and meristics are given in Table 4.

Head and body compressed. Body deepest at vent (Fig. 6A). Snout slightly longer than twice eye diameter, round in lateral view, not projecting beyond tip of upper jaw. Jaws equal in length. Anterior nostril tubular, about midway between upper lip and posterior nostril. Dermal rim of posterior nostril evenly raised, short, tubular, at mid-eye level. Eye small, round, 8.7–10.9 in HL. Interorbital region weakly convex. Mouth slightly oblique, large, slightly longer than 1/2 HL. Posterior part of maxillary exposed, its rear margin roundish. Opercular spine short, strong, sometimes buried under skin. Gill membranes free from isthmus, united to each other below posterior margin of maxillary.

Supratemporal pore absent. Single lateral line pore slightly above upper angle of gill opening (Fig. 6B). Arrangement of supraorbital and infraorbital pores as in *D. indicus*. Arrangement of 1st–9th preoperculomandibular pores as in *D. indicus*, 2nd pore rarely absent, 10th pore located at anterior

upper angle of opercle.

Many papillae on dermal folds of snout tip, and tips of upper and lower jaws. Cirri widely present on sides and top of head.

Jaw teeth small, granular, forming bands in both jaws. Inner teeth on upper jaw larger, conical, arranged in 3 irregular rows anteriorly, single row posteriorly. Inner teeth on lower jaw larger, conical, arranged in 2 rows, innermost teeth largest, widely spaced. Head of prevomer broadly V-shaped with 3–4 granular tooth rows, teeth in hindmost row longer. Palatine teeth granular, forming a tooth band of 5–6 teeth width; innermost teeth larger, conical, widely spaced. Tongue long, tip bluntly pointed. Lingual teeth absent. Two short pseudo-branchial filaments.

Head and body covered with a thick mucous coat-

Table 3. Proportional measurements and meristics of *Dinematichthys randalli*

Locality	Holotype Kosrae	Paratype Kosrae
SL (mm)	72.4	73.0
In % of SL		
HL	28.7	27.1
Predorsal length	34.5	32.9
Preanal length	47.5	48.8
Prepelvic length	22.3	20.6
Body depth at dorsal fin origin	27.4	20.4
Body depth at anal fin origin	23.5	22.7
Maximum body width	16.2	11.8
Pectoral fin length	20.3	16.9
Depth of pectoral peduncle	8.4	7.0
Pelvic fin length	22.9	23.2
In % of HL		
Snout length	20.2	22.2
Eye diameter	10.6	10.6
Postorbital length of head	69.7	69.9
Interorbital width	26.0	26.5
Upper jaw length	55.3	50.5
Depth of maxillary end	18.8	18.7
Counts		
Dorsal fin rays	84	83
Anal fin rays	63	65
Caudal fin rays	14 + 2	14 + 2
Pectoral fin rays	23	23
Pelvic fin ray	1	1
Vertebrae	10 + 32	10 + 32
Developed gill rakers	3	3
Branchiostegal rays	7	7
Lateral scale rows	107	113
Supraorbital pores	2	1
Infraorbital pores	5	5
Preoperculomandibular pores	8–9	9

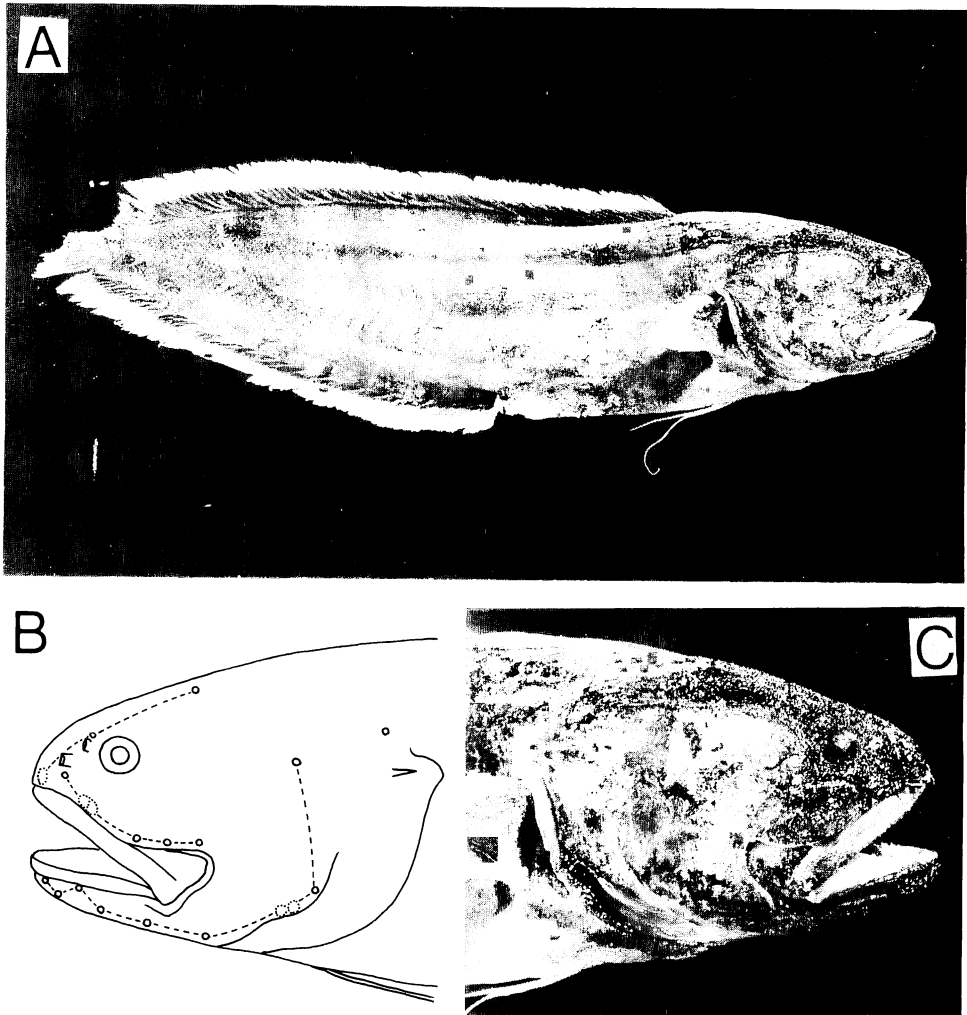


Fig. 6. *Dinematchthys megasoma* sp. nov., NTM S.11253-019-1, holotype, male, 104.2 mm SL, from Northern Territory, Australia. A) Entire body; B) arrangement of cephalic sensory pores; C) view of head.

ing. Body scales small, cycloid, imbricate. Scales present on cheek and opercle; scales on opercle sometimes buried under skin (Fig. 6C). Lateral line indistinct.

Dorsal fin origin above anterior 1/4 pectoral fin. Anal fin origin at about middle of SL. Pectoral fin short, round, reaching below base of 14th–16th dorsal fin rays. Pelvic fin base slightly behind lower angle of preopercle. Pelvic fin ray single, filamentous, reaching close to or slightly beyond pectoral fin tip, falling short of vent.

Precaudal vertebrae 11. Principal rays of caudal fin 12 in a single paratype, 14 in holotype and 3 paratypes.

Male copulatory apparatus as in *D. indicus*.

Color in alcohol.—Head and body uniformly dark brown. Basal regions of dorsal and anal fins, caudal fin and anterior 1/3 pectoral fin brown, others pale yellow.

Distribution. Known only from Northern Territory, Australia, at depths ranging 0 to 5 m.

Etymology. Named *megasoma* (from the Greek *megas*, large and *soma*, body) in reference to its large body, being a noun in apposition.

Remarks. This species clearly differs from the

preceding two in having the tenth preoperculo-
mandibular pore and a scaleless occiput. Although
this cephalic sensory pore is also seen in *D. miny-*
omma and *D. riukuensis*, which have a scaleless
occiput, *D. megasoma* can be easily distinguished
from them by its short, tubular, posterior nostril,
widely scaled opercle and the lateral scale row counts
(Table 1).

Dinematichthys riukuensis Aoyagi, 1952
(Japanese name: Ryukyu-itachiuo)
(Fig. 7)

Dinematichthys riukuensis Aoyagi, 1952: 235 (original de-
scription; type locality: Ishigaki I., Ryukyu Is., southern-
most district of Japan); Machida, 1992: 270.

Brotulina fusca: Matsubara, 1955: 800.

Holotype. YCM-AP 30023, 89.8 mm SL, ♂, Ishigaki
I., Ryukyu Is., coll. H. Aoyagi, date unknown.

Other specimens examined. Five YCM-AP specimens,
coll. H. Aoyagi: 30001, ♀, Okinawa I., Ryukyu Is., date
unknown; 30025, ♀, 44.1 mm SL, Okinawa I., date un-
known. 30026, ♂+2 ♀, 53.6–71.2 mm SL, Okinawa I.,
date unknown. ROM 38504-1, 2♂+2 ♀, 49.1–75.0 mm
SL, Queensland, Australia, 16°06.90'S, 145°26.90'E,
depths 0–2 m, 28 Sept. 1981; ROM 47600, 8♂+5 ♀, 32.3–
78.7 mm SL, Great Astrolabe Reef, Fiji, 18°46.30'N,
178°30.28'E, depths 0.5–3 m, 30 Mar. 1983.

Diagnosis. A species of *Dinematichthys* (Cohen
and Nielsen, 1978) with: unsheathed maxillary; non-
tubular posterior nostril; eye 8.3–10.1 in HL; cheek
scaly; a small scale patch just above opercular spine
in specimens larger than about 45 mm SL; cirri pres-
ent on head; 10th preoperculo-mandibular pore pres-
ent; 76–88 dorsal fin rays; 60–69 anal fin rays; 11–12
precaudal vertebrae; and 110–120 lateral scale rows.

Description. Proportional measurements and
meristics are given in Table 5.

Head and body compressed. Body deepest at
dorsal fin origin (Fig. 7A). Head 3.5–3.9 in SL.
Snout short, round in lateral view, slightly overhang-
ing upper jaw. Jaws equal in length. Anterior nostril
tubular, midway between upper lip and posterior
nostril. Posterior nostril just in front of eye, bearing
semicircular dermal flap on anterior margin. Eye
circular, 8.3–10.2 in HL. Interorbital region weakly
convex. Mouth large, about 1/2 HL, nearly horizon-
tal. Posterior part of maxillary exposed, depth of
maxillary end about twice eye diameter. Opercular

spine strong, with a sharply pointed tip. Gill mem-
branes free from isthmus, united to each other slight-
ly behind a vertical through posterior margin of eye.

Supratemporal pore absent. Single lateral line
pore above upper angle of gill opening. Arrange-
ment of cephalic sensory pores as in *D. megasoma*,
10th preoperculo-mandibular pore present (Fig. 7B).

Head skin rather smooth in small specimens.
Papillae present on dermal folds of upper and lower
jaw tips. Many tiny cirri present around eye and on
top of head.

Teeth small, forming bands in jaws and on pre-
vomer and palatine. Inner teeth on premaxillary
larger, sharply pointed. Teeth in innermost row on
dentary large, conical, widely spaced. Head of pre-

Table 4. Proportional measurements and meristics
of *Dinematichthys megasoma*

Locality	Holotype	Paratypes
	Northern Territory	(4 specimens) Northern Territory
SL (mm)	104.2	64.7–120.3
In % of SL		
HL	27.7	26.7–27.8
Predorsal length	31.9	30.0–32.4
Preanal length	49.5	45.0–53.2
Prepelvic length	24.7	22.1–24.6
Body depth at dorsal fin origin	24.3	19.2–22.8
Body depth at anal fin origin	22.9	19.1–21.9
Maximum body width	13.5	11.0–12.7
Pectoral fin length	15.7	14.0–14.8
Depth of pectoral peduncle	7.2	6.2–7.1
Pelvic fin length	20.0	21.4–23.4
In % of HL		
Snout length	21.8	21.0–25.7
Eye diameter	9.9	9.2–11.5
Postorbital length of head	71.1	70.7–72.4
Interorbital width	27.6	25.3–27.7
Upper jaw length	52.9	50.7–53.8
Depth of maxillary end	17.2	17.1–19.1
Counts		
Dorsal fin rays	82	83–87
Anal fin rays	64	64–66
Caudal fin rays	14+2	12, 14+2
Pectoral fin rays	21	21–22
Pelvic fin ray	1	1
Vertebrae	11+30	11+30–31
Developed gill rakers	3	3
Branchiostegal rays	7	7
Lateral scale rows	125	125–135
Supraorbital pores	3	2–3
Infraorbital pores	5	4–5
Preoperculo-mandibular pores	9	9–10

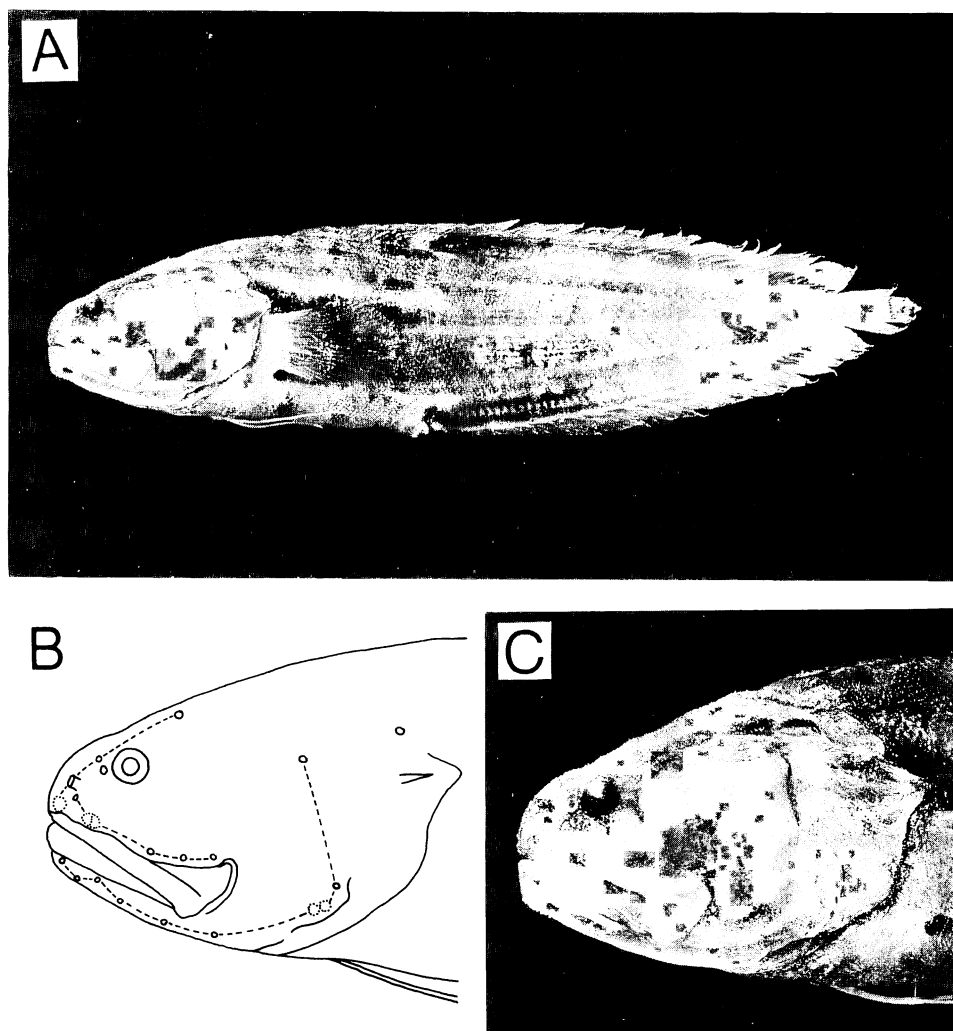


Fig. 7. *Dinematichthys riukiensis*, YCM-AP 30023, holotype, male, 89.8 mm SL, from Ishigaki I., Okinawa, Japan. A) Entire body; B) arrangement of cephalic sensory pores; C) view of head.

vomer broadly V-shaped, with 3–4 tooth rows, teeth in hindmost row larger. Palatine with 4–5 tooth rows anteriorly, teeth in innermost row slightly enlarged. Tongue long, tip blunt, lingual teeth absent. Three developed gill rakers on 1st arch, 1 at angle, 2 on lower arm. Two short pseudobranchial filaments.

Body scales small, cycloid, imbricate. Large scale patch on cheek. Small scale patch on side of head just above opercular spine in specimens larger than about 45 mm SL, no scales below opercular spine (Fig. 7C). Lateral line indistinct.

Dorsal fin origin slightly behind pectoral axil. Pre-anal length nearly equal to or slightly shorter than

1/2 SL. Pectoral fin round, 6.0–7.9 in SL, reaching below base of 14th–17th dorsal fin rays. Pelvic fin ray single, filamentous, falling short of vent. Pelvic fin base slightly behind lower angle of preopercle.

Precaudal vertebrae 11–12 (rarely 12). Caudal vertebrae 29–32 (modally 30).

Male copulatory apparatus as in *D. indicus*.

Color in alcohol.—Head and body uniformly pale brown; all fins pale.

Distribution. Known from coral reefs of Okinawa (southernmost district of Japan), Queensland and Fiji.

Remarks. Originally described by Aoyagi (1952), *D. riukiensis* was considered by Matsubara (1955) as a junior synonym of *Brotulina fusca* Fowler, 1946. Recently, Aoyagi's specimens were registered in YCM (Machida, 1992). The original description was based on a single specimen, 90.3 mm SL, from Ishigaki Island (Aoyagi, 1952), but no type designation had been made. Machida (1992) examined the specimen and confirmed its placement in *Dinematichthys*. Apparently, YCM-AP 30023 represents the holotype of *D. riukiensis*. Aoyagi (1952) also reported the existence of eight further specimens of *D. riukiensis* from Okinawa Island. The present study revealed that three of these specimens, YCM-AP 30024, 30027 and 30028, have a low anterior nostril, which clearly differs from that in *Dinematichthys*. The remaining five specimens (YCM-AP

30001, 30025 and 30026) are *D. riukiensis*.

Dinematichthys riukiensis resembles *D. minyomma* and *D. megasoma* in its arrangement of cephalic sensory pores. However, *D. riukiensis* is distinguishable from *D. minyomma* by its larger eye (8.3–10.1 in the former vs. 10.2–15.0), more pre-caudal vertebrae (11–12 vs. 10), higher lateral scale row counts (110–120 vs. 79–89), and a small scale patch just above the opercular spine in large specimens (absent in *D. minyomma*). It differs from *D. megasoma* in lacking scales below the opercular spine, and having a nontubular posterior nostril and lower lateral scale row counts (130–135 in *D. megasoma*) (Table 1).

Comparative material. *Dinematichthys minyomma*: LACM 44201-1, paratypes 3♂ + 3♀, 53.4–70.2 mm SL,

Table 5. Proportional measurements and meristics of *Dinematichthys riukiensis*

Locality	YCM-AP 30023 (Holotype) Okinawa	YCM-AP (5 spms.) Okinawa	ROM 38504 (4 spms.) Queensland	ROM 47600 (12 spms.) Fiji
SL (mm)	89.8	44.1–73.6	38.0–75.0	32.3–78.7
In % of SL				
HL	29.3	26.5–28.8	26.4–27.7	25.4–28.6
Predorsal length	33.0	30.8–33.1	31.8–33.1	30.8–34.4
Preanal length	49.8	44.2–50.0	45.8–52.1	45.7–49.4
Prepelvic length	23.3	20.7–23.7	20.6–22.3	21.5–23.5
Body depth at dorsal fin origin	24.5	19.4–23.1	21.8–24.7	18.4–22.3
Body depth at anal fin origin	21.4	18.7–21.2	17.3–21.6	16.7–20.1
Maximum body width	15.3	12.1–13.1	12.3–13.7	9.0–14.7
Pectoral fin length	15.7	13.2–16.4	12.6–14.7	12.8–16.7
Depth of pectoral peduncle	7.5	6.6– 6.8	5.9– 6.7	5.8– 7.2
Pelvic fin length	20.4	20.3–25.2	19.3–25.1	22.0–25.6
In % of HL				
Snout length	25.3	22.1–24.8	20.0–23.7	21.2–27.3
Eye diameter	10.3	9.9–12.0	10.3–12.0	9.9–11.8
Postorbital length of head	70.5	70.0–70.9	70.4–72.6	66.8–73.5
Interorbital width	26.4	26.4–28.2	25.9–29.7	22.8–29.7
Upper jaw length	49.0	50.2–54.9	49.4–53.0	47.5–54.4
Depth of maxillary end	18.1	16.2–18.1	16.7–18.4	14.5–19.9
Counts				
Dorsal fin rays	79	76–88	82–87	76–84
Anal fin rays	61	62–69	63–69	60–65
Caudal fin rays	14+2	14+2	14+2	14+2
Pectoral fin rays	22	21–23	22	21–22
Pelvic fin ray	1	1	1	1
Vertebrae	11+30	11+29–32	11–12+30–31	11+29–31
Developed gill rakers	3	3	3	3
Branchiostegal rays	7	7	7	7
Lateral scale rows	115	110–120	110–115	110–120
Supraorbital pores	3	3	3	3
Infraorbital pores	5–6	5	5	5–6
Preoperculomandibular pores	10	10	10	10

Caribbean Sea, Guanaja (Bonaca) Island, Bay Islands, Honduras, 16°26'38''N, 85°53'02''E, from a coral reef at 0–9 m, 21 Apr. 1967, collected G. Miller. *Dinematchthys dasyrhynchus*: WAM P.26616-009, paratypes, 55.6–113.2 mm SL, ♂+4♀, Point Clune, Rottnest Island, Western Australia, 32°00'S, 115°30'E, depth 8 m, rotenone, collected J. B. Hutchins and N. Sinclair, 7 June 1980; WAM P. 27950-011, 6♀, 74.4–106.6 mm SL, Ledge Jurien Bay, Western Australia, 30°18'S, 115°00'E, depths 4–6 m.

Acknowledgments

I thank D. M. Cohen (LACM) for his critical comments on an earlier version of the manuscript. I am also grateful to the following individuals for the loan of study material: R. Winterbottom (ROM); B. C. Russell, H. K. Larson and R. Williams (NTM); J. E. Randall and A. Y. Suzumoto (BPBM); J. B. Hutchins (WAM); M. Hayashi (YCM); D. M. Cohen and J. A. Seigel (LACM).

Literature Cited

Aoyagi, H. 1952. Studies on the coral fishes of the Riu-kiu Islands VIII. Gobiessocidae, Limnichthidae, Parapercidae, Brotulidae, Bothidae and Soleidae. Zool. Mag., 61: 233–236. (In Japanese with English resume.)
Bleeker, P. 1855. Bijdrage tot de kennis der ichthyologische fauna van de Batoe Eilanden. Nat. Tijdschr. Neder.-Indie, 8: 305–328.
Cohen, D. M. and J. B. Hutchins. 1982. Description of a new *Dinematchthys* (Ophidiiformes: Bythitidae) from Rottnest Island, Western Australia. Rec. West. Aust.

Mus., 9: 341–347.

Cohen, D. M. and J. G. Nielsen. 1978. Guide to the identification of genera of the fish order Ophidiiformes with a tentative classification of the order. NOAA Tech. Rep. NMFS Circ., (417): 1–72.
Machida, Y. 1992. Comments on the scientific and Japanese names of the small bythitid species inhabiting coral reefs. Japan. J. Ichthyol., 39: 270–271. (In Japanese.)
Matsubara, K. 1955. Fish morphology and hierarchy. I–III. Ishizaki Shoten, Tokyo. xii+1605 pp., 135 pls. (In Japanese.)
Sedor, A. N. and D. M. Cohen. 1987. New bythitid fish, *Dinematchthys minyomma*, from the Caribbean Sea. Nat. Hist. Mus. Los Angeles Co., Contr. Sci., (385): 5–10.
Winterbottom, R., A. Emery and E. Holm. 1989. An annotated checklist of the fishes of the Chagos Archipelago, central Indian Ocean. ROM Life Sci. Contr., (145): i–v+1–226.

リュウキュウイタチウオ属の3新種の記載とリュウキュウイタチウオの再記載

町田吉彦

フサイタチウオ科のリュウキュウイタチウオ属 (*Dinematchthys*) は、尾鰭が背鰭と臀鰭に連続せず、前鼻孔の位置が著しく高いことを特徴とする。本報告で、本属の3新種 *D. indicus*, *D. randalli*, *D. megasoma* を記載し、リュウキュウイタチウオ *D. riukuensis* Aoyagi, 1952 を再記載した。これらの種および既知種の *D. ilucoeteoides*, *D. dasyrhynchus*, *D. minyomma* のそれぞれは、主上顎骨の後端が露出するかどうか、後鼻孔の形態、眼径、縦列鱗数、頭部の被鱗状態と触毛の有無、腹椎骨数、第10番目の前鰓蓋下顎管孔の有無により識別可能である。

(〒780 高知市曙町 2-5-1 高知大学理学部生物学教室)