

Two New Genera and Species of the Subfamily Brosmophycinae (Bythitidae, Ophidiiformes) from Northern Australia

Yoshihiko Machida

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

Abstract Two new bythitid genera and species of the subfamily Brosmophycinae are described from Northern Territory, Australia. *Brosmolus longicaudus*, described from a single male specimen, is unique in the tribe Brosmophycini in having the anal fin origin well anterior to the midpoint of the body and thin, transparent skin on the head and body. *Beaglichthys macrophthalmus*, described from a single female specimen, differs from all other genera in the subfamily by the following combination of characters: eight branchiostegal rays, eye diameter longer than snout length, cheek scaly, anal fin origin at midpoint of body, three developed rakers on the first gill arch, 12 caudal fin rays, and 14 precaudal vertebrae.

The free-tailed bythitid fishes of the subfamily Brosmophycinae, which contains two tribes, Brosmophycini and Dinematchthyini, are generally small, inhabiting shallow-water, reefs and fresh water (Cohen and Nielsen, 1978). Cohen and Nielsen (1978) recognized four genera in Brosmophycini and nine in Dinematchthyini. The former lack ossified parts in the male intromittent organ, whereas the latter have ossified pseudoclaspers. *Brosmodorsalis* Paulin and Roberts, 1989 belongs to Brosmophycini. *Melodichthys*, comprising two species (Nielsen and Cohen, 1986) was placed in Brosmophycinae, but allocation to either Brosmophycini or Dinematchthyini is uncertain, as each species was described from a female holotype only. Additional specimens of either species have not been collected.

During my studies of bythitid fishes, two curious specimens referable to Brosmophycinae, were found in the fish collection of the Northern Territory Museum (NTM), Australia. They are here described as new genera and species.

All measurements are straight-line measurements. Eye measurements were horizontal, being made on the eye window only. Counts of vertebrae were taken from radiographs, and excluded the ural centra. Dorsal, anal and caudal fin ray counts were also taken from radiographs. Standard and total lengths are expressed as SL and TL, respectively.

Brosmolus gen. nov.

Type species. *Brosmolus longicaudus* sp. nov.

Diagnosis. This genus is distinguished from other genera in the tribe Brosmophycini by the following combination of characters: preanal length 42% SL; head and body covered with thin, transparent skin; cheek scaly; developed rakers on 1st gill arch 4; caudal fin rays 16; precaudal vertebrae 15.

Comparisons. *Brosmolus* belongs to Brosmophycini owing to the lack of ossified parts in the male intromittent organ. In Brosmophycini the anal fin origin of *Brosmophyciops* and *Brosmophycis* approximates the midpoint of the body, with that of *Bidenichthys* being considerably more posterior (Cohen and Nielsen, 1978). Judging from morphometric data in the three species of *Lucifuga*, presented by Cohen and Robins (1970), preanal length varies from 49.2 to 56.4% SL in that genus. Paulin and Roberts (1989) noted that it ranged from 56.6 to 64.4% SL in *Brosmodorsalis*. Thus, *Brosmolus* differs markedly from related genera in having the anal fin origin well anterior to the midpoint of the body. The thin, transparent skin of *Brosmolus* is unique in Brosmophycini.

Table 1 compares important characters of *Brosmolus* with those of other genera of Brosmophycini, *Melodichthys* and *Beaglichthys*. It is apparent that

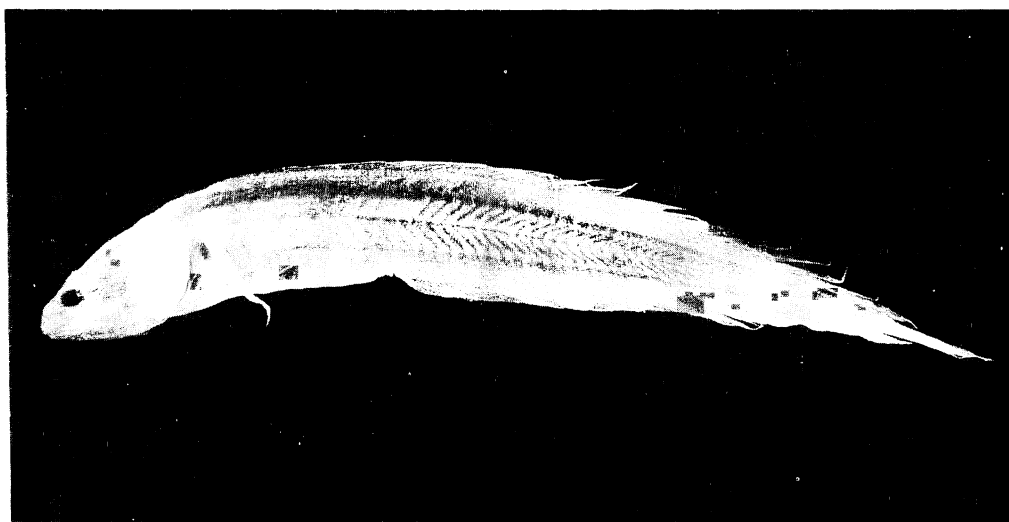


Fig. 1. *Brosmolus longicaudus* gen. et sp. nov., holotype, NTM S.10623-001, male, 58.4 mm SL, from Northern Territory, Australia.

Brosmolus can be distinguished from them by the combination of characters listed in Table 1.

Etymology. *Brosmo* in reference to the subfamily affinities of the fish and the noun suffix *-olus* (masculine).

***Brosmolus longicaudus* sp. nov.**

(Figs. 1–3)

Holotype. NTM S.10623-001, 58.4 mm SL, 65.7 mm TL, male, Carwons Beach, Shoal Bay (130°05'E, 11°50'S),

Table 1. Comparison of genera in the subfamily Brosmophycinae. Comparative data from Cohen (1966, 1986), Poll and van Mol (1966), Cohen and Nielsen (1978), Nielsen and Cohen (1986), and Paulin and Roberts (1989)

	Head scales	Branchio- stegals	Eye vs. snout	Precaudal vertebrae	Developed gill rakers	Caudal fin rays	Preanal (% SL)
Brosmophycini							
<i>Brosmolus</i> gen. nov.	+	7	<	15	4	16	42
<i>Bidenichthys</i> Barnard	—	7 or 8	<	15	15–18	14–16	60<
<i>Brosmodorsalis</i> Paulin et Roberts	—	7	<	16–18	13–16	14	56.6–64.4
<i>Brosmophyciops</i> Schultz	—	7	≥	12–13	3	12	50–52
<i>Brosmophycis</i> Gill	—	7	<	16–17	0–7	16	ca. 50
<i>Lucifuga</i> Poey	+	7	<	11–13	3	8–11	49.1–56.4
Dinematichthyini							
<i>Brotulina</i> Fowler	+	7	<	10–11	3	12	ca. 50
<i>Dermatopsis</i> Ogilby	—	7	<	13	2–4	16≤	48.1–55.8
<i>Dermatopsoides</i> Smith	+ or —	6	<	11–14	3	16≤	49.9–59.5
<i>Diancistrus</i> Ogilby	—	6	<				ca. 50
<i>Dinematichthys</i> Bleeker	+	7	<	10, 13–14	0–3	14, 16–18	50–57
<i>Dipulus</i> Waite	—	6	<	22		16	ca. 45
<i>Gunterichthys</i> Dawson	—	8	<	11–12	5–7	12–15	54.1–56.5
<i>Monothrix</i> Ogilby	—	7	<	13–14		14	ca. 50
<i>Ogilbia</i> Jordan et Evermann	+ or —	7	<				48–55
Incertae sedis							
<i>Beaglichthys</i> gen. nov.	+	8	>	14	3	12	50.9
<i>Melodichthys</i> Nielsen et Cohen	+ or —	7	≥	12–13	11–15	14	63–64

Northern Territory, Australia, depth unknown, Mar. 13, 1974.

Diagnosis. As for genus.

Description. Counts: dorsal fin rays 129, anal fin rays 94, caudal fin rays 16, pectoral fin rays 23, pelvic fin ray 1, branchiostegal rays 7, vertebrae 15 + 44 = 59. Measurements in mm (% SL in parentheses): head length 13.0 (22.3), head depth 7.0 (12.0), head width 6.4 (11.0), body depth at dorsal fin origin 7.8 (13.4), body depth at middle of anus 7.05 (12.1), body width at dorsal fin origin 3.95 (6.8), body width at middle of anus 2.8 (4.8), predorsal length 15.3 (26.2), preanal length 24.5 (42.0), prepelvic length 10.0 (17.1), gnathoproctal length 24.3 (41.6), pectoral fin length 9.65 (16.5), depth of pectoral peduncle 2.5 (4.3), pelvic fin length 8.9 (15.2), snout length 2.65 (4.5), eye diameter 1.7 (2.9), fleshy interorbital width 3.0 (5.1), bony interorbital width 2.0 (3.4), upper jaw length 6.4 (11.0), lower jaw length 6.95 (11.9), depth of posterior end of maxillary 1.6 (2.7).

Head and body compressed, body low, elongated (Fig. 1). Head small, slightly longer than 1/2 preanal length. Gill membranes free from isthmus. Snout rather depressed, round in lateral view, slightly projecting (Fig. 2A); dermal folds on snout tip weakly developed. Anterior nostril large, in a short tube, located just above upper lip near snout tip. Posterior nostril circular, with a short, raised rim, placed just in front of eye. Eye window oval, its diameter shorter than snout length, 7.6 in head length. Interorbital region weakly convex, fleshy interorbital width longer than snout length. Mouth nearly horizontal, large, nearly equal to 1/2 head length. Maxillary expanded posteriorly, sheathed by dermal cheek fold except for its posterior end. Opercular spine sharp, strong. Sensory pores on head as follows. Supraorbital pore 1, on upper lip of snout tip below anterior nostril, covered by dermal fold. Infraorbital pores 6; 1 lateral to anterior nostril, 2 slit-like, closely adjacent pores below posterior nostril, 3 evenly spaced pores along posterior part of upper jaw behind middle of eye. Preoperculomandibular pores 7 (Fig. 2B); 1 in a circular dermal fold at lower jaw tip, 1 on inner surface of dentary just behind 1st pore, 1 below middle of eye, 1 below and slightly before maxillary end, 2 at lower angle of preopercle, 1 slightly above lower angle of preopercle. A single lateral line pore placed above upper angle of gill opening. Developed rakers on 1st gill arch 4, 1 at angle, 3 on lower limb.

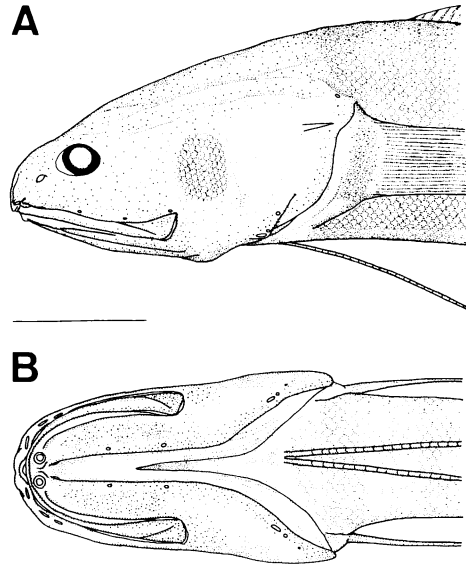


Fig. 2. Head of holotype of *Brosmolus longicaudus* gen. et sp. nov. A, lateral view; B, ventral view. Scale bar indicates 5 mm.

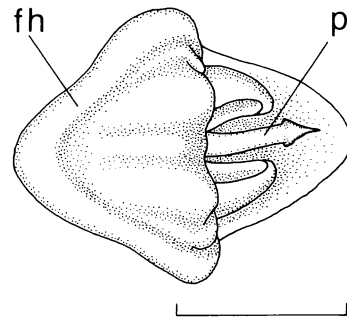


Fig. 3. Intromittent organ of holotype of *Brosmolus longicaudus* gen. et sp. nov. p, penis; fh, fleshy hood. Scale bar indicates 0.5 mm.

Pseudobranchial filaments 2. Tongue long, sharply pointed.

Teeth present on premaxillary, dentary, prevomer and palatines. Teeth on jaws small, sharply-pointed, forming bands of 4–5 tooth rows near symphysis; anterior inner teeth on premaxillary much enlarged, needle-like; teeth in innermost row on dentary enlarged, conical. Head of prevomer V-shaped, with 2 rows of small, pointed teeth. Palatine teeth as large as prevomerine teeth, forming 2 rows.

Dorsal fin origin above 6th vertebra (slightly be-

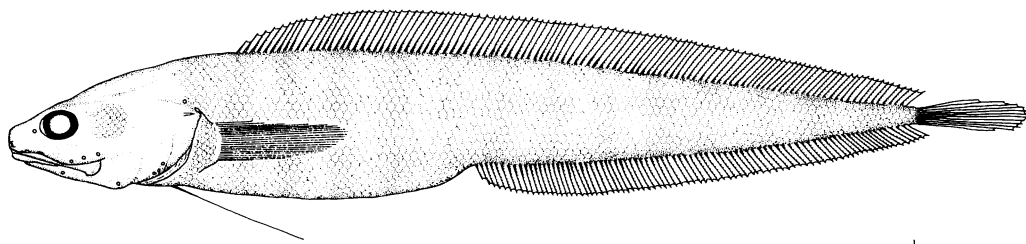


Fig. 4. *Beaglichthys macrophthalmus* gen. et sp. nov., holotype, NTM S.10395-001-1, female, 78.0 mm SL, from Northern Territory, Australia. Scale bar indicates 10 mm.

hind pectoral fin base). Predorsal bones 2. Anal fin origin below 17th vertebra (37th dorsal fin ray), at anterior 2/5 SL. Caudal fin free from dorsal and anal fins. Pectoral fin long, about 3/4 head length, its tip beyond midpoint between pelvic fin base and anus. Pelvic fins each with a rather thick ray, closely adjacent to each other, inserted slightly behind symphysis of cleithra, scarcely reaching tip of pectoral fin.

Head and body covered with thin, transparent skin. Scales absent from head except for a large patch on cheek. Scales on body small, imbricate, about 150 scales in a longitudinal row from upper angle of gill opening to caudal fin base. Bases of dorsal and anal fins without scales. Lateral line indistinct.

Male intromittent organ lacking ossified parts. Penis short, dorso-laterally flattened and arrowhead-like in shape (Fig. 3).

First neural spine slightly more than 1/2 the length of 2nd spine, vertically erected. Vertebrae 5–8 with short, depressed, sharply-pointed neural spines, subsequent precaudal neural spines progressively more erect and longer.

Color in preservative: Head and body light ocher yellow, becoming lighter on belly. Skin colorless, scale pockets not detectable. Small melanophores on head, pectoral fin base and dorsal half of body. All fins pale.

Distribution. Known only from the type locality, Shoal Bay, Northern Territory, Australia.

Etymology. Derived from Latin *longi*, long and *caudus*, tail in reference to the long tail of the species.

Beaglichthys gen. nov.

Type species. *Beaglichthys macrophthalmus* sp. nov.

Diagnosis. This genus is distinguished from other genera in the subfamily Brosmophycinae by

the following combination of characters: anal fin origin at midpoint of body; cheek scaly; eye diameter longer than snout length; opercular spine strong; developed rakers on first gill arch 3; branchiostegal rays 8; caudal fin rays 12; precaudal vertebrae 14.

Comparisons. Although *Beaglichthys* is placed in the subfamily Brosmophycinae, its tribal assignment is currently impossible, owing to the genus being represented only by a single female specimen.

Beaglichthys differs from other genera in the subfamily Brosmophycinae except for *Bidenichthys* and *Gunterichthys* in having eight branchiostegal rays (Table 1). According to Cohen and Nielsen (1978), *Bidenichthys capensis* has eight branchiostegal rays. Paulin and Roberts (1989) transferred *Monothrix consobrinus* from *Monothrix* to *Bidenichthys*. I examined ten *B. consobrinus* specimens (National Museum of New Zealand P. 23422, 45.3–89.7 mm SL), and confirmed that the species has seven branchiostegal rays (Machida, pers. obs.). However, *Beaglichthys* differs from *Bidenichthys* in the following characters: cheek scaly, preanal length 50.9% SL, eye diameter longer than snout length, 3 developed gill rakers on 1st arch, 12 caudal fin rays, and 14 precaudal vertebrae (Table 1). *Beaglichthys* differs markedly from the monotypic genus *Gunterichthys* in the following characters: cheek scaly, eye diameter longer than snout length, 3 developed gill rakers on 1st arch, 12 caudal fin rays, and 14 precaudal vertebrae (Table 1). A comparison with the original description of *Gunterichthys* also shows that *Beaglichthys* has a body with imbricate scales (vs. body scales barely overlapping), and the opercular spine strong (vs. slender and weak). Dawson (1966) noted in the original description of *Gunterichthys longipennis* that its eye diameter varied from 3.1 to 4.2 in snout length.

Etymology. *Beagle* in reference to Beagle Gulf

where Shoal Bay, the locality of the type species is located, and Greek *ichthys*, fish (masculine).

Beaglichthys macrophthalmus sp. nov.
(Fig. 4)

Holotype. NTM S.10395-001-1, 78.0 mm SL, 88.0 mm TL, female, Shoal Bay, Northern Territory, Australia, depth unknown, June 29, 1973.

Diagnosis. As for genus.

Description. Counts: dorsal fin rays 111, anal fin rays 83, caudal fin rays 12, pectoral fin rays 22, pelvic fin ray 1, branchiostegal rays 8, vertebrae 14+36=50. Measurements in mm (% SL in parentheses): head length 18.35 (23.5), head depth 10.6 (13.6), head width 9.9 (12.7), body depth at dorsal fin origin 13.2 (16.9), body depth at middle of anus 12.05 (15.4), body width at dorsal fin origin 8.0 (10.3), body width at middle of anus 6.3 (8.1), predorsal length 21.4 (27.4), preanal length 39.7 (50.9), pre-pelvic length 15.3 (19.6), gnathoproctal length 36.3 (46.5), pectoral fin length 9.9 (12.7), depth of pectoral peduncle 4.55 (5.8), pelvic fin length 12.0 (15.4), snout length 3.0 (3.8), eye diameter 3.4 (4.4), fleshy interorbital width 3.7 (4.7), bony interorbital width 2.05 (2.6), upper jaw length 9.2 (11.8), lower jaw length 10.3 (13.2), depth of posterior end of maxillary 3.0 (3.8).

Head and body compressed, body elongated (Fig. 4). Head small, 4.3 in SL, slightly shorter than 1/2 preanal length. Gill membranes free from isthmus. Snout weakly depressed, its tip rather truncate in both dorsal and lateral views, not projecting beyond upper jaw tip. Dermal folds on snout tip weakly developed. Anterior nostril in a short tube, placed slightly above upper lip near snout tip. Posterior nostril circular, larger than anterior nostril, with weakly raised rim, positioned just in front of eye. Eye window oval, its diameter longer than snout length, 5.4 in head length. Interorbital region weakly convex, fleshy interorbital width longer than eye diameter. Mouth slightly oblique, large, upper jaw length nearly equal to 1/2 head length. Maxillary expanded and free posteriorly, extending backwards beyond rear margin of eye window. Opercular spine flat but strong, with a sharply-pointed tip. Sensory pores on head as follows. A single supraorbital pore below anterior nostril, covered by a dermal fold. Infraorbital pores 6; 1 small pore lateral to anterior nostril, 2 large, slit-like pores on margin of dermal fold below posterior nostril, 3 evenly spaced pores on

dermal cheek fold along posterior part of upper jaw. Preoperculumandibular pores 8; 1 in a circular dermal fold at lower jaw tip, 1 below inner surface of dentary just behind 1st pore, 1 below anterior margin of eye, 1 below posterior 1/3 of spectacle, 1 near dentary articulation, 3 closely adjacent pores at lower angle of preopercle. A single lateral line pore present just above upper angle of gill opening. Developed rakers on 1st gill arch 3, all short and depressed, 1 at angle, 2 on lower limb. Pseudobranchial filaments 2. Tongue short, broad, with a bluntly-pointed tip. Teeth small, granular, forming bands on jaws, prevomer and palatines. Eight to 9 tooth rows on premaxillary, innermost row teeth enlarged, becoming longer anteriorly. Six or 7 tooth rows near symphysis of dentary, innermost row teeth enlarged, conical. Head of prevomer widely V-shaped, 5-6 tooth rows medially, 2 tooth rows posteriorly. Palatine teeth arranged in about 3 rows.

Dorsal fin originating above 6th vertebra (slightly behind pectoral fin base). Anal fin origin below 17th vertebra (36th dorsal fin ray), at about middle of SL. Caudal fin free from dorsal and anal fins. Pectoral fin long, its tip reaching about midway between pelvic fin base and anus. Pelvic fins closely adjacent, each with a filamentous ray, inserted slightly behind cleithra symphysis, its tip reaching about midway between fin base and anus.

Head and body covered with thick skin; numerous tiny papillae on head. Cheek scaly; snout, opercle and top of head scaleless. Body covered with large, imbricate scales, about 100 scales in a longitudinal row from upper angle of gill opening to caudal fin base. Lateral line indistinct.

First neural spine longer than 1/2 2nd spine length, vertically erected. Vertebrae 5-10 with short, depressed, sharply-pointed spines, subsequent pre-caudal neural spines progressively more erect and longer.

Color in preservative: Head and body uniformly pale yellow, becoming lighter on belly; top of head with small melanophores. All fins pale.

Distribution. Known only from the type locality, Shoal Bay, Northern Territory, Australia.

Etymology. Derived from Greek *makros*, large and *ophthalmos*, eye in reference to the large eye of the species.

Biological notes. The holotype had a neonate, 23.3 mm TL, with its posterior half protruding from the genital opening. Two other neonates, 23.6 and 23.2 mm TL, in the same lot were probably newly-

born from the same female, judging from their body lengths. Each specimen lacked scales and an opercular spine, and had the teeth scarcely visible. Only two rakers were present on the lower limb of the first gill arch. Two pseudobranchial filaments were long and conspicuous.

Acknowledgments

I thank B. C. Russell, H. K. Larson and R. Williams for the loan of NTM bythitid specimens, and the opportunity to describing the new genera. I also thank C. D. Paulin, National Museum of New Zealand, who kindly sent me specimens of *Bidenichthys consobrinus* for examination. G. S. Hardy, Ikeda, Osaka, Japan, kindly corrected the English in the manuscript and offered helpful comments.

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(Received April 22, 1992; accepted October 21, 1992)

北部オーストラリア産のリウキュウイタチウオ亜科の2新属新種

町田吉彦

オーストラリアの Northern Territory 産の標本に基づき、フサイタチウオ科リウキュウイタチウオ亜科の2新属新種を記載した。本亜科は尾鰭が背鰭や臀鰭と連続しないことを特徴とする。*Brosmolus* は *Brosmolus longicaudus* を模式種とし、本種には雄の完模式標本しか知られていない。本属は雄の交接器に硬化した部分がないことで *Brosmophycini* に属し、臀鰭始部が体の前半部に位置すること、皮膚が透明であることで近縁の属と区別できる。また、頬は有鱗、鰓条骨数が7、鰓耙数が4、腹椎骨数が15、尾鰭鰭条数が16であることも区別できる。*Beaglichthys* は *Beaglichthys macrophthalmus* を模式種とし、本種には雌の完模式標本しか知られていない。そのため、本属の族の帰属は現時点では定かでない。しかし、本属は鰓条骨数が8、眼径は吻長より大、頬は有鱗、鰓耙数が3、腹椎骨数が14、尾鰭鰭条数が12であり、本亜科のいずれの属とも異なる。

(780 高知市曙町 2-5-1 高知大学理学部生物学教室)