

Description of a New *Dinematichthys* (Ophidiiformes: Bythitidae) from Rottnest Island, Western Australia

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Abstract

A new species of ophidioid fish, *Dinematichthys dasyrhynchus*, is described from Rottnest Island, located off the coast of south-western Australia. It differs from the only other known member of the genus *D. ilucoeteoides* by its more numerous dorsal fin rays (96-103 v. 83) and pectoral fin rays (25-28 v. 22-23), greater number of lateral line scales (140 v. 100), smaller eye (6.9 v. 5 in head), and in having an unsheathed maxillary.

Introduction

Among the host of unnamed species of viviparous, free-tailed ophidiiform fishes found in warm water reef areas around the world is a highly distinctive form that appears to inhabit only the reefs of Rottnest Island, Western Australia (32° 00'S, 115° 30'E). We name this species because it is appropriate to commence describing reef bythitids so that eventually they can be correctly classified.

Nine nominal genera of bythitid fishes with ossified pseudoclasps have been grouped together in the tribe Dinematichthyini by Cohen and Nielsen (1978), who have noted that the limits of several of the included genera are poorly drawn, not least of all because they represent numerous undescribed species. One of the genera, *Dinematichthys*, represents a particularly difficult problem because apparently there are no known specimens of the type species, *D. ilucoeteoides*. Although the name has been used widely in the literature, it seems likely that other species and in some instances other genera were represented. A detailed explanation of the allocation of the name *Dinematichthys* has been presented by Cohen and Nielsen (1978).

We have compared our material of the Rottnest Island species with Bleeker's (1855) description of *D. ilucoeteoides*, and we tentatively assign our specimens to *Dinematichthys* because they share with *D. ilucoeteoides* an anterior nostril

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placed high on the snout and because of an extensive scale covering on the head. Differences between the two are numerous and when more species are described and specimens of the true *D. iluocoeteoides* are re-collected and become available for study, it may be necessary to establish the Rottnest Island species in a separate genus.

Methods and Abbreviations

Methods are as described in Cohen and Neilsen (1978). The following abbreviations are used in the text: SL, standard length; AM, Australian Museum, Sydney; USNM, National Museum of Natural History, Washington, D.C.; WAM, Western Australian Museum, Perth.

Systematics

Dinematichthys dasyrhynchus sp. nov.

Figures 1-3; Tables 1-3

Dinematichthys iluocoeteoides — Mees 1960: 18.

Dinematichthys sp. — Hutchins 1979: 93.

Holotype

WAM P.26614-010, 88 mm SL, male, collected with rotenone from limestone reef at 3 m in Rocky Bay, Rottnest Island, Western Australia, J.B. Hutchins and N. Sinclair, 6 June 1980.

Paratypes

Twenty-three specimens from Rottnest Island, 49-121 mm SL (unless otherwise designated, all specimens at WAM): P.25725-017, 2 specimens, 102 mm SL, Green Island, by rotenone at 10 m, J.B. Hutchins and C.W. Bryce, 27 January 1977; P.25781-013, 99 mm SL, Mary Cove, by rotenone at 11 m, J.B. Hutchins, 5 May 1977; P.26616-009, 5 specimens, 57-116 mm SL, Point Clune, by rotenone at 8 m, J.B. Hutchins and N. Sinclair, 7 June 1980; P.26619-015, 2 specimens, 111-121 mm SL, Parker Point, by rotenone at 4 m, J.B. Hutchins and N. Sinclair, 13 June 1980; P.26620-010, 2 specimens, 84-119 mm SL, Geordie Bay, by rotenone at 5 m, J.B. Hutchins and N. Sinclair, 14 June 1980; P.27146-001, 2 specimens, 57-119 mm SL, collection data as for holotype; AM I.20245-016, 3 specimens, 65-95 mm SL, Horseshoe Reef, by rotenone at 12-15 m, B.C. Russell and J.B. Hutchins, 12 April 1978; USNM 222629, 2 specimens, 49-102 mm SL, Fish Hook Bay, by rotenone at 8 m, J.B. Hutchins, 8 March 1977; USNM 224475, 3 specimens, 71-79 mm SL, collection data as for P.26616-009; P.4683, 94 mm SL, Salmon Bay, University of Western Australia, 23 November, 1956.

Diagnosis

This species is placed in the genus *Dinematichthys* on the basis of the anterior nostril located high on the snout, the extensive scale covering on the head, and the expanded posterior end of the maxillary. It differs from the only other known member of the genus *D. iluocoeteoides* by its more numerous dorsal fin rays (96-103 v. 83) and pectoral fin rays (25-28 v. 22-23), greater number of lateral

line scales (140 v. 100), smaller eye (6.9 v. 5 in head), and in having an unsheathed maxillary (see Table 1).

Table 1 Differences between the two species of *Dinematichthys*. (Data for *D. iluocoeteoides* from original description.)

Character	<i>D. iluocoeteoides</i>	<i>D. dasyrynchus</i>
Head length/eye diameter	A little over 5	6.9-9.4
Lateral scale rows	About 100	About 140
Dorsal fin rays	83	96-103
Pectoral fin rays	22-23	25-28
Posterior end of maxillary	Sheathed	Unsheathed

Description

Measurements and counts of holotype and selected paratypes are presented in Table 2.

Body compressed and relatively elongate, deepest at or near origin of dorsal fin, depth at vent 4.8-6.1 in SL. Dorsal profile of head descends from nape at an angle of about 25°-30° to the rounded and slightly protruding snout, which bears rows of bilobed filaments (Figure 2A) as does anterior end of lower jaw. Opercle carries a sharp-pointed spine (sometimes hidden). Lower jaw slightly included, upper expanded and unsheathed posteriorly. Eye covered by a clear, round spectacle, which goes 1.6-1.9 in interorbital. Posterior nostril, located about its own diameter anterior to eye, has a raised rim of skin. Anterior nostril, located well above upper lip and a diameter ahead of posterior nostril, has a raised rim with a longer flap at rear margin.

Lateral canal has 2 pores; supratemporal 1 or 2; supraorbital 4, 1 in fold of skin above upper lip, 1 medial to anterior nostril, 1 above space between rear nostril and anterior margin of eye, and 1 postero-dorsal to eye; infraorbital 6, 7 or 8, including 1 below anterior nostril and 1 or 2 that are postorbital in position; preoperculo-mandibular with 9 or 10, including 3 or 4 in a double series (sometimes incomplete) along mandible (Figure 2B). Lateral line marked by a narrow, pale line that originates near angle of opercle and extends posteriorly along body about one head length, at which point it is interrupted and resumes in the midline.

Premaxillary, dentary, and palatine each with a broad band of granular teeth and a single row of larger more widely-spaced, needle-like teeth. Head of vomer carries a triangular patch of granular teeth and an inner row of needle-like teeth. No developed gill rakers; however, first arch bears a row of flat plates covered with tiny granular teeth. Tongue a slender, elongate, prowlike structure.

All but ventral fin rays are branched. Anterior rays of dorsal are distally free for about one-half their length. Caudal fin rather rounded. Pectoral fin less than one-half head length, and also rounded. Ventral fins, each with a single ray

Table 2 Measurements (mm) and fin ray counts of selected type specimens of *Dinematichthys dasyrhynchus*.

	Holotype WAM P.26614-010	USNM 222629	AM I.20245-016	Paratypes USNM 224475	USNM 224475	AM I.20245-016
Standard length	88	102	95	79	71	65
Head length	23	27	24	21	19	17
Snout length	5.5	6.1	5.7	5.5	4.2	3.8
Eye diameter	2.5	3.0	2.9	2.4	2.4	2.2
Interorbital width	4.9	5.5	4.8	4.3	4.0	3.9
Upper jaw length	12	13	13	11	9.2	8.8
Greatest maxillary width	4.3	4.8	4.2	3.8	3.8	3.0
Predorsal length	25	28	25	23	20	18
Preanal length	50	55	48	40	39	—
Body depth at vent	18	19	17	13	13	11
Pectoral length	11	12	10	10	8.3	—
Ventral length	20	19	20	16	17	15
Dorsal fin count	96	98	102	103	101	97
Anal fin count	62	66	69	68	68	68
Pectoral fin count	25	25	27	28	27	26
Caudal fin count	18	17	17	18	17	17
Gill raker count	5+18	5+18	5+16	5+16	5+11*	—
Vertebral number	14+33	14+34	14+33	14+34	14+33	13+33
Lateral line count	C. 140	C. 140	C. 140	C. 150	C. 140	—
Sex	Male	Female	Female	Female	Male	Male

* Count affected by apparent teratological condition.

Table 3 Frequency distributions for fin ray counts and vertebral counts of *Dinematichthys dasyrhynchus*.

Dorsal fin rays								Anal fin rays								Pectoral fin rays			
96	97	98	99	100	101	102	103	62	63	64	65	66	67	68	69	25	26	27	28
2	1	3	4	2	5	3	2	1	0	1	1	7	3	5	4	1	7	6	5
Vertebrae																			
13 + 33						14 + 33						14 + 34							
1						10						10							

inserted immediately adjacent to each other, insert more than an eye diameter behind symphysis of cleithra; the rays fall short of vent.

Body completely covered with small cycloid scales arranged in regular rows. Head scales lacking only on muzzle and interorbital region.

Male intromittent organ (Figure 3) has two pairs of pseudocaspers; anterior ones are obliquely to posteriorly directed pegs; posterior ones are short and rounded, and fit into a thickened, pad-like area at anterior of anal fin base. Genital flap does not completely cover caspers, and has a rounded posterior margin. Penis is variable in length. (*D. dasyrhynchus* resembles another ophidioid, the aphyonid *Barathronus*, in which penis length has been shown by Nielsen, 1969 to be related to degree of sexual maturity as well as absolute size of the fish.)

Ribs present on first six centra, subsequent abdominal vertebra have ribs at ends of parapophyses. Neural spine of centrum one shorter than those following; spines of middle abdominal centra depressed. Vertebrae 14 (one with 13) + 33-34.

Colour of holotype in alcohol: an overall pale brown, the scale centres on sides of body somewhat darker; cirri on snout and lower jaw dark brown. Colour when fresh (based on colour transparencies of recently collected specimens): an overall brownish-yellow; , throat and breast somewhat paler; cirri on snout and lower jaw brown.

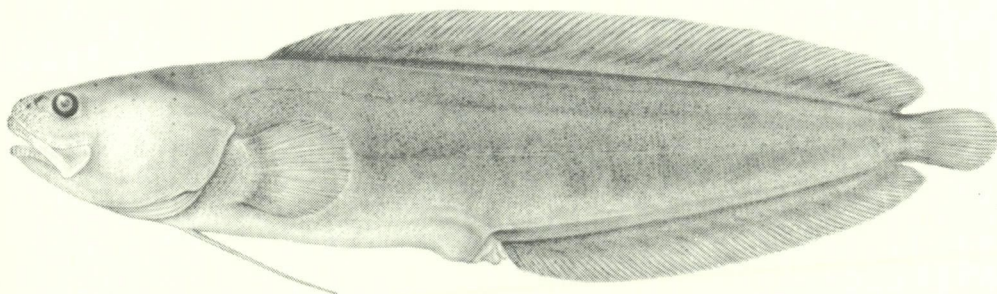


Figure 1 *Dinematichthys dasyrhynchus* sp. nov., holotype, WAM P.26614-010, male, 88 mm SL.

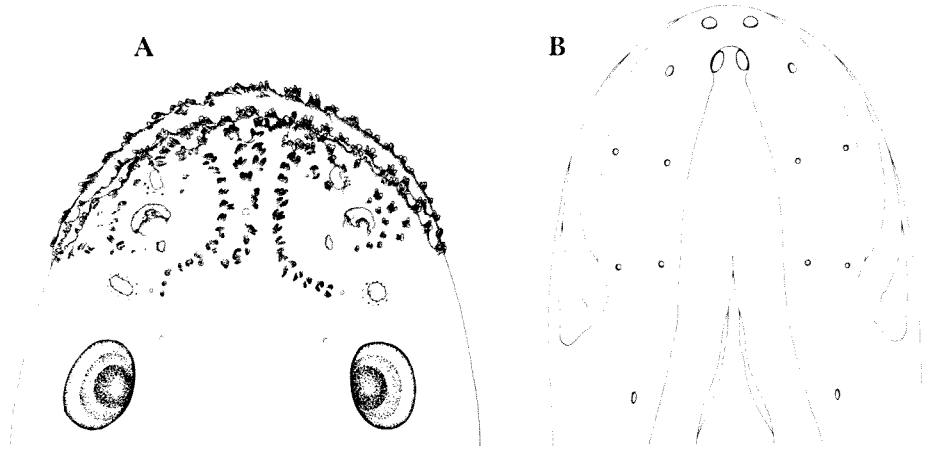


Figure 2 (A) Dorsal view of snout of *Dinematichthys dasyrhynchus*, WAM P.26619-015, 111 mm SL; (B) Ventral view of lower jaw of *Dinematichthys dasyrhynchus*, WAM P.26619-015, 111 SL. Not to same scale.

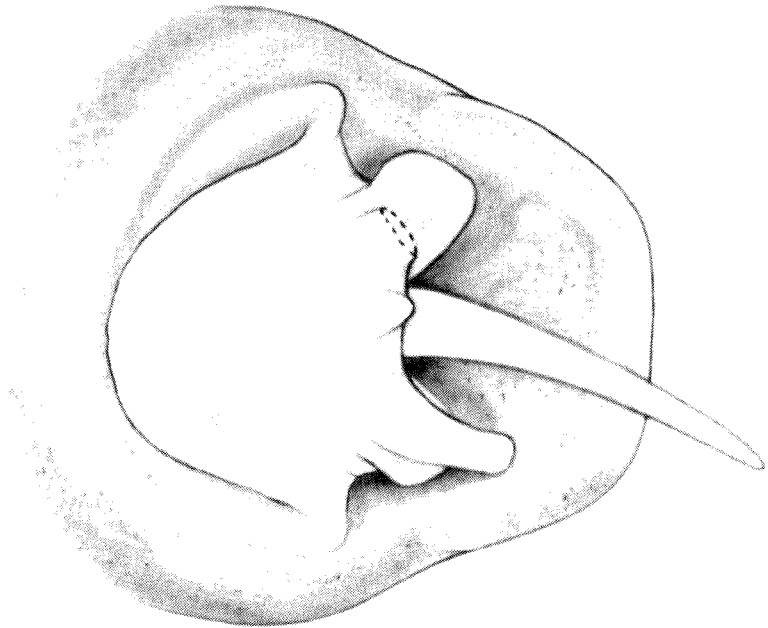


Figure 3 Ventral view of the male genital area of *Dinematichthys dasyrhynchus*, USNM 224475, 71 mm SL. Genital flap pushed forward, anterior left pseudoclasper not shown (anterior of specimen to the left).

Distribution

Dinematichthys dasyrhynchus appears to be confined to Rottnest Island. It has been collected only with rotenone from limestone reefs at depths between 3 and 15 m.

Remarks

Males are notably less abundant in our samples with a ratio of one male to three females. We do not know if this ratio exists in nature or whether males are less available to present collecting methods.

This species is named *dasyrhynchus* (Greek: meaning shaggy-snout) with reference to the prominent cirri on its snout.

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