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Author(s)	YABE, Mamoru; SOMA, Aya
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A Rare Fish, *Archaulus biseriatus*, Collected from the Central Kuril Archipelago (Scorpaeniformes : Cottidae)

Mamoru YABE* and Aya SOMA

Abstract

A rare cottid fish, *Archaulus biseriatus* Gilbert & Burke, was redescribed on the basis of a male specimen (121.0 mm SL, catalogued as HUMZ 165817) collected from off Simushir Island in the central Kuril Archipelago (47°06.4'N, 152°19.2'E, depth 123 m). This species was previously known only from the type locality, the Petrel Bank in the Bering Sea. The present specimen constitutes the second record for the species and the first discovery from the western North Pacific.

Key words : *Archaulus biseriatus*, Cottid fish, Second record, Central Kuril Archipelago

Introduction

In order to study the biodiversity of the Kuril Archipelago, a series of six summer expeditions, collectively known as the International Kuril Island Project, was initiated in 1994 by biologists at the University of Washington (U.S.A.), the Institute of Biology and Soil Sciences (Russian Academy of Sciences), and Hokkaido University (Japan). During the expedition, we collected a rare cottid, *Archaulus biseriatus*, off Simushir Island in the central Kuril Archipelago. This species was originally described as a monotypic genus, collected from the Petrel Bank of Bering Sea, by Gilbert and Burke (1912). After then, no additional specimens have been recorded. Here, this species is redescribed as the second record of this species and the first discovery from the western North Pacific.

Materials examined here were deposited in the Laboratory of Marine Biodiversity, Graduate School of Fisheries Sciences, Hokkaido University, at Hakodate (HUMZ), and in the National Museum of Natural History, Smithsonian Institution, at Washington, DC (USNM). Methods for taking counts and measurements follow Hubbs and Lagler (1958) and Yabe (1991), except for following: the length of first dorsal fin base (TR) was measured from the base of the first ray to the base of the terminal ray; the length of the first dorsal fin base (TM) was measured from the base of the first ray to the end of the terminal fin membrane of the first dorsal; lengths of second dorsal fin base and anal fin base were measured as for those of the first dorsal fin; the length of the caudal peduncle was measured from the end of the terminal fin membrane of the anal fin; the head depth and width were measured on a vertical of the base of uppermost preopercular spine. Standard length (SL) was used throughout.

Laboratory of Marine Biodiversity, Graduate School of Fisheries Sciences, Hokkaido University, Hakodate, Hokkaido 041-8611, Japan (*e-mail: myabe@fish.hokudai.ac.jp)

Archaulus biseriatus Gilbert & Burke, 1912

Archaulus biseriatus Gilbert & Burke, 1912 : 36 (original description ; type locality, Petrel Bank, Bering Sea, depth 43 to 54 fathoms) ; Eschmeyer et al., 1998 : 234 (validity).

Material

HUMZ 165817, a male, 121.0 mm SL, 47°06.4'N, 152°19.2'E, depth 123 m, (off Simushir Island, Kuril Archipelago), Aug. 7, 1999, dredge net, collected by M. Yabe.

Description

Proportional measurements and meristic counts are given in Table 1. Body compressed, body width beneath origin of first dorsal fin 1.4 in its depth. Caudal peduncle short, compressed, depth 1.6 in length. Head small, slightly compressed. Snout rounded, its length 2.7 in head length. Nasal spine sharp, with a slender cirrus on distal tip. Anterior nostril on a short tube, a small flap cirrus on posterior rim ; posterior nostril with low rim. Mouth small. Maxilla extending to vertical through anterior margin of orbit, two small cirri on posterior margin of maxilla. Fine conical teeth present in bands on jaws, prevomer and palatines. A pair of terminal mandibular pores. Eye small, orbital diameter 3.5 in head length. Upper margin of orbit extremely elevated. Interorbital space narrow, concave, its width 2.1 in orbital diameter. Occipital concave between blunt fronto-parietal ridges. A distinct multifurcated cirrus at posterodorsal margin of orbit. Two pairs of small bifurcated cirri on dorsal surface of occiput. Four preopercular spines ; uppermost spine longest, simple, its length 2.7 in orbital diameter ; second spine low, triangular ; third and fourth spines small, blunt, hidden under skin. One or two filamentous cirri on base of each preopercular spine. A short simple cirrus on cheek. A multifurcated cirrus on posterodorsal margin of opercle. Branchiostegal membranes broadly united, free from isthmus. Lateral line scale row distinct, extending in a gradually arched curve to tip of pectoral fin, continuing posteriorly as a straight line along body axis ; each lateral line scale with serrated margin dorsally ; some scales with a filamentous cirrus ; a terminal scale with a simple cirrus on proximal

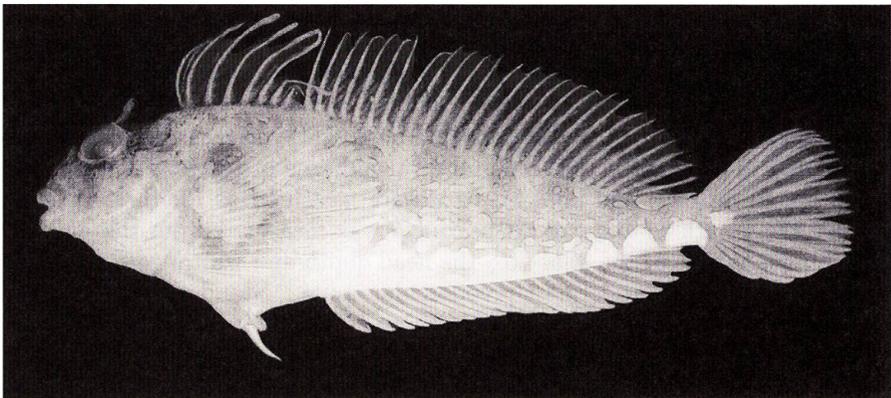


Fig. 1. *Archaulus biseriatus* Gilbert & Burke, HUMZ 165817, a male, 121.0 mm SL, collected from off Simushir Island, Kuril Archipelago.

YABE & SOMA : A rare cottid fish from Kuril Archipelago

Table 1. Proportional measurements and meristic counts of *Archaulus biseriatus*.

	Holotype	Paratypes		Present specimens
	USNM 74365	7 specimens Range	Mean	HUMZ 165817
Standard length (mm)	129.2	80.9-85.4		121.0
Proportional measurements (%SL)				
Body depth at 1st dorsal fin origin	25.4	25.7-28.6	26.4	27.3
Body depth at anal fin origin	24.3	23.6-25.5	24.6	26.1
Body width at 1st dorsal fin origin	17.0	17.1-19.3	18.3	19.0
Body width at anal fin origin	10.9	10.1-12.6	11.3	12.7
Head length	28.0	28.6-31.0	29.4	27.8
Head depth	19.8	19.6-21.7	20.4	20.2
Head width	17.0	16.6-18.0	17.6	17.6
Predorsal length	24.8	25.8-28.3	27.4	24.4
Prepelvic length	29.9	27.4-30.8	29.0	28.4
Preanal length	46.1	46.0-48.9	47.2	44.1
Length of first dorsal fin base (TR)	17.6	16.6-20.6	19.0	16.1
Length of first dorsal fin base (TM)	18.5	17.7-21.8	20.2	18.2
Length of second dorsal fin base (TR)	50.9	48.5-50.9	49.8	54.2
Length of second dorsal fin base (TM)	55.6	50.2-55.0	52.6	56.3
Length of anal fin base (TR)	45.6	43.4-46.2	44.7	45.8
Length of anal fin base (TM)	46.9	44.6-46.9	45.6	46.9
Length of pectoral fin base	13.0	11.6-15.0	12.8	12.5
Length of caudal peduncle	11.8	11.2-13.3	12.3	11.4
Depth of caudal peduncle	6.6	5.6-6.9	6.1	7.0
Snout length	9.4	7.7-9.5	8.6	10.2
Length of orbit	7.8	8.4-9.4	8.9	7.9
Interorbital width	4.3	2.5-3.4	2.9	3.7
Length of upper jaw	9.1	9.0-9.9	9.5	9.5
Length of mandible	8.8	8.8-9.5	9.1	9.0
Postorbital length of head	13.4	12.8-13.8	13.5	12.5
Pectoral fin length	31.0	29.9-34.5	32.2	28.6
Pelvic fin length	14.7	12.5-18.7	15.1	14.8
Meristic counts				
First dorsal fin spines	9	9-10	9*	8
Second dorsal fin rays	28	28-29	28*	29
Pectoral fin rays	16	17	17*	17
Pelvic fin rays	I,3	I,3	I,3*	I,3
Anal fin rays	23	22-23	22*	24
Lateral line scales	46	45-47	47*	48
Abdominal vertebrae	11	—	—	11
Caudal vertebrae	33	—	—	35

* Mode.

base of caudal fin. Two rows of serrated scales along the base of dorsal fins, widening anteriorly into a band, uniting with antimere on nape. Numerous serrated scales on pectoral axilla.

Spines of first dorsal fin extremely elevated, fin membrane between each spine deeply incised. A multifurcated cirrus on distal tip of each dorsal spine. First and second dorsal fins connected with a low membrane. Erect second dorsal fin with a gently rounded distal margin. Terminal ray of second dorsal fin broadly connected with caudal peduncle by a terminal fin membrane. Anal fin originated vertical below base of third ray of second dorsal fin. Proximal part of terminal anal fin ray connected with caudal peduncle by a narrow fin membrane. Pectoral fin developed, lower eight rays thickened, their fin membranes deeply incised. Pelvic fin on a narrow base; fin rays more or less arranged one above another vertically along body axis; middle ray longest. Caudal fin rounded posteriorly; 12 rays supported by hypural plate, uppermost and lowermost rays unbranched, middle 10 rays branched; 7 upper and 5 lower procurrent rays. Soft rays of all fins except, for middle rays of caudal fin, unbranched. Anus closely behind base of pelvic fin. Urogenital papilla long, tapered, its length 9.6% SL.

Color in alcohol: Ground color pale brown dorsolaterally, paler ventrally. Seven irregular dark saddles on bases of dorsal fins. Small irregular pale spots scattered on lateral surface of body. Snout, suborbital and occipital regions, and anterior margins of jaws dark. Cirri on head dark. Dorsal fins with several irregular dark bands. Anal fin with faint dark bands. Several irregular dark bands on pectoral fin. Pelvic fin pale. Caudal fin with four irregular bands, a pale spot on base of fin.

Distribution

Petrel Bank, Bering Sea, depth 79–98 m (Gilbert and Burke, 1912). The present specimens were collected from western North Pacific, off Simushir Island, Kuril Archipelago, depth 123 m.

Remarks

Archaulus biseriatus is characterized in having a deep compressed body; lateral line scales with serrated margins; two scale rows along the base of dorsal fins, widening anteriorly into a band and uniting with antimere on the nape; no scales on the head; branchiostegal membranes broadly united, free from isthmus; teeth on prevomer and palatines; one spine and three soft rays in the pelvic fin; an anus closely behind the base of the pelvic fin (Gilbert and Burke, 1912). The present specimen collected off Simushir Island agreed well with the type specimens and the original description of *Archaulus biseriatus*. This species was originally described as a monotypic genus, based on 10 specimens collected from the Petrel Bank of Bering Sea, by Gilbert and Burke (1912), and after then no additional specimens have been recorded. Thus, the present specimen is the second record of *Archaulus biseriatus* and the first discovery from the western North Pacific for this species.

Comparative material

Archaulus biseriatus, USNM 74365 (holotype, a male, 129.2 mm SL), USNM 70879 (paratype, a female, 84.0 mm SL), USNM 74503 (paratypes, three males, 80.9–

83.4 mm SL), USNM 74504 (paratypes, three females, 81.5-85.4 mm SL).

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