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New record of the finless eel *Apterichtus hatookai* from Taiwan (Anguilliformes: Ophichthidae: Ophichthinae)

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Abstract

Two individuals of a finless eel were collected, representing the first record of the genus *Apterichtus* from Taiwan. With minor variations, these specimens fit the original description of *Apterichtus hatookai* well, and is thus reported herein as the new record and its distribution range is now extended to southwestern Taiwan.

Keywords: Pieces, taxonomy, *Apterichtus hatookai*, new record, Taiwan

Introduction

Two specimens of the finless snake-eel genus *Apterichtus* were obtained at fish landing ground in southwestern Taiwan and were identified as the orange blotched eel *A. hatookai* Hibino et al. (2014) described from Japan, and later reported from Fiji and China (McCosker and Hibino, 2015). The genus is characterized by the absence of all fins, no cirri on the upper lip and the posterior nostril opening outside the mouth.

Members of *Apterichtus* are found to burrow into sandy bottoms with only the head or anterior body exposed. McCosker and Hibino (2015) reviewed the genus and recognized 18 species, including descriptions of 5 new species. Hibino et al. (2016) described one more new species collected from Marquesas Islands.

Despite the presence of 4 nominal species in Japan, no *Apterichtus* species has been previously documented from Taiwan. Two specimens previously identified as *Apterichtus moseri* were reidentified as *Lamnostoma mindora* by Dr. Y. Hibino (pers. comm.). This new record elevates the number of ophichthid

eels in Taiwan to 23 genera and 61 species (see Ho et al., 2015).

Methods and materials

Total length (TL) is used throughout. Methods for taking measurements and counts follow McCosker and Hibino (2015). Specimens were deposited at the Pisces Collection in National Museum of Marine Biology & Aquarium, Pingtung, Taiwan (NMMB-P).

Results

***Apterichtus hatookai* Hibino, Shibata and Kimura, 2014**

Figures 1A-C; Table 1

Apterichtus hatookai Hibino, Shibata and Kimura, 2014:318, fig. 1-3 (Type locality: Ehime Prefecture, Shikoku Island, Japan, 4-5 m). McCosker and Hibino, 2015:62.

Material examined. NMMB-P23321, 234 mm TL, Ke-tzu-liao fishing port, Kaohsiung, SW Taiwan, 19 Mar. 2016. NMMB-P23322, 349 mm TL, Ke-tzu-liao fishing port, Kaohsiung, SW Taiwan, 31 Mar. 2016.

Description of Taiwanese specimens.

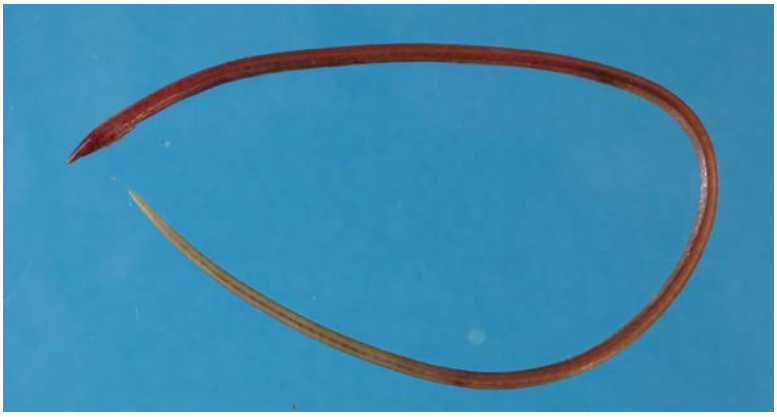
Morphometric measurements in %TL: head length 5.5-5.7; body depth at gill opening 1.3-1.5; body depth at anus 1.1; trunk 32.6-32.7; preanal length 38.1-38.5; tail length 61.5-61.9. In % head length: eye diameter 5.7-6.0; interorbital space 4.8-5.6; snout length 13.7-15.8; upper-jaw length 28.0-32.1; gill-opening length 12.0-13.0; interbranchial width 3.1-3.7.

Body extremely elongate and cylindrical; tip of tail slightly compressed. Head small; anus situated at anterior 2/5 of total length. Snout acute and long, more than twice eye diameter and about half of upper jaw length; anterior tip of lower jaw below center of eye. Anterior nostril a low tube, situated as either side of anterior tip of snout; posterior nostril located on anteroventral margin of eye, opening toward ventral side. Eyes small, covered by a transparent skin; mouth moderately large, upper-jaw length about twice snout length; edge of upper lip smooth with a distinct fold along the upper jaw. Teeth conical and pointed, jaw teeth uniserial, a single tooth on vomer, intermaxillary teeth arranged in arc-shaped row along anterior roof of mouth, invisible when mouth closed. Gill opening large, its length more than twice eye diameter, anterior margin of gill openings close set but not connected.

Cephalic sensory pores: 7 pores on supraorbital, 1 on ventral tip of snout + 4 on dorsal surface of snout +2 above eye; 10 pores on infraorbital, 2 between nostrils on ventral snout + 4 behind posterior nostril along upper jaw + 4 behind eye; 5 on mandible; 4 on preopercle; a single pores on interorbital; 6 (349 mm specimen) or 7 (234 mm

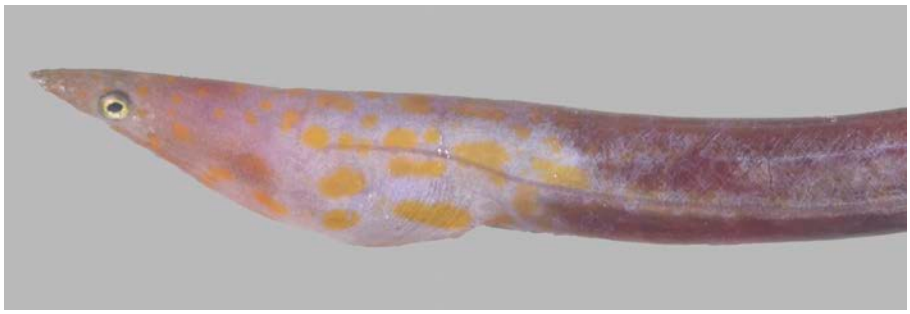
specimen) on supratemporal, one of these on mid-temporal. Lateral-line pores small but obvious, almost complete except near tip of tail. All fins absent; tip of tail hard. Preanal vertebrae 52 or 54, total vertebrae 138 or 139.

Coloration. When fresh, reddish or reddish brown with bright white on branchial pouch and anterior portion of body; large irregular orange or yellow spots or blotches on head and body, their size larger anteriorly and gradually



A.

B.



C.

Fig. 1. *Apterichtus hatookai* Hibino, Shibata & Kimura, 2014. A. NMMB-P23321, 234 mm TL. B-C. NMMB-P23322, 349 mm TL. B. dorsal view of head. C. lateral view of head.

Table 1. Morphometric and meristic data of *Apterichtus hatookai* from Taiwan, compared with that of the type series.

	NMMB-P23321	NMMB-P23322	Type series (Hibino et al., 2014)
Total length	234	349	265-519
% Total length	%TL	%TL	
Head length	5.7	5.5	5.1-6.1
Trunk length	32.7	32.6	31.8-34.2
Preanal length	38.5	38.1	38.0-39.6
Tail length	61.5	61.9	60.4-62.0
Body depth at gill opening	1.5	1.3	0.9-1.5
Body width at gill opening	1.1	1.1	0.9-1.4
Body depth at anus	1.1	1.1	0.9-1.3
Body width at anus	1.1	1.1	1.0-1.3
% Head length			
Eye diameter	6.0	5.7	5.7-7.0
Interorbital width	4.8	5.6	5.1-7.0
Snout length	15.8	13.7	10.7-14.9
Upper-jaw length	45.5	44.0	44.2-49.2
Gill-opening length	12.0	13.0	12.2-13.9
Interbranchial width	3.7	3.1	3.2-3.9
Sensory pores			
Supraorbital	7;7	7;7	7
Infraorbital	10;10	10;10	10
Interorbital	1	1	1
Supratemporal	7	6	7
Mandibular	5;5	5;5	5
Preopercular	4;4	4;4	4
Before gill opening	6;6	7;7	6-7
Preanal	56;56	57;57	54-58

smaller posteriorly, indistinct on tail; abdomen bluish . When preserved, yellowish brown with tiny pigments and pale blotches on head and trunk.

Remarks. These specimens are consistent with the meristic and morphometric characters described in Hibino et al. (2014). They have 52 and 54 preanal vertebrae, 138 and 139 total vertebrae, 6 and 7 pores before gill opening, and 56 and 57 preanal pores, which fall within the range of the type series. However, some minor variations are observed: the 234 mm specimen has a slightly smaller interorbital space (4.8% HL) and gill opening (12.0% HL); the 349 mm specimen has a slightly shorter upper jaw (44.0% HL) and gill-opening interspace (3.1% HL). Their coloration is also slightly different; both specimens have larger and scattered orange or yellow patches on the head and trunk compared to the previous records (Hibino et al., 2014:fig. 1, McCosker and Hibino, 2015:fig. 1), which are distinctly small. The above-mentioned differences may be attribute to geographic variation.

Moreover, the 349 mm specimen has only 6 supratemporal pores because one pore on the left side is likely damaged and healed.

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