The Thailand Natural History Museum Journal 11(2): 99-103, December 2017
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Short communication

Record of an Armored Searobin *Heminodus philippinus* Smith, 1917 (Actinopterygii, Teleostei, Peristediidae) from French Polynesia

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ABSTRACT: Five specimens of armored searobin *Heminodus philippinus* Smith, 1917, collected from off Marquesas Islands, French Polynesia, were found in the collection of Bernice Pauahi Bishop Musuem, Honolulu, USA and Muséum national d'Histoire naturelle, Paris, France. The species had been known from the eastern Indian Ocean (off Sumatra and Java, Indonesia) and the western North Pacific (off Mindanao, Philippines, and off Kochi, Japan). This study represents the first record of the species from the South Pacific and the easternmost record of the species in the Indo-Pacific. Ontogenetic differences in the shape of the rostral projections are clearly observed between the smallest and largest specimens, transitioning from a spine-like triangular projection to a projection that approaches an equilateral triangle in outline). Differences exsist in counts of anal fin rays (20 vs 18–19) and dorsal bony plates (31–32 vs 28–30) when comparing Polynesian and Indo-West Pacific specimens, respectively.

KEY WORDS: Marquesas Islands, South Pacific, first record, Japan, Philippines, Indonesia.

INTRODUCTION

The armored searobin genus *Heminodus* (family Peristediidae) was established by Smith (1917) based on *Heminodus philippinus* Smith, 1917 as the type species, captured off Mindanao Island, Philippines. Kamohara (1952) subsequently described a second species *H. japonicus* from Kochi, southern Japan, which Kawai and Nakaya (2007) synonymized with *H. philippinus* based on a comparison of the types and additional Indonesian specimens. Since then, no other specimens of the species have been reported. The monotypic genus is characterized by the following combination of characters: upper jaw teeth present, lateral margin of head smooth, posterior parts of lower lateral rows of bony plates separated from each other, and one or two very short barbels present (Kawai, 2008).

Three specimens identified as *H. philippinus*, captured off the Marquesas Islands, French Polynesia, were found in the collection of Bernice Pauahi Bishop Musuem, Honolulu, USA (BPBM) and Muséum national d'Histoire naturelle, Paris, France (MNHN). In this study, we describe the French Polynesian specimens of *H. philippinus*.

MATERIALS AND METHODS

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Counts and proportional measurements follow Kawai *et al.* (2004) with measurements recorded to the nearest 0.1 mm with a digital caliper. Standard length is abbreviated as SL. Terminology and counts of bony plates and barbels follow Yatou and Okamura (1985), while the methodology for cranial spines is that of Miller (1967).

Heminodus philippinus Smith, 1917 (Fig. 1)

Heminodus philippinus Smith, 1917: 146; Richards, 1999: 2367; Kawai and Nakaya, 2007: 168, fig. 1; Kawai, 2008: 22, fig. 21B; Yamada and Yagishita, 2013: 728.
Heminodus japonicus Kamohara, 1952: 3, fig. 1; Ochiai and Yatou, 1988: 320, pl. 364D; Shinohara *et al.*, 2001: 317; Yamada, 2002: 611.

Materials. BPBM 31679, 286 mm SL, BPBM 31680, 269 mm SL, Marquesas Islands, depth 400 m, hook and line, June 1987; MNHN 2000-5513, 89.5 mm SL, Hiva Oa Island (9°40'58.8"S, 139°3'0"W), Marquesas Islands, depth 280–370 m, beam trawl, RV Alis, MUSORSTOM 9 cruise, station CP 1238, 31 August 1997; MNHN2003-1022, 2 specimens, 148–180 mm SL, Nuku Hiva Island (8°55'58.8"S, 140°15'0"W), Marquesas Islands, depth 478–502 m, beam trawl, RV Alis, MUSORSTOM 9 cruise, CP 1302 station, 9 September 1997.

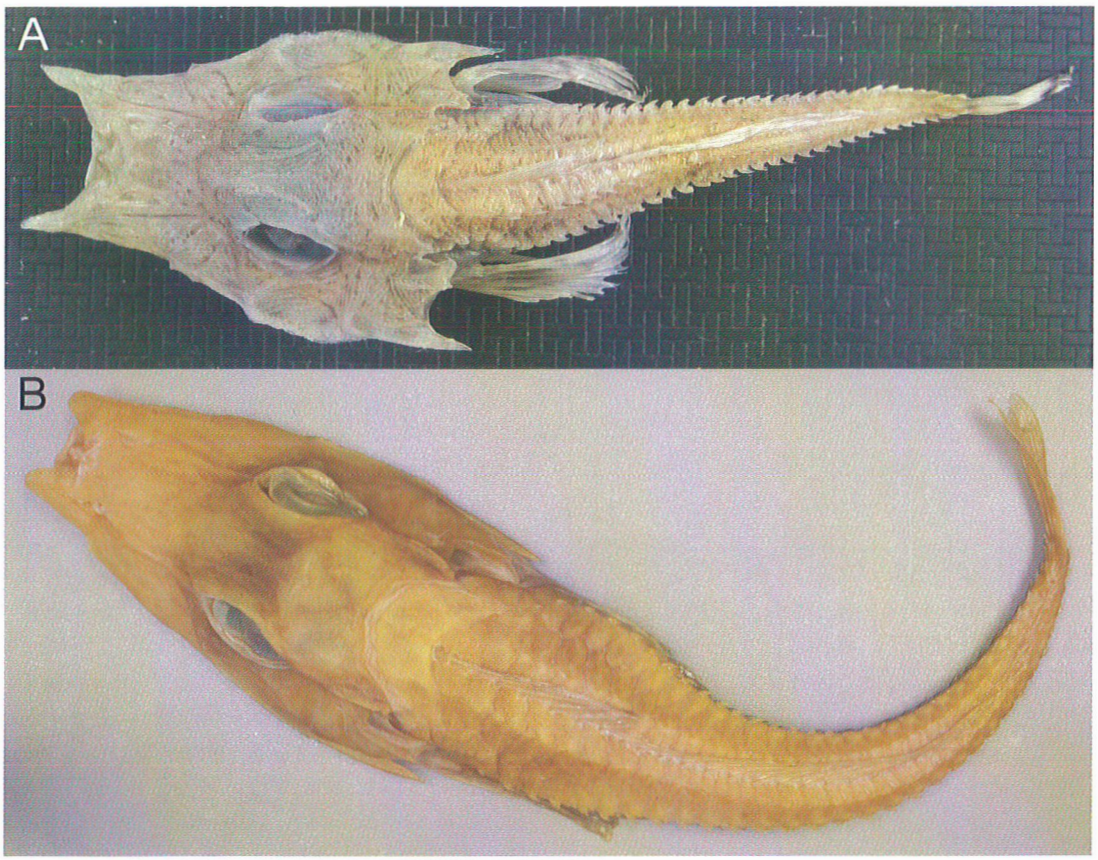


Figure 1. Dorsal views of *Heminodus philippinus* Smith, 1917. A, MNHN 2000-5513, 89.5 mm SL; B, BPBM 31679, 286 mm SL.

Table 1 Meristics and measurements of *Heminodus philippinus*.

	Present specimens					Kawai and Nakaya (2007)
	MNHN 2000-5513	MNHN 2003-1022	MNHN 2003-1022	BPBM 31680	BPBM 31679	n=27
Standard length (mm)	89.5	148	180	269	286	70.2–199.4
Counts						
Dorsal fin rays	VIII, 21	VIII, 21	VIII, 21	VIII, 21	VIII, 21	VI–VIII, 18–21
Anal fin rays	20	20	20	20	20	18–19
Principal caudal fin rays	11	11	11	12	12	11–12 (n=26)
Pectoral fin rays (including two free rays)	18	18	18	18	18	17–18
Pelvic fin rays	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5
Bony plates in dorsal	31	32	31	31	31	28–30
Bony plates in upper lateral	36	36	37	36	36	33–36
Bony plates in lower lateral	23	25	25	24	24	21–24
Bony plates in ventral	25	25	25	24	25	22–25
Bony plates before anus	4	4	4	4	4	3–5
Groups of barbels (lip + chin)	2+0	2+0	2+0	2+0	2+0	1–2+0
Branches on filamentous barbel	2	2	2	2	2	2
Gill rakers	4+1+14 = 19	5+1+16 = 22	5+1+14 = 20	3+1+14 = 18	5+1+14 = 20	4–7+1+13–18 =19–26
Measurements (% SL)						
Body depth	22.2	18.0	16.8	14.7	14.5	14.6–22.5
Body width	12.7	14.0	12.8	13.5	14.7	11.8–19.9
Head length	42.8	41.3	39.3	39.3	41.1	39.6–45.3
Head depth	22.6	18.8	18.4	14.4	13.7	14.4–23.9
Snout to dorsal fin	41.3	39.1	37.6	37.9	38.5	38.5–44.1
Snout to anal fin	58.4	57.2	57.7	59.3	59.8	56.0–62.9
Snout length	19.6	18.2	17.9	17.9	18.7	18.1–20.9
Rostral projection length	9.5	6.8	5.3	3.2	3.2	2.9–8.5 (*n*=19)
Filamentous barbel length	9.1	6.8	8.5	7.9	8.6	4.6–8.9
Upper jaw length	21.8	22.1	20.4	21.4	22.2	19.5–24.8
Lower jaw length	23.2	24.0	23.7	23.4	23.8	23.6–27.3
Orbital diameter	11.8	11.1	10.0	9.6	9.7	9.4–12.1
Interorbital width	10.3	8.4	7.9	7.6	8.7	7.5–11.8 (*n*=26)
Pectoral fin length	23.6	23.1	22.6	22.7	22.4	16.0–26.6
Upper detached pectoral fin ray length	19.3	17.7	16.3	13.9	15.1	15.8–21.9
Lower detached pectoral fin ray length	17.3	16.1	14.4	12.2	13.1	13.7–20.3
Pelvic fin length	19.6	18.2	16.0	15.0	15.5	14.5–20.2
Caudal peduncle length	8.8	8.4	8.5	8.2	7.9	7.0–10.5
Caudal peduncle depth	3.2	2.8	2.6	2.4	2.3	2.2–4.0

Description. Counts and proportional measurements (% SL) are listed in Table 1.

Body fusiform, covered with bony plates. Head large and depressed. Snout broad. Rostral projection on each side forming equal lateral triangle in BPBM specimens (spine-like triangle in MNHN specimens). Eye large. Interorbital concave. Mouth large and inferior with villiform teeth on upper jaw and without teeth on lower jaw. Posterior extent of upper jaw below or slightly beyondanterior margin of orbit. Posterior tip of lower jaw below middle of orbit.Vomer and palatine toothless. Two barbels on either side of lip: anterior barbel without branches (rudimentary in MNHN 2003-1022, 180 mm SL); posterior barbel filamentous subdivided into two barbels. Barbels on chin absent. Gill rakers very short and serrated. Gill membrane narrowly united to isthmus. No spines on base of rostral projection, nasal, lateral ethmoid, metethmoid, frontal-2 and 4th infraorbital. Single large preopercular spine present. Opercle and parietal spines present. Frontal-1 and posttemporal spine very weak. Supraocular bone exposed between of parietals of both sides on dorsal surface.

Bony plates on body mainly in 4 rows, each plate with single posteriorly directed spines. Plates in upper lateral row all lacking anterior directed spine. Anterior 5 plates in upper lateral row smaller. Four plates in front of or lateral to anus.

Dorsal fin originating anteriorly on second bony plate in dorsal row, ending at caudal peduncle. Anal fin originating posterior to anus, ending on caudal peduncle. Two detached pectoral fin rays thick, shorter than length of pectoral fin except for two detached rays. Length of pelvic fin almost equal to length of upper detached pectoral fin ray. Caudal fin nearly truncate or weakly marginate.

Color in alcohol. Head and body light brown. Irregular dusky spots on head and dorsal part of body (faded in BPBM specimens). Dorsal, anal, pelvic and caudal fins mostly light brown (blackish bar at posterior part of caudal fin in MNHN 2000-5513). Pectoral fin grayish to light brown.

Distribution. Kochi, Japan (Kamohara, 1952), Mindanao, Philippines (Smith, 1917), Sumatra and Java, Indonesia (Kawai and Nakaya, 2007), and Marquesas, French Polynesia (this study).

Remarks. BPBM 31679 (286 mm SL) amd 31680 (269 mm SL) are much bigger than the specimens (74.8–199 mm SL) of *Heminodus philippinus* described by Kawai and Nakaya (2007). An ontogenetic difference in the shape of the rostral projection is clearly evident when comparing specimens with small and large body size, transforming from spine-like triangular projections in small specimens, to a more equilateral triangular form in large examples (Fig. 1). Differences in counts of anal fin rays and dorsal bony plates were observed between Polynesian and Indo-West Pacific specimens: anal fin rays 20 vs 18–19, respectively; dorsal bony plates 31–32 in the former vs 28–30 in the latter.

Heminodus philippinus was previously known from the Indian Ocean (off Sumatra and Java, Indonesia) and the western North Pacific (off Mindanao, Philippines, and off Kochi, Japan). Therefore, these specimens (off Marquesas, French Polynesia) are the first record of the species from the South Pacific and the easternmost record of the species in the Indo-Pacific. In addition, thisstudy represents the first record of a species of Peristediidae in French Polynesia.

ACKNOWLEDGEMENTS

We sincerely thank to Arnold Y. Suzumoto and Lori O'Hara (BPBM) and Patrice Pruvost, Zora Gabsi and Lina M. Duque Vélez (MNHN) for providing access to specimens. We are also grateful to two referees, Dr. Salinee Khachonpisitsak

(Burapha University, Thailand) and Dr. Martin F. Gomon (Museum Victoria, Australia), for their valuable comments.

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Received: 1 November 2017
Accepted: 29 November 2017