

First and northernmost record of *Pempheris oualensis* (Pempheridae), from Ryukyu Archipelago, Japan

Keita Koeda¹, Hideyuki Imai², Tetsuo Yoshino², Katsunori Tachihara²

¹Graduate School of Engineering and Science, University of the Ryukyus,

1 Senbaru, Nishihara, Okinawa, 903-0213 Japan

²Faculty of Science, University of the Ryukyus, 1 Senbaru, Nishihara, Okinawa, 903-0213 Japan

Abstract. Five specimens of *Pempheris oualensis* Cuvier, 1831 collected from the Yaeyama Islands were purchased at Wholesale Fish Market in Naha, Okinawa Island, Japan. This species and *P. schwenkii* Bleeker, 1855 are unique among the genus in the following characters: surface scales cycloid or weakly ctenoid, deciduous, not divided into basal and distal halves; and unscaled part of head region limited at anterior part of eye. *P. oualensis* is further distinguished from the latter species by having a larger and blackish body, a tooth band extending outside of the lips, and more pored lateral line scales (62–66 vs 46–52) and scale rows above the lateral line (6 1/2 vs 3 1/2). This is the first record of *P. oualensis* from Japan, and the northern distribution limit of the species. We describe the morphological characters of the specimens and propose a new Japanese name, “Yume-hatampo.”

Keywords: Pempheridae, *Pempheris oualensis*, Yume-hatampo, first record, northernmost distribution, Ryukyu-Archipelago, Japan.

Introduction

Fishes of the genus *Pempheris* are commonly found in rocky and coral areas of the Pacific Ocean, Indian Ocean, Red Sea, Mediterranean Sea, Caribbean Sea, and southwestern Atlantic Ocean. These species school in caves or crevasses during the day (Annese and Kingsford, 2005) and swim out to the open water column at night, where they prey on zooplankton. This genus is characterized by having strongly compressed bodies, one short dorsal fin, large eyes, and the lateral line extending well onto the caudal fin (Cuvier and Valenciennes, 1831; Fowler, 1931; Weber and de Beaufort, 1936; Tominaga, 1963). In the genus *Pempheris*, 39 species (including nominal ones) are reported, with three species (*P. japonicus* Steindachner and Döderlein, 1883; *P. schwenkii* Bleeker, 1855; *P. nyctereutes* Jordan

and Evermann, 1903) reported from Japan.

Five specimens of *Pempheris* species that was unrecorded in Japan were purchased at Wholesale Fish Market in Naha, Okinawa Island, after being caught in the Yaeyama Islands, in 9 June 2009. These specimens were identified by direct observation of the holotype specimen and previous descriptions of *Pempheris oualensis*. This paper describes the morphological characters of the *P. oualensis* specimens and proposes a new Japanese name for the species.

Materials and Methods

Specimen sizes are reported as standard length (SL; mm), with all additional measurements being percentages of SL or of head length (HL). The measurement method follows Hubbs and Lagler (1949), except head depth, predorsal length, prepelvic length, preanal length, peduncle length, and peduncle depth, which follow

*Corresponding author: hatampo@gmail.com

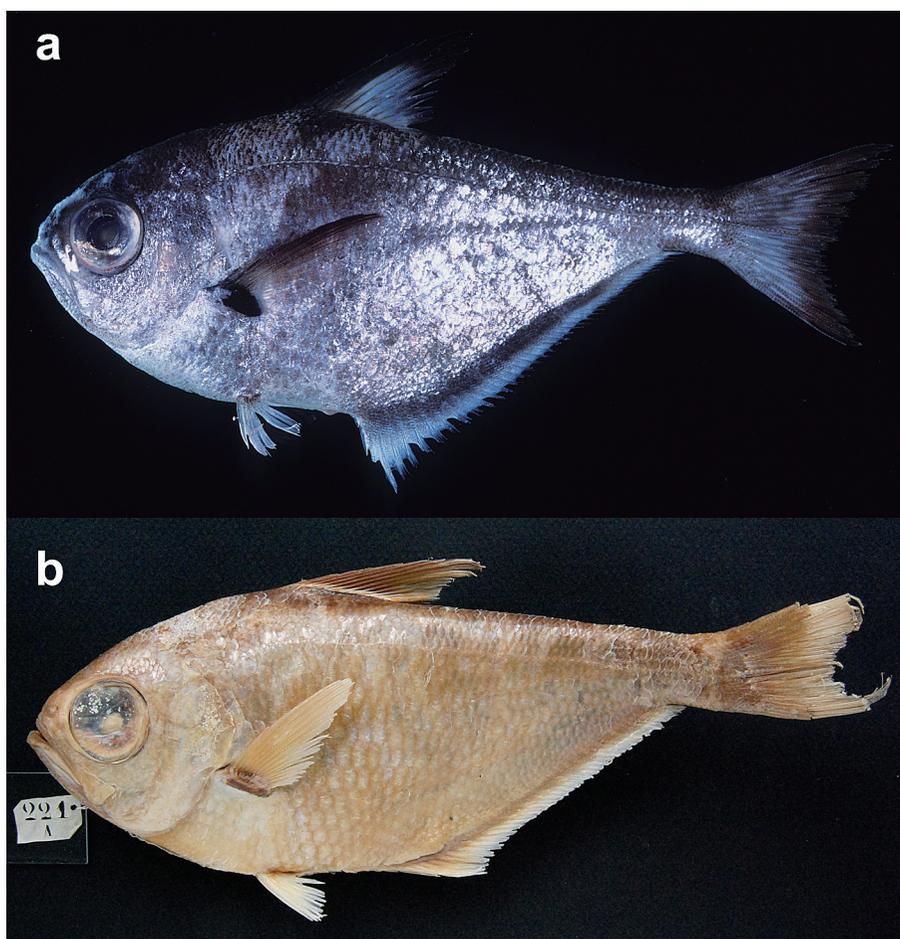


Fig. 1. a, *Pempheris oualensis* (URM-P 45408, 185.5 mm SL) purchased from Wholesale Fish Market in Naha, Okinawa Island, Japan; b, Holotype of *Pempheris oualensis* (MNHN-A211, 177.4 mm SL).

Mooi and Jubb (1996).

The number of pored lateral line scales includes both body sides. Soft X-ray images were used to count dorsal-, anal-, procurrent caudal-, caudal-fin rays, and vertebrae, with the counting method following Hubbs and Lagler (1949), except caudal fin rays, gill rakers, procurrent caudal fin rays, and predorsal scales, which followed Mooi and Jubb (1996).

Materials were deposited at the Muséum National d'Histoire Naturelle, Paris (MNHN), Smithsonian Natural Museum of Natural History (USNM), and the Department of Marine Sciences, University of the Ryukyus (URM).

***Pempheris oualensis* Cuvier, 1831**

(Fig. 1)

(New Japanese name: Yume-hatampo)

Pempheris oualensis: Cuvier in Cuvier and Valenciennes, 1831: 299, Kosrae (Oualan) Island; Bleeker, 1875–78: 6, pl. 383, fig. 5, Indonesia; Fowler, 1931: 59, Philippines, Indonesia, Australia, Samoa.

Materials examined. URM-P 45408–45412, five specimens, 182.9–187.2 mm SL, 9 June 2009, Yaeyama Islands, southwestern Ryukyu Archipelago, purchased at Wholesale Fish Market in Naha, Okinawa Island, Japan.

Table 1. Measurements of *Pempheris oualensis*

	Present specimens <i>n</i> = 5	Holotype MNHN-A221
Standard length (mm)	185 (183–187)	177
Measurements		
As % of the standard length		
Head length	28.8 (28.1–29.5)	28.8
Head depth	33.2 (31.1–34.8)	31.6
Predorsal fin length	40.5 (39.7–42.1)	40.1
Prepelvic fin length	37.1 (35.9–38.3)	37.9
Preanal fin length	51.8 (51.1–52.5)	52.0
Length of pelvic fin origin to anal fin origin	15.5 (14.2–16.8)	18.6
Body depth	43.3 (42.1–44.8)	42.9
Length of dorsal fin base	16.6 (15.6–17.1)	17.5
Length of anal fin base	50.9 (48.6–52.7)	50.8
Caudal peduncle length	9.4 (8.1–9.4)	10.2
Caudal peduncle depth	9.4 (9.2–9.8)	10.2
Length of dorsal fin origin to pelvic-fin origin	42.4 (40.8–43.7)	42.4
Length of dorsal fin origin to anal fin insertion	59.4 (58.9–59.9)	59.9
As % of the head length		
Snout length	23.7 (22.6–24.8)	23.5
Eye diameter	38.4 (37.0–40.4)	39.2
Interorbital width	30.9 (29.6–32.7)	29.4
Upper jaw length	52.3 (50.0–53.8)	54.9
Longest dorsal fin length	84.3 (79.5–88.5)	82.4
Longest anal fin length	50.7 (48.1–55.8)	45.1
Longest pectoral fin length	81.6 (77.8–85.1)	damaged
Longest pelvic fin length	45.5 (44.4–48.1)	45.1

Data include mean, with ranges in parentheses

Diagnosis. *Pempheris oualensis* is unique among the genus *Pempheris* in the following characters: 62–66 pored lateral line scales; 6 1/2 scale rows above lateral line; 39–42 predorsal scales; 18–19 pectoral fin rays; front margin of pectoral fin dark brown; clear blackish spot almost the same size as pupil, on pectoral fin base; prepelvic ventral outline keeled; villiform tooth band extending outside lips. This species belongs to Group C of Tominaga (1963), with surface scales cycloid or weakly ctenoid, deciduous, not divided into basal and distal halves; unscaled part of head region limited at anterior part of eye.

Description. Proportional measurements as percentages and counts of the examined specimens and holotype are shown in Tables 1 and 2, respectively. This species has a strongly compressed body, with the greatest body depth (2.3 in SL). Dorsal outline convex to

dorsal fin base, extending linearly to caudal peduncle; ventral outline convex to anal fin base, extending linearly to caudal peduncle.

Snout length very short (4.2 in HL); large eye (2.6 in HL); interorbital convex; mouth large and very oblique; maxillary reach to center of pupil; lower jaw projecting beyond upper jaw; villiform teeth on vomer, palatines, and jaws; villiform tooth band extending outside lips.

Scales deciduous, thin, semicircular in shape, far wider than long, not divided into basal and distal halves, with dense, tiny spots; scales of ventral area larger than those of dorsal area; almost all parts of the head scaled except anterior to the eye; about one-third of basal part of anal fin covered with small scales; scales above lateral line more deciduous; pored lateral line scales adherent and form a line parallel to dorsal outline to

Table 2. Counts of *Pempheris oualensis*.

	Present specimens <i>n</i> = 5	Holotype MNHN-A221
Standard length (mm)	183–187	177
Counts		
Dorsal fin rays	VI, 9	VI, 9
Anal fin rays	III, 39–42	III, 41
Pectoral fin rays	18–19	18
Pelvic fin rays	I, 5	I, 5
Caudal fin rays	9 + 8	9 + 8
Upper procurent rays	7 – 8	damaged
Lower procurent rays	5	damaged
Lateral line scales	62–66	64
Scale lows above lateral line	6.5	6.5
Scales lows below lateral line	15	15
Predorsal scales	39–42	34
Cheek scales row	5	damaged
Circumpeduncular scales	18	damaged
Upper gill rakers	8 –10	8
Lower gill rakers	20–22	21
Total gill rakers	28–32	29
Vertebrae	25	25

middle of caudal fin.

First dorsal fin spine shortest and last spine longest; first dorsal soft ray longest of dorsal fin; dorsal fin base clearly shorter than longest dorsal ray; second anal soft ray longest of anal fin; uppermost and lowermost branched rays of caudal fin longest; posterior margin of caudal fin forked; fourth ray of pectoral fin longest; pelvic fin beyond anus, but not reaching anal fin origin.

Color when fresh. Body with scales shiny dark purple; beneath rubbed-off scales, pale purple with irregular vertical dark brown bars indicating scale traces; body darker above and paler below; dorsal fin broadly blackish along front margin and at tip; anal fin pale but faintly black along margin; posterior margin of caudal fin dusky; front margin of pectoral fin dark brown; clear blackish spot almost the same size as pupil, on pectoral fin base; few pigments present in pelvic fin soft rays.

Color in formalin. Body brown except paler areas where scales were rubbed; black and dusky parts of dorsal, pectoral, and caudal fins remain; pigments in pelvic fin soft rays remaining.

Distribution. Yaeyama Islands in Japan (present study), Kosrae (Oualan) Island in Micronesia (Cuvier, 1831), Indonesia (Bleeker, 1875–78), Philippines,

Indonesia, Samoa, Australia (Fowler, 1931). This record is the northern distribution limit of *P. oualensis*.

Remarks. This species is easily distinguished from congeneric species in Japan in having 62–66 pored lateral line scales (*vs* 46–52 in *P. schwenkii*; 72–81 in *P. japonicus*; 67–76 in *P. nyctereutes*), and 6 1/2 scale rows above the lateral line (*vs* 3 1/2 in *P. schwenkii*; 12 in *P. japonicus*; 8 in *P. nyctereutes*).

Snyder (1912) reported *P. oualensis* from Okinawa Island, but the specimens deposited at USNM were identified to *Pempheris* sp. from the photographs. This fact suggests the misidentification of Snyder (1912). Okada (1938) gave the Japanese name “Ryukyu-hatampo” to *P. oualensis* of Snyder (1912) without observing the specimens. Thus, the Japanese name has no validity.

Comparative specimens. *P. oualensis*: MNHN-A211 holotype, 177.4 mm SL, Kosrae (Oualan) Island, Micronesia; *P. schwenkii*: URM-P 45485–48489, URM-45491–45499, 14 specimens, 84.6–125.3 mm SL, Onna, Maeda, Mizugama and Ginowan (Okinawa Island, Okinawa Prefecture); *P. japonicus*: URM-P 45422, 45423, 2 specimens, 139.5–149.4 mm SL, Mizugama (Okinawa Island, Okinawa Prefecture); *P. japonicus*: URM-P 45424–45426, 3 specimens, 78.8–108.4 mm

SL, Wagu Fishing Port (Mie Prefecture); *P. nyctereutes*: URM-P 45413–45421, 45484, 20 specimens, 102.2–167.9 mm SL, Shina Fishing Port (Kochi Prefecture); *Pempheris* sp.: USNM-75468, 397603, 8 specimens, Okinawa Island, Okinawa prefecture.

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Appendices

One specimens of *P. oualensis* (URM-P 45713) collected at Odo Beach, Okinawa Island, Japan (26°05.12’N, 127°42.26’E), 8 m depth, in 7 June 2010. This is the northern distribution limit of the species.

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