

New Records of the Noline Scorpionfish, *Phenacoscorpius megalops* (Actinopterygii: Scorpaeniformes: Scorpaenidae), from the Emperor Seamounts, Central North Pacific

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Abstract. Eight specimens (36.7–70.0 mm standard length) of a scorpionfish, *Phenacoscorpius megalops* Fowler, 1938, were collected from the Koko Seamount, Emperor Seamounts, in the central North Pacific. This species can be distinguished from other congeners by its lack of palatine teeth, branched pectoral fin rays in adults, small or no second preopercular spine, shorter snout, longer and deeper caudal peduncle and larger eyes. Taiwan was previously regarded as the northernmost locality for this species; thus the present specimens are the northernmost records for the species.

Key words: Scorpaenidae, *Phenacoscorpius*, distribution, Koko Seamount, northernmost record.

Introduction

The genus *Phenacoscorpius* is a scorpaenid genus, containing five valid species: *P. adenensis* Norman, 1939; *P. eschmeyeri* Parin and Mandrytsa in Mandrytsa, 1992; *P. longirostris* Motomura and Last, 2009; *P. megalops* Fowler, 1938; and *P. nebris* Eschmeyer, 1965. The type species, *P. megalops*, was described by Fowler (1938) as a new genus and species of scorpionfish from the Philippines. Taxonomic problems remained with the species until Motomura (2008) concluded that *Scorpaenopsis stigma* Fowler, 1938 is a junior synonym of *P. megalops*

and described the morphological characters of the species based on a reexamination of the type series.

In an on-going study of the fauna of the Emperor Seamounts in the central North Pacific (e.g., Okamoto *et al.* 2012), we obtained eight specimens of *P. megalops* from the Koko Seamount in October 2009 and June 2011. *Phenacoscorpius megalops* has been reported from the Taiwan, Philippines, Indonesia, Vietnam, and the Hawaiian Islands (Poss 1999; Motomura 2008; Motomura and Last 2009). Our specimens represent the first confirmed records of the species from the Emperor Seamounts and are also the northernmost record for the species.

Counts and measurements follow Motomura (2008). The last two soft rays of the dorsal and anal fins are counted as single rays, each pair being asso-

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ciated with a single pterygiophore. Counts of vertebrae were taken from radiographs. Standard length is expressed as SL. Morphometric values are expressed as percentage of SL. Sex was confirmed by dissection of the right side of the abdomen. The specimens are deposited at the Seikai National Fisheries Research Institute (SNFR).

Phenacoscopus megalops Fowler, 1938

[English name: Noline scorpionfish]

(Fig 1)

Phenacoscopus megalops Fowler, 1938: 70 (type locality: 27 miles southeast of Bagatao Island Light between Burias and Luzon, Philippines); Eschmeyer and Randall 1975: 293 (Oahu, Hawaiian Islands); Chen 1981: 51 (Taiwan); Poss 1999: 2328 (in part, Taiwan, Philippines, Indonesia, and Hawaiian Islands); Poss 2000: 605 (list, South China Sea); Motomura 2008: 776 (Indonesia and Philippines); Shao *et al.* 2008: 246 (list, South China Sea); Motomura and Last 2009: 28 (Taiwan, Vietnam, and Philippines).

Scorpaenopsis stigma Fowler, 1938: 66 (type locality: 8.7 miles southwest of Point Tagolo Light, northern Mindanao, Philippines).

Material examined. 8 specimens, 36.7–70.0 mm SL: SNFR 16430, 50.1 mm SL, female, 34°58.92′

N, 171°56.31′ E–34°59.03′ N, 171°56.39′ E, Koko Seamount, Emperor Seamounts, 350–351 m depth, 1.5 m width beam trawl, 5 October 2009; SNFR 16431, 51.8 mm SL, female, data same as SNFR 16430; SNFR 16506, 55.9 mm SL, female, 34°58.98′ N, 171°56.40′ E–34°59.10′ N, 171°56.51′ E, Koko Seamount, Emperor Seamounts, 350 m depth, 1.5 m width beam trawl, 5 October 2009; SNFR 17790, 70.0 mm SL, male, 35°38.17′ N, 171°03.10′ E–35°37.79′ N, 171°03.21′ E, Koko Seamount, Emperor Seamounts, 435–500 m depth, 1.5 m width beam trawl, 14 June 2011, SNFR 17791, 36.7–64.9 mm SL, 4 specimens, 3 males (36.7, 60.6, 64.9 mm SL), 1 female (47.0 mm SL), 35°38.90′ N, 171°00.71′ E–35°38.84′ N, 171°00.94′ E, Koko Seamount, Emperor Seamounts, 400–425 m depth, 1.5 m width beam trawl, 15 June 2011.

Counts and measurements. Dorsal-fin rays XII, 9; anal-fin rays III, 5 or 6 (1 of 8, SNFR 16431); pelvic-fin rays I, 5; pectoral-fin rays 16–17 (mode 16), 1 or 2 uppermost rays and 6–10 lower rays unbranched, other rays branched; pored lateral-line scales 2–5; gill rakers 4–6 + 13–15 = 18–20; branchiostegal rays 7; vertebrae 25.

Body depth 34.4–37.8 (mean 36.0); head length 41.4–48.2 (43.5); head width 14.5–15.9 (15.2); snout



Fig. 1. *Phenacoscopus megalops*, 64.9 mm SL, SNFR 17791, Koko Seamount, central North Pacific.

length 8.9–10.9 (9.9); orbital diameter 12.5–16.9 (14.1); interorbital width between preocular spine bases 5.0–6.3 (5.7); interorbital width at mid-line of eye 4.2–5.3 (4.8); upper-jaw length 20.5–22.6 (21.3); maxillary depth 5.2–6.8 (6.2); postorbital length 18.7–21.7 (20.1); predorsal-fin length 38.4–43.1 (40.5); preanal-fin length 69.2–74.7 (71.2); prepelvic-fin length 37.8–42.6 (39.8); first dorsal-fin spine length 5.2–6.4 (5.8); second dorsal-fin spine length 10.1–13.1 (11.6); third dorsal-fin spine length 15.0–18.5 (17.0); fourth dorsal-fin spine length 15.7–18.5 (16.6); fifth dorsal-fin spine length 14.1–17.2 (15.2); sixth dorsal-fin spine length 11.4–14.3 (13.3); seventh dorsal-fin spine length 11.4–13.7 (12.6); eighth dorsal-fin spine length 8.2–12.0 (10.4); ninth dorsal-fin spine length 6.4–8.5 (7.5); tenth dorsal-fin spine length 4.7–6.8 (5.5); eleventh dorsal-fin spine length 4.6–6.4 (5.3); twelfth dorsal-fin spine length 11.3–12.4 (11.5); longest dorsal-fin soft ray length 17.7–19.7 (18.8); first anal-fin spine length 5.9–9.9 (8.2); second anal-fin spine length 17.9–19.9 (18.9); third anal-fin spine length 13.1–15.8 (14.2); longest anal-fin soft ray length 16.5–20.6 (18.5); pectoral-fin length 32.0–37.1 (34.8); pelvic-fin spine length 14.7–17.2 (16.3); longest pelvic-fin soft ray length 21.8–24.1 (23.2); caudal-fin length 21.9–24.4 (22.9); caudal-peduncle length 18.6–23.2 (21.1); caudal-peduncle depth 8.3–9.2 (8.8).

Remarks. The present specimens from the Emperor Seamounts are identified as *Phenacoscorpius megalops* on the basis of the following combination of characters: palatine teeth absent; branched pectoral fin rays present; second opercular spine small; snout length 8.9–10.9% SL; orbital diameter 12.5–16.9% SL; caudal-peduncle length 18.6–23.2% SL; and caudal-peduncle depth 8.3–9.2% SL. According to Motomura and Last (2009), although *P. megalops* and *P. longirostris* lack palatine teeth (vs. palatine teeth present in *P. adenensis*, *P. eschmeyer*, and *P. nebris*), *P. megalops* can be distinguished from *P. longirostris* in lacking or having only a small second preopercular spine and in having branched pectoral fin rays in adults (vs. having a well-developed second preopercular spine and all pectoral fin rays

unbranched in *P. longirostris*), a greater orbital diameter, longer and deeper caudal peduncle, wider head, and shorter snout (Motomura and Last 2009). However, Motomura and Last (2009) mistakenly described the head widths of *P. megalops* and *P. longirostris* as 34.0–36.5% of SL and 24.4–28.3% of SL respectively. These values were in fact of % of HL, instead of % of SL. Characters of our specimens from the Emperor Seamounts agree with the data for the type and other specimens of *P. megalops* given by previous literature reports, with the exception of the anal-fin soft rays for which one of our specimens had 6 rays (vs. 5 in Eschmeyer and Randall 1975; Chen 1981; Motomura 2008; Motomura and Last 2009). Intraspecific variation of the anal-fin soft ray counts in other congeners has not been reported (5 in *P. longirostris* and 6 in *P. adenensis*, *P. eschmeyer*, and *P. nebris*; Eschmeyer 1969; Mandrytsa 1992, 1993; Motomura 2008; Motomura and Last 2009). Because the anal-fin soft ray counts of species of *Phenacoscorpius*, except for *P. megalops*, are based on a small number of specimens (e.g., *P. eschmeyer*, $n=1$; *P. longirostris*, $n=2$) and many scorpaenids have intraspecific variation in anal-fin soft rays (Chen, 1981; table 4), we regard that our specimen with 6 anal-fin soft rays to be *P. megalops*.

Distribution records of *Phenacoscorpius megalops*, including present specimens, are shown in Fig. 2. This species has been reported from temperate to tropical waters in the western North Pacific (Taiwan, Vietnam, Philippines, and Indonesia) and in the Hawaiian Islands. Our specimens represent the first record of *P. megalops* from the Emperor Seamounts and the northernmost record of the species. Several studies have reported *P. megalops* in New Zealand (Paulin 1982; Paulin *et al.* 1989; Fricke *et al.* 2011) and New Caledonia (Rivatton *et al.* 1990; Fricke *et al.* 2011), but these are based on misidentifications, and the species appears to be restricted to the North Pacific (Motomura 2008; unpublished data). Four of our specimens (47.0–55.9 mm SL) are females with mature gonads filled with relatively large eggs of several developmental stages. The most developed eggs are ca. 0.4 mm in diameter.

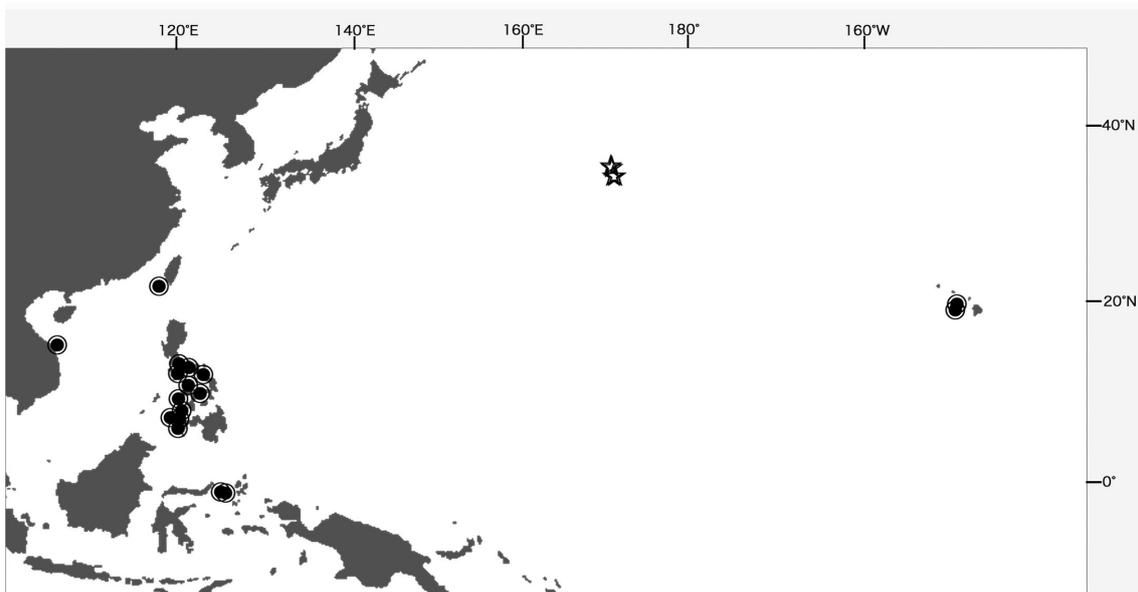


Fig. 2. Distributional records of *Phenacoscorpius megalops*. Circles and stars indicate localities of previously recorded specimens and specimens examined in this study, respectively.

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