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First Records of the Pumpkin Scorpionfish, *Scorpaena pepo* (Scorpaenidae), from Japan

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Abstract. Three specimens (222.4–238.0 mm standard length) of the large scorpionfish (Scorpaenidae), *Scorpaena pepo* Motomura *et al*., 2007, were collected from Kagoshima Prefecture, Kyushu, southern Japan. The species has previously been known only from Taiwan; thus the Kagoshima specimens are described herein as the first records of *S. pepo* from Japan and the northernmost records for the species.

Key words: Scorpaenidae, scorpionfish, *Scorpaena pepo*, distribution, Japan.

Introduction

The large scorpionfish, *Scorpaena pepo*, was originally described by Motomura *et al*. (2007) on the basis of four specimens collected from off Taiwan at depths of *ca*. 200 m. Although this species is abundant around Taiwanese waters (Motomura *et al*., 2007), it has never been recorded from outside of Taiwan.

During an ichthyofaunal survey of Kagoshima Prefecture, Kyushu, southern Japan (scorpionfish documentation in: Motomura and Senou, 2009; Motomura *et al*., 2009*a*, *b*), three specimens of *S. pepo* were collected from the western part of Kagoshima (East China Sea side). These specimens are described herein as the first records of *S. pepo* from Japan and the northernmost records for the species.

Counts and measurements followed Motomura *et al*. (2005, 2007). The last two soft rays of the dorsal and anal fins were counted as single rays, each pair being associated with a single pterygiophore. Pectoral-fin ray counts begin with the uppermost element. Standard length is expressed as SL. Terminology of head spines follows Randall and Eschmeyer (2002: fig. 1) and Motomura (2004: fig. 1) with the following addition: the spine on the lateral surface of the lacrimal bone is referred to as the lateral lacrimal spine (Motomura and Senou 2008: fig. 2). The specimens of *S. pepo* from Kagoshima, Japan are deposited at the Kagoshima University Museum, Kagoshima, Japan (KAUM). Comparative material examined for this study were listed in Motomura *et al*. (2005, 2007): 54 specimens of *S. onaria* (including holotype and paratypes) and four type specimens of *S. pepo*. Data for additional specimens of *S. pepo* are as follows: KAUM-I. 9927, 194.9 mm SL, fish market in Keelung, north of Taipei, Taiwan, H. Motomura and M. Meguro, 28 May 2008; KAUM-I. 9936, 107.6 mm SL, Dahsi, Yi-lan, northeastern Taiwan, 24°59′N, 122°06′E, 400 m depth, bottom trawl, H. Motomura and H.-C. Ho, 29 May 2009; KAUM-I. 17777, 127.7 mm SL, Nanfangao, Yi-lan, northeastern Taiwan, 22 Feb. 2009.

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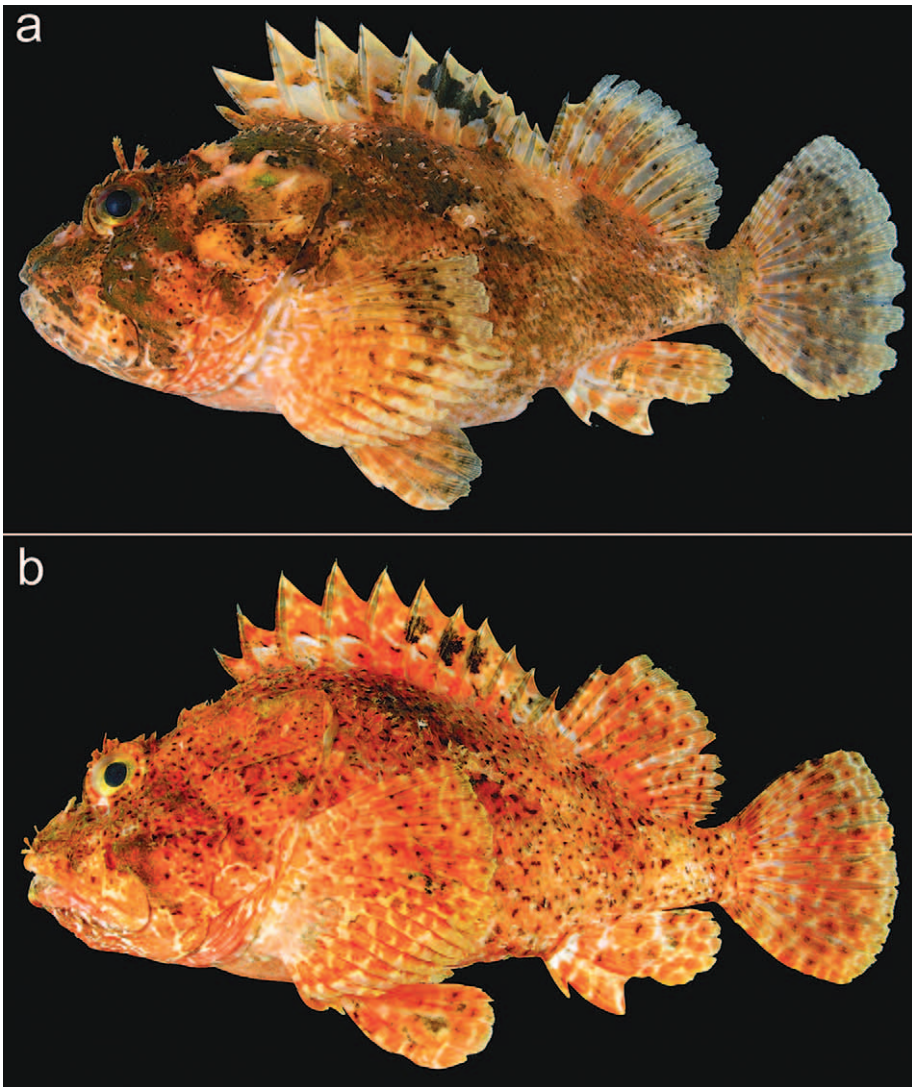

Fig. 1. Color photographs of *Scorpaena pepo* from Kagoshima, Japan. a, KAUM-I. 17643, 228.2 mm SL; b, KAUM-I. 13246, 238.0 mm SL.

***Scorpaena pepo* Motomura, Poss and Shao**

[English name: Pumpkin Scorpionfish]

[New standard Japanese name: Kabocha-fusakasago]

(Fig. 1)

Scorpaena neglecta neglecta (not of Temminck and Schlegel, 1843): Shen, 1984: 31, pl. 31, fig. 264–16b (in part; northeastern and southwestern Taiwan; authorship incorrectly given as Heckel).

Scorpaena onaria (not of Jordan and Snyder, 1900): Shao and Chen, 1993: 668, pl. 57, fig. 5 (Taiwan).

Parascorpaena picta (not of Cuvier in Cuvier and Valenciennes, 1829): Chen, 2003: 53, fig. 210 (Penghu, Taiwan; reidentified as *S. pepo* by Motomura *et al*., 2009*a*).

Scorpaena pepo Motomura *et al*., 2007: 37, figs. 1, 2A (type locality: off northeast coast of Taiwan).

Material examined. All specimens from Kagoshima, Kyushu, southern Japan. KAUM-I. 13246, 238.0

mm SL, off Matsugaura, Minami-kyushu, 31°22′N, 130°39′E, 110–130 m depth, line-fishing, 6 Jan. 2009; KAUM-I. 16276, 222.4 mm SL, off Nomaike, Minami-satsuma, 17 Mar. 2009; KAUM-I. 17643, 228.2 mm SL, off Yamagawa, Ibusuki, 25 Mar. 2009.

Counts and measurements. Dorsal-fin rays XII, 9. Anal-fin rays III, 5. Pelvic-fin rays I, 5. Pectoral-fin rays 16 on both sides in 2 specimens, asymmetrically 16 and 17 in 1 specimen; uppermost ray and lower 10 rays unbranched, remaining rays branched. Longitudinal scale rows 45 or 46. Pored lateral-line scales 23. Scale rows between origin of sixth dorsal spine and lateral line 8. Scale rows between origin of last dorsal spine and lateral line 7 or 8. Scales above lateral line 5 or 6, below lateral line 17. Gill rakers on upper limb 4 or 5, lower limb (including a raker at angle) 9 or 10, including 1 or 2 rakers on hypobranchial; total rakers 14. Branchiostegal rays 7. The following morphometrics are expressed as percentage of SL: Body depth 38.1–43.1 (mean 40.8); body width 27.4–29.2 (28.0); head length 46.5–47.8 (47.0); snout length 13.4–13.8 (13.6); orbit diameter 10.3–11.3 (10.7); interorbital width at middle of eye 6.6–7.4 (7.1); interorbital width between supraocular spine bases 5.5–6.6 (6.2); head width 16.3–16.6 (16.5); upper-jaw length 24.3–24.9 (24.5); maxillary depth 7.3–8.1 (7.7); suborbital space 4.5–5.4 (4.9); postorbital length 23.5–25.8 (24.5); between tips of opercular spines 5.9–7.5 (6.9); occipital pit length 5.6–6.8 (6.4); occipital pit width 5.7–6.1 (6.0); postoccipital pit length 8.0–9.2 (8.8); supraocular tentacle length 1.6–4.4 (3.1); predorsal length 38.1–39.0 (38.6); preanal length 73.7–77.0 (75.3); prepelvic length 44.6–46.2 (45.6); first dorsal-fin spine length 7.3–8.2 (7.8); second dorsal-fin spine length 12.8–14.5 (13.4); third dorsal-fin spine length 15.3–17.9 (16.7); fourth dorsal-fin spine length 15.6–17.9 (17.0); fifth dorsal-fin spine length 15.7–17.5 (16.8); sixth dorsal-fin spine length 15.3–16.4 (16.0); seventh dorsal-fin spine length 14.5–15.3 (14.9); eleventh dorsal-fin spine length 7.7–8.9 (8.1); twelfth dorsal-fin spine length 13.2–14.7 (14.1); longest dorsal-fin soft ray (second or third) length 18.9–20.2 (19.6); first anal-fin spine length 8.8–9.2 (9.1); second anal-fin spine length 17.0–17.3 (17.2); third anal-fin spine length 15.0–16.4 (15.8); longest anal-fin soft ray (first of second) length 21.3–22.0 (21.6); longest pectoral-fin ray (eighth) length 28.0–29.0 (28.6); pelvic-fin spine length 14.8–16.1 (15.2); longest pelvic-fin soft ray (second) length 24.8–25.5 (25.1); caudal-fin length 26.0–27.9 (27.0); caudal-peduncle length 16.0–16.4 (16.3); caudal-peduncle depth 10.2–10.9 (10.5).

Remarks. Selected characters of the present specimens from Kagoshima, Japan are as follows: pectoral-fin rays 16 on each side of body in two specimens and asymmetrically 17 and 16 in one specimen; longitudinal scales series 45 or 46; embedded cycloid scales covering anteroventral surface of body and pectoral-fin base; lateral line sloping steeply downward above anterior half of pectoral fin; median interorbital ridge well developed, its highest portion greater in height than interorbital ridges; lateral lacrimal spine present; anterior lacrimal spine with one or two additional spines; posterior lacrimal spine simple; three suborbital spines; space between upper and lower opercular spines not covered with fleshy skin; supraocular tentacle equal to or shorter than pupil diameter, its length 1.6–4.4% (mean 3.1%) of SL; underside of lower jaw without tentacles; no skin flap on pectoral-fin axil; relatively deep body (depth 38.1–43.1% of SL); body yellowish-orange when fresh, with numerous small distinct black spots scattered on entire head and trunk (except for ventral surface of body), soft-rayed portions of unpaired fins, and upper half of pectoral fin; and a large black blotch at the margin of membrane between sixth or seventh and ninth or tenth dorsal-fin spines (all males). These characters agreed with diagnosis of *S. pepo* given by Motomura *et al*. (2007).

The posterior margin of the maxilla in the type specimens of *S. pepo* (172.9–245.1 mm SL) extends well beyond a vertical through the posterior margin of the orbit (Motomura *et al*., 2007). The maxillae of the largest specimen (238.0 mm SL) and two smaller specimens from Kagoshima (222.4–228.2 mm SL) extend slightly beyond and just reach a ver-

tical through the posterior margin of the orbit respectively. In addition, examination of comparative material of *S. pepo* from Taiwan (listed above) showed that the posterior margin of the maxilla of the smallest specimen (KAUM-I. 9936, 107.6 mm SL) just reaches a vertical through the posterior margin of the orbit and that of the largest (KAUM-I. 9927, 194.9 mm SL) extends well beyond the orbit margin. Thus, this maxillary character appears to represent individual variation and tends to exhibit growth-related change, although Motomura *et al*. (2007) included it in the diagnostics of *S. pepo*.

Motomura *et al*. (2007: 42–43) suggested that *S. pepo* is closely related to *S. onaria* Jordan and Snyder, 1900 and provided detailed morphological comparisons between these two species. At a glance, *S. pepo* can be easily distinguished from *S. onaria* from East Asian waters by having a yellowish-orange body (*vs*. reddish in the latter), numerous small black spots scattered over the head (*vs*. spots absent from head, rarely a few spots only on opercle), and large body size (largest specimen 245.1 mm SL vs. 187.9 mm SL; Motomura *et al*., 2007). *Scorpaena onaria* was redescribed by Motomura *et al*. (2005), with discussions of its distribution, morphological changes with growth, sexual dichromatism, and biology. Two geographically distinct populations for *S. onaria* have been recognized: a northern population from the northwestern Pacific and a southern population from the southwestern Pacific (Motomura *et al*., 2005, 2007). Motomura *et al*. (2007) stated that *S. pepo* is more similar to the southern population of *S. onaria* than the northern population, even though *S. pepo* co-occurs with the northern population of *S.* onaria. Molecular analysis among *S. pepo* and northern and southern populations of *S. onaria* is required to resolve their relationships.

Scorpaena pepo appears to be relatively common in the southwestern parts of Kagoshima, Kyushu (East China Sea side), at depths of more than 100 m. The first author had surveyed fishes on the Pacific side of southern Kyushu, including the eastern part of Kagoshima, for five years (1997–2002), but did not find any individuals of *S. pepo*. So the species appears to be distributed primarily on the continental shelf of the East China Sea.

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