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First Equatorial Records of *Neosebastes entaxis* and *N. longirostris* (Scorpaeniformes: Neosebastidae) from Northern Sulawesi, Indonesia

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Abstract. Catches of two neosebastid fishes (Scorpaeniformes), *Neosebastes entaxis* Jordan and Starks, 1904 (2 specimens: 143.6–184.9 mm standard length) and *N. longirostris* Motomura, 2004 (1 specimen: 176.2 mm standard length) from northern Sulawesi, Indonesia, represent the first records of the species and genus from the equatorial waters. *Neosebastes entaxis* has previously been recorded from Japan and Taiwan, and *N. longirostris* has been known only from northwestern Western Australia (Indian Ocean). The Indonesian specimens are here described.

Key words: Neosebastidae, scorpionfish, *Neosebastes entaxis, Neosebastes longirostris*, Indonesia

Introduction

The genus *Neosebastes* Guichenot, 1867 (Neosebastidae) was reviewed by Motomura (2004) who recognized 12 valid species, including five new species. The genus has been considered to represent an anti-equatorial distribution (Motomura, 2004; Motomura and Causse, 2010).

During ichthyofaunal surveys of Bitung, northern Sulawesi, Indonesia (e.g., Motomura & Peristiwady, 2010), two specimens of *Neosebastes entaxis* and one specimen of *N. longirostris* were collected from depths of 20–30 m off Bitung. *Neosebastes entaxis* has previously been recorded only from Japan and Taiwan on the basis of collected specimens and *N. longirostris* has been known only from the type specimens from northwestern Western Australia (Indian Ocean). The Indonesian specimens are described herein as the first records of the species and genus from the equatorial region, and the southernmost and northernmost records of the two species.

Counts, measurements and terminology of head spines followed Motomura (2004). The last two soft rays of the dorsal and anal fins were counted as single rays, each pair being associated with a single pterygiophore. Standard and head lengths are expressed as SL and HL respectively. Morphometric data in Tables 1–2 are rounded off to whole numbers. The specimens from Indonesia examined in this study have been deposited at the Reference Collection of LIPI Bitung (LBRC-F), Technical Implementation Unit for Marine Biota Conservation, Indonesian Institute of Science, Bitung, Indonesia.

Neosebastes entaxis Jordan and Starks, 1904

(Fig. 1A; Table 1)

Neosebastes entaxis Jordan and Starks, 1904: 120, fig. 7 (type locality: Misaki, Kanagawa, Japan).

Material examined. LBRC-F 1416, 143.6 mm SL, off Bitung, northern Sulawesi, Indonesia, 20–30 m depth, 28 Feb. 2009, line-fishing (purchased at Girian

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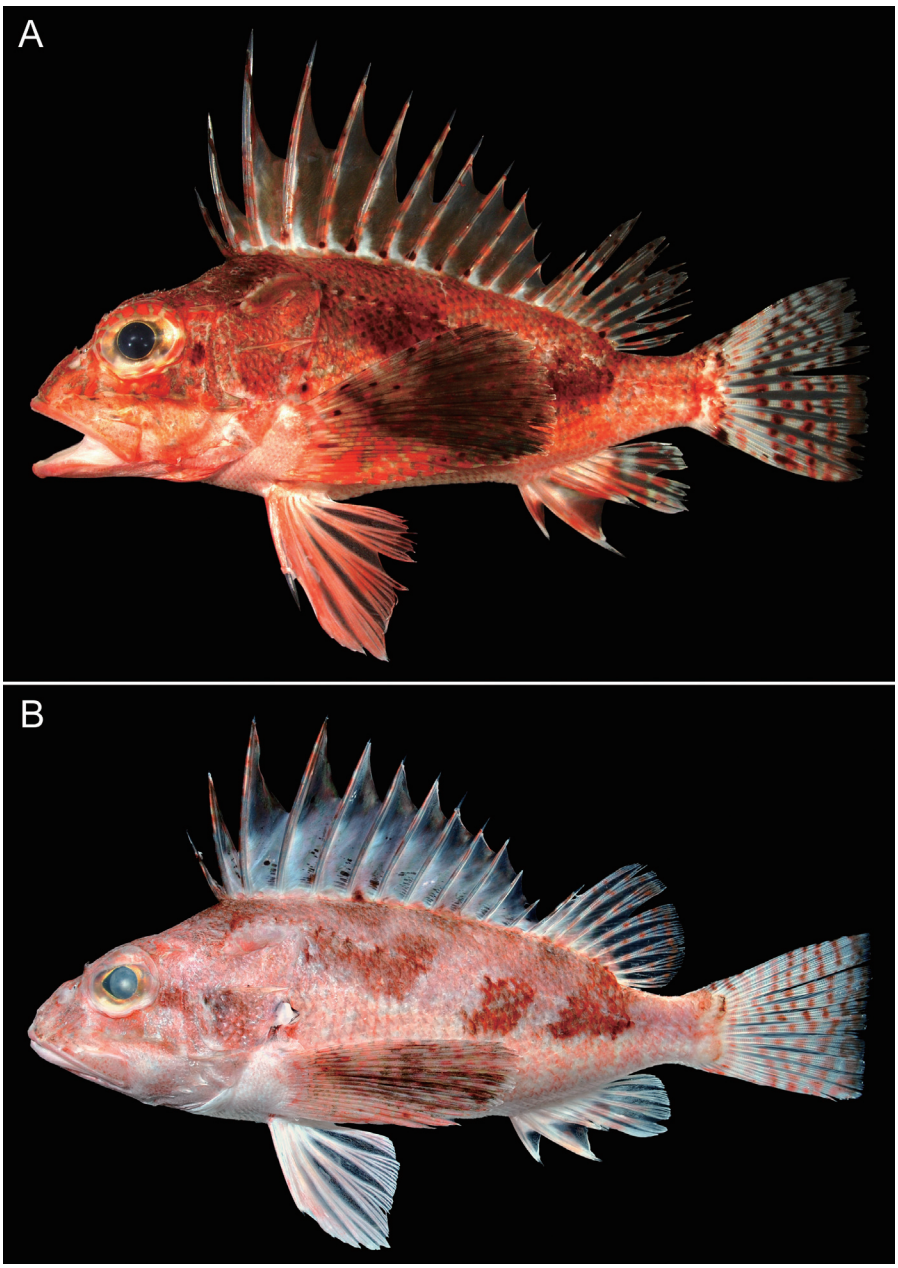

Fig. 1. Two neosebastids from Sulawesi, Indonesia. A, *Neosebastes entaxis*, LBRC-F 1416, 143.6 mm standard length; B, *Neosebastes longirostris*, LBRC-F 2185, 176.2 mm standard length. Photos by T. Peristiwady.

Market, Bitung, by T. Peristiwady); LBRC-F 2421, 184.9 mm SL, off Bitung, northern Sulawesi, Indonesia, 20–30 m depth, 6 Feb. 2011, line-fishing (purchased at Girian Market, Bitung, by T. Peristiwady).

Description. Proportional measurements are given in Table 1. Dorsal-fin rays XIII, 8; anal-fin rays III, 5; pectoral-fin rays 21; pored lateral-line scales 33–34; scale rows in longitudinal series 51–52; scale rows between

Table 1. Morphometric characters of *Neosebastes entaxis*, expressed as a percentage of standard length. Mean values in parentheses include data for the type material.

	This study	Motomura (2004)		
	Non-types Indonesia *n* = 2	Holotype Japan SU 7367	Paratype Japan SU 7414	Non-types Japan and Taiwan *n* = 28
Standard length (mm)	144–185	137	140	70–180
Body depth	55–56	35	36	34–46 (36)
Body width	25	24	21	20–26 (24)
Head L	45–47	45	45	44–49 (45)
Snout L	11–13	11	11	10–12 (11)
Orbit diameter	13–14	14	14	13–16 (14)
Interorbital width	6–7	7	8	6–8 (7)
Upper jaw L	18–19	18	17	16–19 (18)
Postorbital L	21–22	21	22	20–23 (21)
Predorsal fin L	34–36	34	35	34–38 (35)
Preanal fin L	73–76	73	74	71–74 (73)
Prepelvic fin L	36–38	36	38	35–39 (36)
1st D spine L	12–14	14	15	11–17 (14)
2nd D spine L	22–23	21	20	18–29 (21)
Longest D spine L (3rd or 4th)	29–34	broken	30	27–36 (30)
12th D spine L	10	9	9	7–10 (8)
13th D spine L	12–13	13	12	11–13 (12)
Longest D ray L (2nd)	19–21	broken	broken	17–23 (20)
1st A spine L	11–12	11	12	10–12 (11)
2nd A spine L	19–20	19	20	16–20 (18)
3rd A spine L	16–17	14	15	13–16 (15)
Longest A ray L (1st or 2nd)	20–21	broken	19	16–20 (19)
Pectoral fin L	35–39	34	broken	33–38 (36)
Pelvic spine L	17–19	17	19	16–20 (18)
Longest pelvic ray L (2nd)	29–31	26	29	25–29 (27)
C fin L	25–28	26	broken	24–28 (27)
C peduncle L	16–17	17	17	15–19 (17)
C peduncle depth	10–11	10	11	10–11 (10)

SU, Stanford University collection deposited at the California Academy of Sciences, San Francisco; L, length; D, dorsal; A, anal; C, caudal.

last dorsal-fin spine origin and lateral line 5½; well-developed gill rakers 2 + 7–8; rudimentary gill rakers 3 + 4–5; underside of mandible with numerous tiny pores, no ridges; preocular spine divided into 2 points, and flattened anteriorly and posteriorly; no additional spines between lacrimal and suborbital ridges; upper opercular spine simple; midinterorbital space moderately deep, not covered with scales; interorbital ridges indistinct; posterior margin of maxilla not reaching a vertical at posterior margin of pupil; interorbital width wide (4.1–6.0 in HL); membrane anterior to sixth dorsal-fin spine extending up to 51.2–53.9% of the spine length; first anal-fin spine 1.4–1.5 in third spine; second pelvic-fin soft ray 1.5 in HL; head and body blackish in preserved specimens; body, head, and pelvic and anal fins orange when fresh; no distinct small black spots on head or lateral line.

Remarks. The above characters of the present specimens from Indonesia agree with the characters of *N. entaxis* given by Motomura (2004) who redescribed the species on the basis of 30 specimens, including the holotype and paratype. Detailed comparisons of *N. entaxis* with other congeners were given in Motomura (2004).

Prior to Motomura (2004), *N. entaxis* was considered to occur off the Ogasawara Islands (Randall *et al*., 1997; Nakabo, 2002) and northern Australia (Allen and Cross, 1989), in addition to the southern Pacific coast of the Japanese mainland and Taiwan. Specimens from the Ogasawara Islands and Australia were then described by Motomura (2004) as one and three new species respectively. Motomura (2004) considered *N. entaxis* as endemic to the East Asian continental shelf. Thus, the present specimens from Bitung, northern Sulawesi, Indonesia, represent the first records of *N. entaxis* from the tropical region in the western Pacific Ocean on the basis of collected specimens. In addition to the present Indonesian records, the occurrences of *N. entaxis* in the Ryukyu Islands and the Philippines were recently confirmed by the first author (specimens not collected), suggesting that the species is widely and continuously distributed in the western Pacific from Japan and Taiwan to Indonesia.

Neosebastes longirostris Motomura, 2004

(Fig. 1B; Table 2)

Neosebastes longirostris Motomura, 2004: 41, figs. 2C, 3E, 4B, 6B, 7A, 8D, 9D, 19, 20, pls. 1-G (type locality: north of Monte Bello Islands, Western Australia, 19° 33–35′ S, 115° 36–38′ E).

Material examined. LBRC-F 2185, 176.2 mm SL, off Bitung, northern Sulawesi, Indonesia, 20–30 m depth, 28 Aug. 2011, line-fishing, coll. by Kusno (purchased at Girian Market, Bitung, by T. Peristiwady).

Description. Proportional measurements are given in Table 1. Dorsal-fin rays XIII, 8; anal-fin rays III, 5; pectoral-fin rays 22; pored lateral-line scales 34; scale rows in longitudinal series 58; scale rows between last dorsal-fin spine origin and lateral line 8; well-developed gill rakers 2 + 6; rudimentary gill rakers 3 + 6; underside of mandible with numerous tiny pores, no ridges; preocular spine simple, and flattened anteriorly and posteriorly; supraocular spines occurring only posterior to vertical midline of eye; no additional spines between lacrimal and suborbital ridges; upper opercular spine simple; midinterorbital space covered with scales; interorbital space shallow; posterior margin of maxilla not reaching a vertical through posterior margin of pupil; snout length long (4.0 in HL); interorbital width wide (6.0 in HL); body depth shallow (3.2 in SL); no distinct small black spots on head or lateral line.

Remarks. The above characters of the present specimen from Indonesia agree with the characters of *N. longirostris* given by Motomura (2004), with the exception of 6 well-developed gill rakers on the lower limb in the Indonesian specimen [vs. 8 or 9 rakers (based on 13 type specimens); Motomura, 2004]. Judging from intraspecific variations of gill-raker counts in scorpaenids, the Indonesian specimen can be identified as *N. longirostris*. Detailed comparisons of *N. longirostris* with other congeners were given in Motomura (2004).

Neosebastes longirostris has previously been known only from off the northwestern coast of Western Australia between 14° and 20° S (Motomura, 2004: fig. 20). Thus, the present specimen from Bitung, northern Sulawesi, Indonesia, represents the first record from the

Table 2. Morphometric characters of *Neosebastes longirostris*, expressed as a percentage of standard length. Mean values in parentheses include data for the holotype.

	This study	Motomura (2004)	
	Non-types Indonesia LBRC-F 2185	Holotype Australia CSIRO H. 5198-03	Paratypes Australia *n* = 12
Standard length (mm)	176	161	81–169
Body depth	31	32	30–36 (32)
Body width	21	22	19–23 (21)
Head L	45	45	45–50 (47)
Snout L	11	13	12–13 (13)
Orbit diameter	13	12	12–16 (14)
Interorbital width	8	8	7–9 (8)
Upper jaw L	19	18	18–21 (19)
Postorbital L	22	22	21–24 (22)
Predorsal fin L	34	35	34–39 (36)
Preanal fin L	73	73	71–75 (73)
Prepelvic fin L	39	35	35–40 (38)
1st D spine L	13	11	8–14 (11)
2nd D spine L	20	16	15–22 (18)
Longest D spine L (3rd or 4th)	29	24	23–31 (25)
12th D spine L	7	6	5–8 (7)
13th D spine L	12	9	9–13 (11)
Longest D ray L (2nd)	20	18	16–22 (18)
1st A spine L	11	10	9–13 (10)
2nd A spine L	17	16	14–22 (17)
3rd A spine L	15	14	12–17 (14)
Longest A ray L (1st or 2nd)	20	18	17–21 (19)
Pectoral fin L	35	32	29–35 (32)
Pelvic spine L	16	15	14–21 (17)
Longest pelvic ray L (2nd)	26	24	22–29 (25)
C fin L	29	25	24–30 (27)
C peduncle L	18	17	16–19 (18)
C peduncle depth	10	10	9–11 (10)

CSIRO, Australian National Fish Collection at the Commonwealth Scientific and Industrial Research Organisation' s Marine and Atmospheric Research laboratories, Hobart; L, length; D, dorsal; A, anal; C, caudal.

Pacific Ocean and northernmost record of the species. The distributional pattern of *N. longirostris* (i.e., occurring in northwestern Western Australia and northern Sulawesi, and lack of records from other Southeast Asian waters) is inexplicable, with the exception of the following hypothesis. The species might have been widely distributed in Southeast Asian waters before the Pleistocene, the last cold period being about 12,000 years ago, and Australian and Asian populations of the species were then separated by the Sundaland during the Pleistocene. Appropriate marine environments remained off northern Sulawesi even during the Pleistocene (Morley and Flenley, 1987). This suggests that *N. longirostris* in northern Sulawesi might be a relic population.

The Indonesian specimen was collected at a depth of 20–30 m, whereas the capture depths of the Australian specimens were from 170–250 m (Motomura, 2004). Further specimens are required from Indonesia to determine whether or not the Indonesian population also occurs in deeper water.

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