

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

| | |
|------------------------------|---|
| 著者 | "MOTOMURA Hiroyuki, PERISTIWADY Teguh" |
| journal or publication title | Biogeography |
| volume | 14 |
| page range | 31-36 |
| URL | http://hdl.handle.net/10232/22421 |

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

Hiroyuki Motomura^{1*} and Teguh Peristiwady²

¹ The Kagoshima University Museum, 1-21-30 Korimoto, Kagoshima 890-0065, Japan

² Technical Implementation Unit for Marine Biota Conservation, Indonesian Institute of Science,
J1 Tandurusa, Kel. Tandurusa, Kotamadya Bitung 95227, Indonesia

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

*Corresponding author: motomura@kaum.kagoshima-u.ac.jp

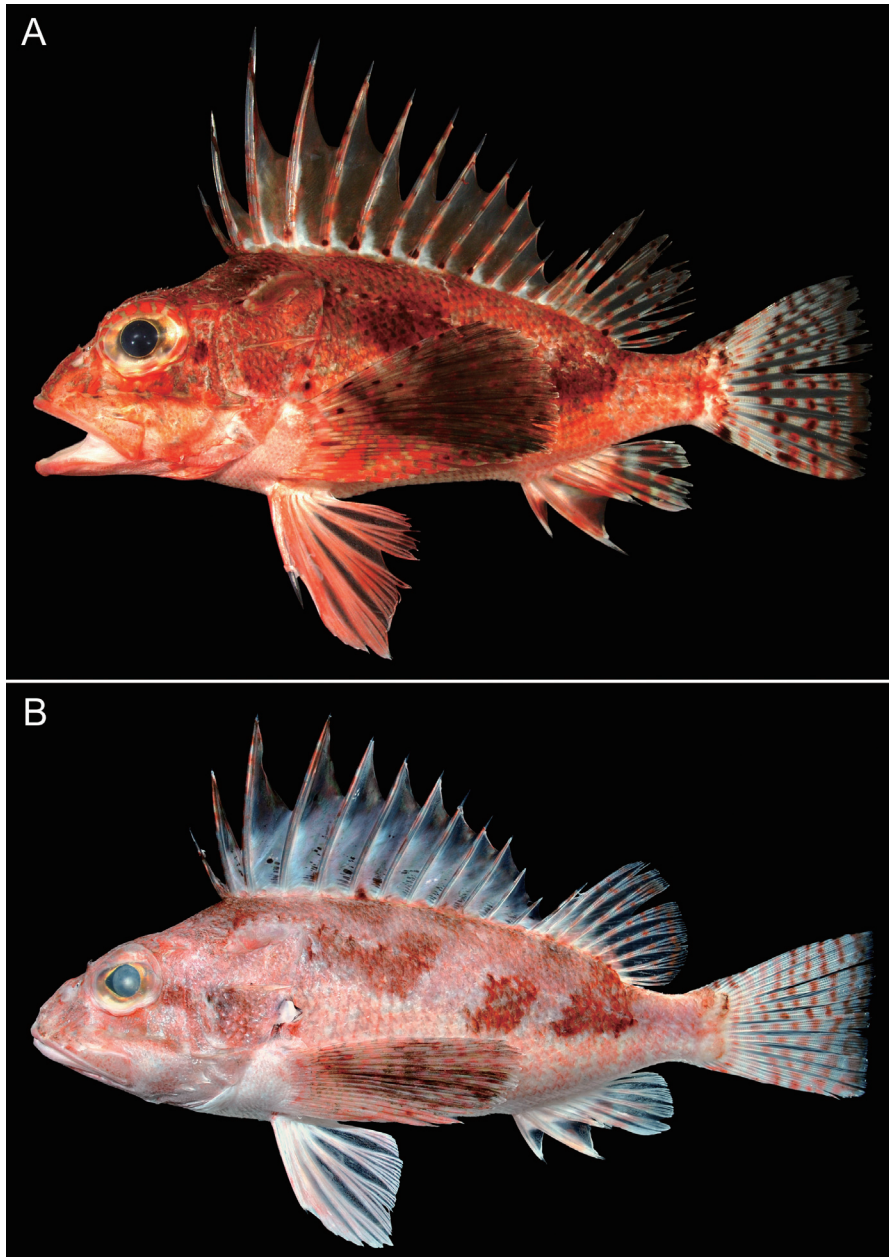


Fig. 1. Two neosebastids from Sulawesi, Indonesia. A, *Neosebastes entaxis*, LBRC-F 1416, 143.6 mm standard length; B, *Neosebastes longirostris*, LBRC-F 2185, 176.2 mm standard length. Photos by T. Peristiwady.

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 <i>n</i> = 2 | Holotype Japan SU 7367 | Paratype Japan SU 7414 | Non-types Japan and Taiwan <i>n</i> = 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 $5\frac{1}{2}$; 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 <i>n</i> = 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.

Acknowledgments

We are especially grateful to Embo and Kusno (Girian, Bitung, Indonesia) for their assistance to collect the specimens of *Neosebastes*. We thank K. Matsuura (National Museum of Nature and Science, Japan) and S. Kimura (Mie University, Japan) for the opportunity to examine the specimens, and D. Sasaki, Y. Hibino and S. Takeuchi (Mie University, Japan) for their assistance during the first author's stay in Bitung. We greatly appreciated comments on the manuscript by G. Yearsley (Hobart, Australia). This study was supported in part by a Grant-in-Aid for Scientific Research (C) from the Japan Society for the Promotion of Science (JSPS), Japan (23580259) and 2011 Program on Fish Diversity of Coral Reef Ecosystems in Coral Triangle from the Ministry of Sciences and Technology, Indonesia. The first author's visit to Bitung in 2011 was supported by the JSPS–Asian Core Program “Coastal Ecosystems in Southeast Asia”.

Literature Cited

- Allen, G. R. & Cross, N., 1989. Scorpaenidae. In Paxton, J. R., Hoese, D. F., Allen, G. R. & Hanley, J. E. (Eds), *Zoological catalogue of Australia. Vol. 7. Pisces. Petromyzontidae to Carangidae*: 438–452. Australian Government Publishing Service, Canberra.
- Guichenot, A., 1867. Notice sur le Néosébaste, nouveau genre de poissons de la famille des Scorpénoides, et description d'une nouvelle espèce. *Mém. Soc. Impér. Sci. Nat. Cherbourg*, **13**: 83–89.
- Jordan, D. S. & Starks, E. C., 1904. A review of the scorpaenoid fishes of Japan. *Proc. U. S. Natl. Mus.*, **27** (1351): 91–175.
- Morley, R. J. & Flenley, J. R., 1987. Late Cainozoic vegetational and environmental changes in the Malay Archipelago. In Whitmore, T. C. (Ed), *Biogeographical Evolution of the Malay Archipelago*: 50–59. Clarendon Press, Oxford.
- Motomura, H., 2004. Revision of the scorpionfish genus *Neosebastes* (Scorpaeniformes: Neosebastidae), with descriptions of five new species. *Indo-Pac. Fish.*, **37**: 1–76.
- Motomura, H. & Causse, R., 2010. Revised diagnosis of *Neosebastes capricornis* (Neosebastidae), with new records of the species from Vanuatu. *NZ J. Mar. Freshwater Res.*, **44** (4): 323–327.
- Motomura, H. & Peristiwady, T., 2010. *Scorpaena onaria* (Scorpaenidae), previously considered to have an antitropical distribution, found in northern Sulawesi, Indonesia, western central Pacific Ocean. *Biogeography*, **12**: 127–131.
- Nakabo, T., 2002. Scorpaenidae. In Nakabo, T. (Ed), *Fishes of Japan with pictorial keys to the species, English Edition*: 565–595. Tokai University Press, Tokyo.
- Randall, J. E., Ida, H., Kato, K., Pyle, R. L. & Earle, J. L., 1997. Annotated checklist of the inshore fishes of the Ogasawara Islands. *Natl. Sci. Mus. Monogr.*, **11**: 1–74.

(Received January 23, 2012; Accepted February 13, 2011)