

Morphology and coloration of *Harpiosquilla harpax* (de Haan, 1844) collected from Osaka Bay and the Kii Channel, Japan, with comments on *Harpiosquilla* species from Okinawa Island (Crustacea: Stomatopoda: Squillidae)

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大阪湾と紀伊水道から採集されたトゲシヤコ *Harpiosquilla harpax* (de Haan, 1844) の形態と色彩, および沖縄本島産のトゲシヤコ属について

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抄録: トゲシヤコ *Harpiosquilla harpax* (de Haan, 1844) は本邦から記載された口脚目の1種で, 日本からはよく似た *H. japonica* Manning, 1969 も記載されている. 大阪湾と紀伊水道産の標本を正確に同定するため, 45 個体について形態と色彩を詳細に観察した. タイプ標本との比較により今回の標本はトゲシヤコと同定され, *H. japonica* は形態の特徴が合致しタイプ産地が紀伊水道に含まれることからトゲシヤコの新参異名となることが分かった. 本種は顕著な突起を欠く額板と長さが幅よりも大きい尾節で特徴付けられ, 本邦以外に台湾, 中国, ベトナム, ニューカレドニアとオーストラリアから記録されている. 沖縄本島産のトゲシヤコ属の標本を調べたところ, 額板に突起を持つものが含まれ, その尾節の長さは幅とほぼ同じであった. 同様の特征を持つ標本はインド・西太平洋の各地から記録されトゲシヤコに誤同定されてきたが, それらの中には複数種が混在する可能性があるため, 沖縄本島産の種名は決定できなかった.

Abstract: Two mantis shrimp species of Squillidae, *Harpiosquilla harpax* (de Haan, 1844) and *H. japonica* Manning, 1969, were originally described from Japan and both are closely similar to each other. To accurately identify *Harpiosquilla* material collected from Osaka Bay and the Kii Channel, morphological characters and coloration of 45 specimens were examined in detail. As a result of comparison with the type specimens of *H. harpax*, the present specimens are identified as that species. Because of close similarity of the morphology and the type locality contained in the Kii Channel, *H. japonica* is synonymized with *H. harpax*. *Harpiosquilla harpax* is characterized particularly by having the rostral plate lacking a distinct apical projection and the telson longer than broad, and it was recorded from Taiwan, China, Vietnam, New Caledonia and Australia in addition to Japan. Examination of *Harpiosquilla* specimens collected from Okinawa Island revealed that they have a rostral plate partly with an apical projection and a telson as broad as long. *Harpiosquilla* specimens having such characters were recorded from many localities in the Indo-West Pacific and have been misidentified as *H. harpax*. Because there is a possibility that they include multiple similar species, the species name of the specimens from Okinawa Island cannot be determined at present.

Key words: Stomatopoda; *Harpiosquilla harpax*; *Harpiosquilla japonica*; Osaka Bay; Kii Channel; Okinawa Island

Harpiosquilla harpax (de Haan, 1844) is one of the mantis shrimps (Stomatopoda) occurring in Osaka Bay (Ariyama, 2004). This species (Fig. 1A) was originally described as *Squilla harpax* in De Haan (1833-1850) based on the specimens collected by Ph. F. von Siebold and H. Bürger from Japan (Yamaguchi and Baba, 1993), and has been recorded from various localities in the Indo-West Pacific from Japan to South Africa (see synonym list of the species as shown below). Because of taxonomic confusion among *Harpiosquilla* species, Manning (1969) revised the genus

※ Contributions from Osaka Museum of Natural History No. 489 (Accepted Dec. 27, 2020)

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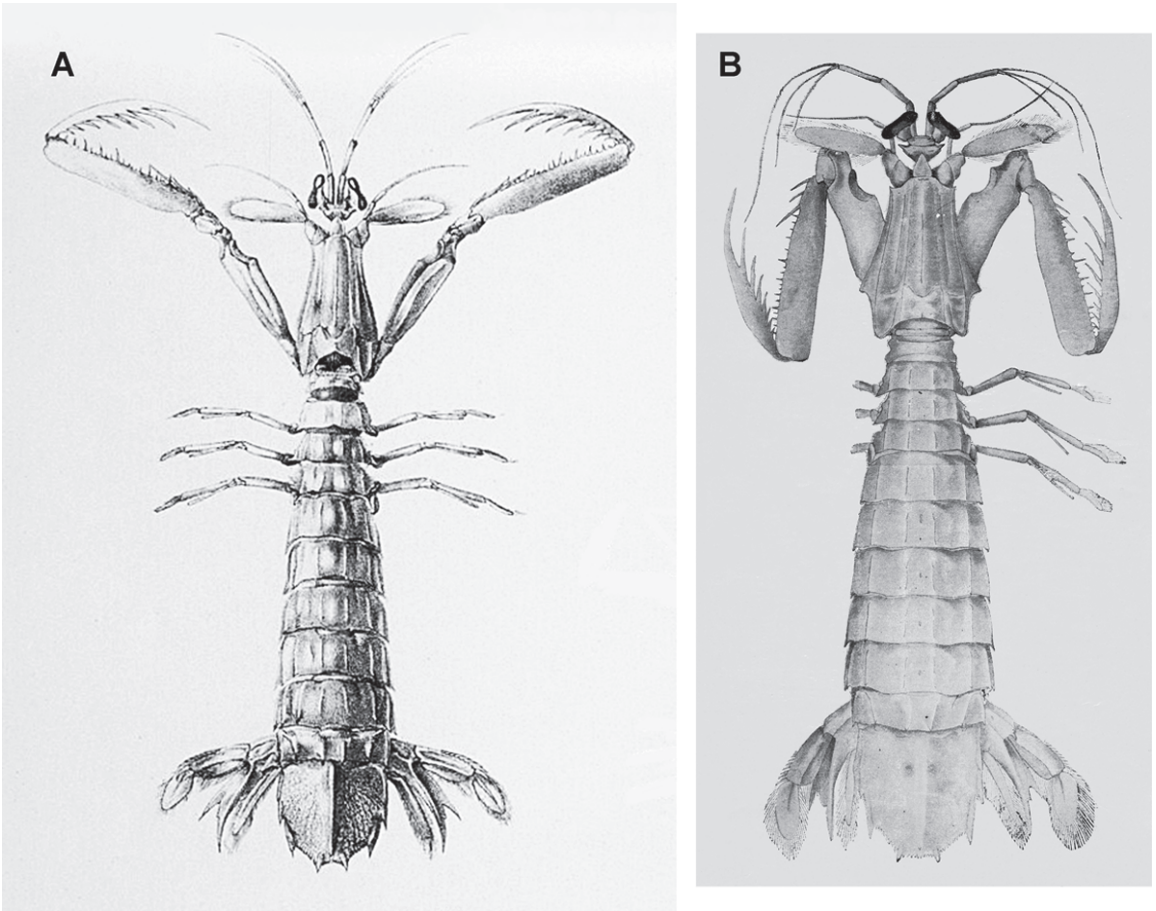


Fig. 1. *Harpiosquilla harpax* (de Haan, 1844) in the literature, entire animal, dorsal views. A, *Squilla harpax* de Haan, 1844; pl. 51, fig. 1 of De Haan (1844), downloaded from Kyoto University Library Network (2001). B, *Squilla raphidea* Fabricius, 1798; fig. 2 of Fukuda (1913), scanned from Dobutsugaku Zasshi.

and recognized seven species. In the paper, he described a new species, *H. japonica* Manning, 1969, from Wakanoura in Japan because the rostral plate lacks a slender anterior projection which is present in *H. harpax*, and referred *H. raphidea* Fabricius, 1798, recorded by Fukuda (1913) from Japan (Fig. 1B) to *H. japonica*. Manning (1969), as well as Manning (1968a), examined the lectotype of *Squilla harpax*; however, the detailed characters of the type specimen were not shown. Ahyong (2001) synonymized *H. japonica* with *H. harpax* owing to the variability of the shape of the rostral plate, but later Ahyong et al. (2008) reinstated *H. japonica* because of differences of the rostral plate and coloration between the two taxa.

To identify *Harpiosquilla* species in Osaka Bay accurately, the first author examined not only the specimens from Osaka Bay, but also specimens from the Kii Chanel which includes the coast of Wakanoura, the type locality of *H. japonica*. The second author examined the type specimens of *H. harpax*. Moreover, in the stomatopod collection of the Ryukyu University Museum, the third author found *Harpiosquilla* specimens collected from Okinawa Island in the Ryukyu Archipelago where no species of the genus have been recorded in the literature before. In the present paper, morphological characters and coloration of the Japanese specimens are shown in detail and the taxonomy of *H. harpax* and *H. japonica* is re-assessed.

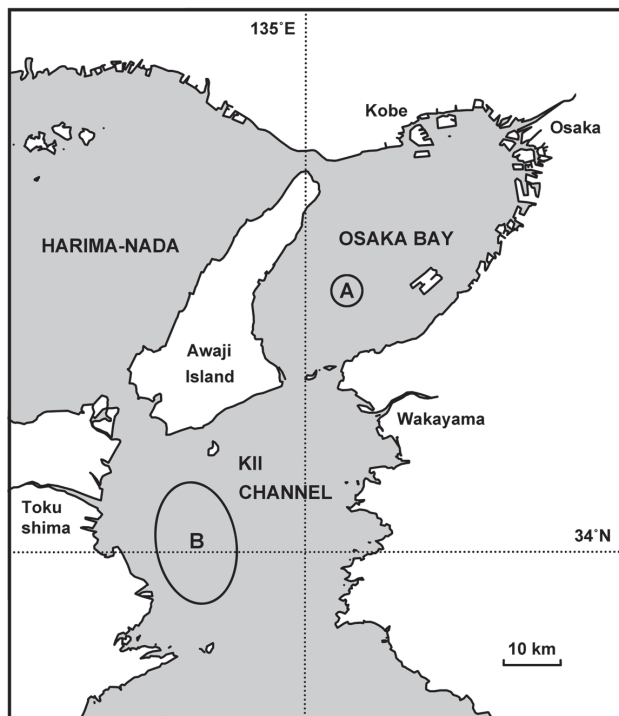


Fig. 2. Collecting sites of *Harpiosquilla harpax* (de Haan, 1844). A, fishery ground of the Shimosho Fisheries Cooperative Association. B, fishery ground of the Tokushimashi Fisheries Cooperative Association. Wakanoura is included in Wakayama City, Wakayama Prefecture.

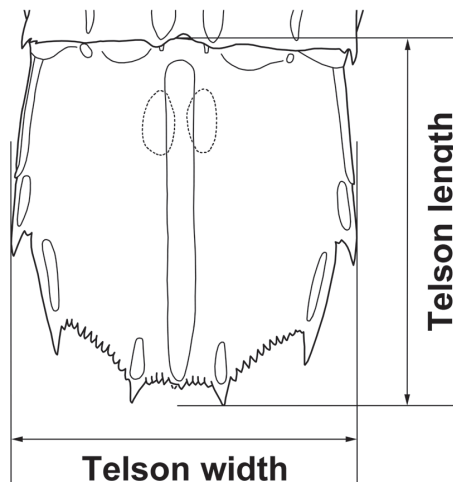


Fig. 3. Measurement of telson length and width of the specimens.

Materials and methods

Forty-five specimens caught by fishermen belonging to the Shimosho Fisheries Cooperative Association, Osaka Prefecture and the Tokushimashi Fisheries Cooperative Association, Tokushima Prefecture were examined. Their fishery grounds are Osaka Bay (depth: 30-50 m) and the Kii Channel (depth: 40-70 m), respectively (Fig. 2). The type specimens of *Squilla harpax* deposited in the Naturalis Biodiversity Center, Leiden, The Netherlands (except for a paralectotype, RMNH.CRUS.S.460) and *Harpiosquilla* specimens deposited in the Ryukyu University Museum (Fujukan, RUMF), Okinawa, Japan were also examined for comparison. We observed the morphology of all the specimens and coloration of the specimens from Osaka Bay and the Kii Channel. In particular, the observations were focused on the morphology of rostral plate and telson, and photographs of them were taken to be parallel to the dorsal surfaces. The measurement of the total length (TL) of the specimens and morphological terminology follow Ahyong (2001). The telson length and width were measured as shown in Fig. 3. The material examined from Osaka Bay and the Kii Channel is deposited in the Osaka Museum of Natural History (OMNH).

Taxonomic account

Family Squillidae Latreille, 1802
 Genus *Harpiosquilla* Holthuis, 1964
Harpiosquilla harpax (de Haan, 1844)
 (Japanese name: Togeshako)
 (Figs. 1 and 4-9)

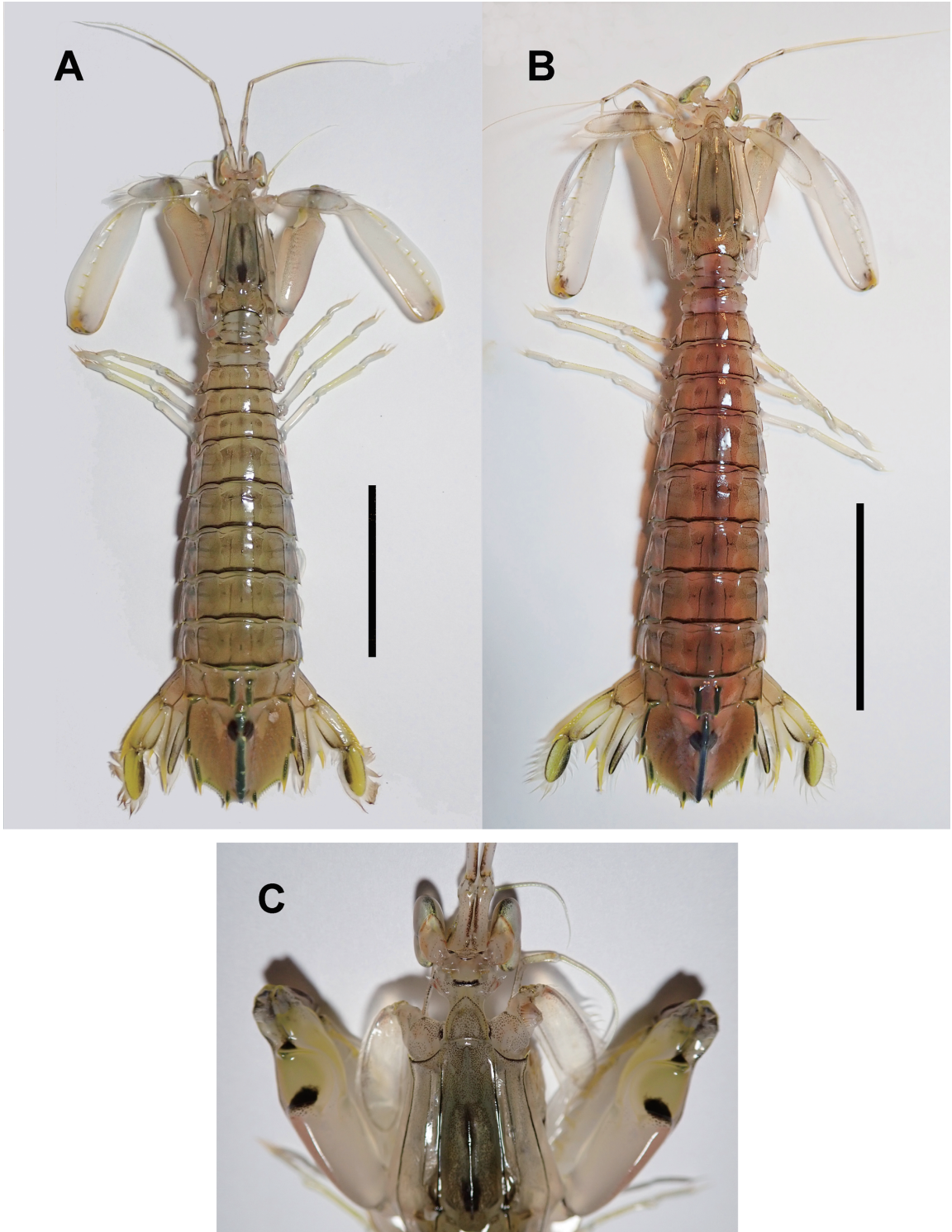


Fig. 4. Photographs of *Harpiosquilla harpax* (de Haan, 1844), fresh condition, dorsal views. Entire animal (A, B); anterior part of body (C). A, C, male (OMNH-Ar-12074, TL 181 mm); B, female (OMNH-Ar-12070, TL 177 mm). Scales: 50 mm.

Squilla harpax de Haan, 1844: atlas, pl. 51, fig. 1 [type locality: Japan]. –De Haan, 1849, text, 222.

Chloridella raphidea. –Rathbun, 1902: 55 [not *Squilla raphidea* Fabricius, 1798].

Squilla raphidea. –Fukuda, 1913: 69, fig. 2. –Komai, 1927: 323. –Komai, 1938: 268. –Liu, 1949: 43, pl. 6, figs. 15-17 [not *S. raphidea* Fabricius, 1798].

Squilla raphidea var. –Gravier, 1937: 186, figs. 8-10 (in part) [not *S. raphidea* Fabricius, 1798].

Harpiosquilla harpax. –Holthuis, 1964: 140. –Hamano, 1988: 378, figs. 19a, b, 20a-d, 21c-i. –Ahyong, 2001: 257, fig. 126 (in part). –Hamano, 2005: 67, fig. 2-22g-l. –Motoh, 2005: 13, fig. 2. –Machida and Yamamoto, 2006: 32, fig. 3. –Motoh, 2007: 44, fig. 2. –Ugai et al., 2008: 21, pl. 6, fig. 6.

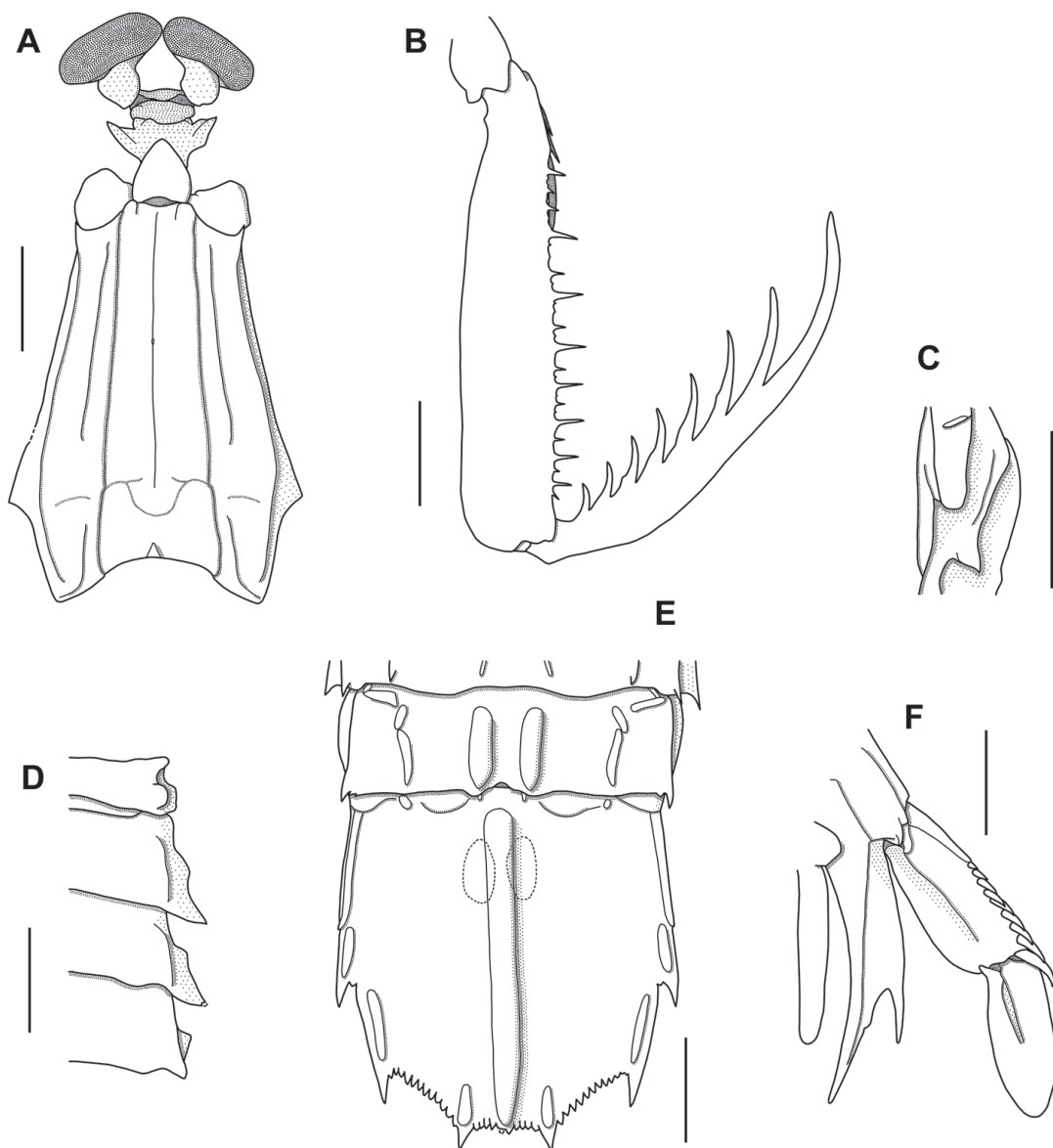


Fig. 5. *Harpiosquilla harpax* (de Haan, 1844), male (OMNH-Ar-12074, TL 181 mm). A, carapace and anterior, dorsal view; B, right raptorial claw, lateral view; C, 5th thoracic somite (right), lateral view; D, 5-8th thoracic somites (right), dorsal view; E, 6th abdominal somite and telson, dorsal view; F, right uropod, dorsal view. Scales: 10 mm.

Harpiosquilla japonica Manning, 1969: 15, figs. 10, 11 [type locality: Japan]. –Manning, 1995: 158, figs. 87b, d, 88b, 91b, 92a, e, 94b. –Liu and Wang, 1999: 577 (list). –Moosa, 2000: 433. –Ahyong et al., 2008: 114, figs. 88-90.

Harpiosquilla intermedia Manning and Michel, 1973: 113, figs. 1, 2b [type locality: New Caledonia].

Not *Squilla harpax*. –Tiwari and Biswas, 1952: 358, fig. 3b, d, f. –Ingle, 1963: 18, figs. 9, 36, 59. –Manning, 1968b: 121, fig. 3a [= *Harpiosquilla* sp. See below **Remarks** of *H. sp.*].

Not *Harpiosquilla harpax*. –Manning, 1966: 87, fig. 1 [= *H. stephensoni* Manning, 1969, according to Manning (1969)].

Not *Harpiosquilla harpax*. –Lee and Wu, 1966: 51, fig. 7A-F [= *H. indica* Manning, 1969, according to Ahyong et al. (2008)].

Not *Harpiosquilla harpax*. –Manning, 1968a: 15, fig. 4. –Tirmizi and Manning, 1968: 33, fig. 13. –Manning, 1969: 25, figs. 28-38. –Dutt and Ravindranath, 1975: 62, figs. 7-12. –Manning, 1995: 153, figs. 90a, 92b, 93, 95, 96, pl. 28. –Ahyong et al., 1999: 38, fig. 2a-d. –Liu and Wang, 1999: 577 (list). –Ahyong et al., 2008: 108, figs. 82, 83. –Mahapatro et al., 2019: 18, figs. 2-5 [= *Harpiosquilla* sp. See below **Remarks** of *H. sp.*].

Material examined. Lectotype, male (RMNH.CRUS.S.28, TL 152.5 mm), Japan, 1823-1834, coll. Ph. F. von Siebold and H. Bürger. Three paralectotypes (RMNH.CRUS.S.478: one female, TL 204 mm; two males, TL 177 and 93 mm), same data as lectotype.

One male (OMNH-Ar-12063, TL 168 mm), Osaka Bay (Fig. 2A), 30-50 m deep, caught by fishermen using Ishigeta dredge, 6 Jun. 2016. One male (OMNH-Ar-12064, TL 170 mm), same place and method, 24 Jun. 2020. One male (OMNH-Ar-12065, TL 141 mm), same place and method, 2 Jul. 2020. One male (OMNH-Ar-12066, TL 172 mm), same place and method, 12 Jul. 2020. One female (OMNH-Ar-12067, TL 132 mm), same place and method, 19 Jul. 2020. Two males (OMNH-Ar-12068, TL 150, 124 mm), same place and method, 29 Jul. 2020. Two males (OMNH-Ar-12069, TL 130, 127 mm), same place and method, 3 Aug. 2020. Three males and one female (OMNH-Ar-12070, TL 169, 162, 127, 177 mm), same place and method, 5 Aug. 2020. One male (OMNH-Ar-12071, TL 173 mm), same place and method, 7 Aug. 2020. Three males (OMNH-Ar-12072, TL 158, 122, 116 mm), same place and method, 12 Aug. 2020. Two males and one female (OMNH-Ar-12073, TL 132, 123, 134 mm), same place and method, 16 Aug. 2020. Five males and two females (OMNH-Ar-12074, TL 181, 171, 132, 127, 126, 162, 131 mm), same place and method, 19 Aug. 2020. Three males (OMNH-Ar-12075, TL 193, 165, 144 mm), same place and method, 11 Sep. 2020. Fourteen males and one female (OMNH-Ar-12076, TL 210, 204, 204, 204, 203, 203, 202, 189, 181, 176, 173, 173, 172, 172, 193 mm), Kii Channel (Fig. 2B), 40-70 m deep, caught by fishermen using trawl, 19 Jul. - 10 Aug. 2020.

Diagnosis. Antennal scale translucent. Rostral plate without distinct apical projection, anterolateral margins weakly convex in larger individuals (see below **Variation**). Carapace with median carina. Raptorial claw dactylus with 8 teeth, outer margin slightly swollen in large males (see below **Variation**). Sixth to eighth thoracic somites with intermediate carinae unarmed posteriorly. Sixth abdominal somite with inflated, wide submedian carinae. Telson apparently longer than broad, with inflated, wide median carina and pair of oval, dark brown patches.

Description of male (based on OMNH-Ar-12074, TL 181 mm). Body (Fig. 4A) slender. Cephalon (Fig. 5A) with eyes large, corneal index (carapace length / cornea width x 100) 297; rostral plate nearly as long as wide, apex obtusely angled, anterolateral margins weakly convex; carapace broadened posteriorly, anterolateral corners each bearing spine, posterolateral margins each with excavation, median carina present, dorsal pit indistinct, intermediate carinae not extending to anterior margin. Raptorial claw (Fig. 5B) large; propodus with series of immovable spines and with 1 long and 2 short movable spines proximally; dactylus with 8 teeth on inner margin, outer margin slightly swollen in proximal half and with low prominence near proximal end.

Thoracic somites (Fig. 5C, D) with fifth somite rounded posterolaterally, but with anteroventrally-oriented lateral process; sixth to eighth somites with indistinct submedian and distinct intermediate carinae, none armed posteriorly, sixth and seventh somites with acute posterolateral process on each side, eighth somite bearing blunt process on each lateral margin. Abdomen with indistinct submedian carinae on first to fifth somites, those on sixth somite inflated, wide;

carinae spined as follows: submedian 6 (spine defaced), intermediate 2-6, lateral 1-6, marginal 1-5. Telson (Fig. 5E) 1.16 times longer than broad; dorsal surface with inflated, wide median carina, spine on posterior end of median carina defaced; margins with 3 pairs of primary teeth, marginal carina about 2.4 times as long as lateral carina, denticle formula: submedian 5, intermediate 12, lateral 1. Uropod (Fig. 5F) with exopod bearing 8 small and 1 large crescent movable spines on outer margin of proximal segment; protopod terminating in long inner and short outer spines, outer margin of inner spine with rounded small lobe proximal to half part; endopod slender.

Description of female (sexual dimorphic characters; based on OMNH-Ar-12070, TL 177 mm, Fig. 4B). Dactylus of raptorial claw slender, outer margin smoothly curved. Ovary developed.

Variation (all of 45 specimens were examined). Rostral plate (Fig. 6): in large individuals (TL >140 mm), apex obtusely angled (without distinct apical projection), anterolateral margins weakly convex; in smaller individuals, anterolateral margins slightly concave (Fig. 6G, K) or nearly straight (Fig. 6H, L). Raptorial claw: opposable margin of dactylus with 7 (1%), 8 (97%) or 9 (2%) teeth; outer margin of dactylus in males larger than above-mentioned male (TL 181 mm) slightly more swollen, but not angular. Abdominal somites: posterior spines of intermediate carinae on second somite present on both side (56%), one side (22%) or none (22%); posterior spines of submedian carinae on sixth somite defaced in part of material examined (13%). Telson (Fig. 7): longer than broad in all specimens,

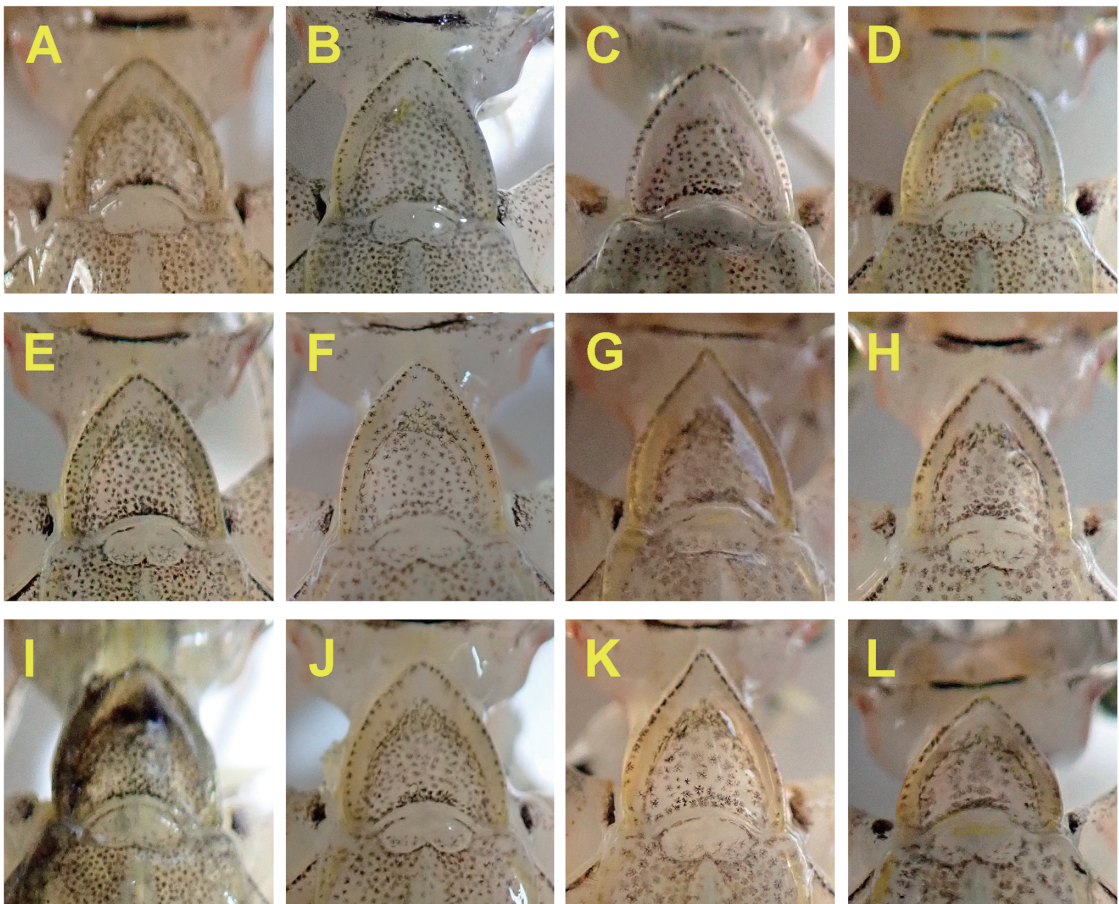


Fig. 6. Photographs of rostral plates of *Harpiosquilla harpax* (de Haan, 1844), dorsal views. A, male (OMNH-Ar-12076, TL 202 mm); B, male (OMNH-Ar-12074, TL 181 mm); C, male (OMNH-Ar-12076, TL 176 mm); D, male (OMNH-Ar-12074, TL 171 mm); E, male (OMNH-Ar-12072, TL 158 mm); F, male (OMNH-Ar-12075, TL 144 mm); G, male (OMNH-Ar-12074, TL 127 mm); H, male (OMNH-Ar-12072, TL 122 mm); I, female (OMNH-Ar-12076, TL 193 mm); J, female (OMNH-Ar-12070, TL 177 mm); K, female (OMNH-Ar-12073, TL 134 mm); L, female (OMNH-Ar-12067, TL 132 mm).

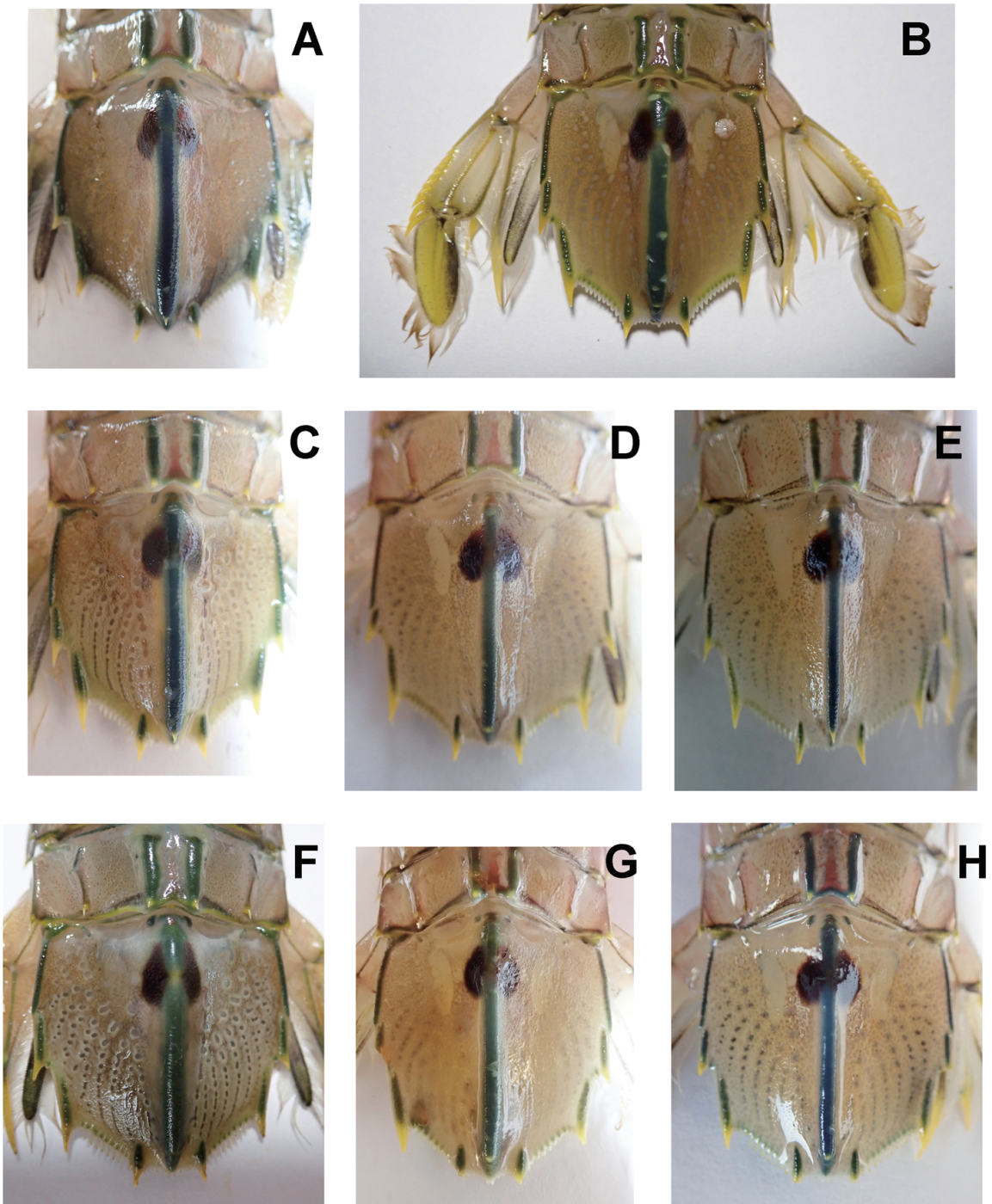


Fig. 7. Photographs of 6th abdominal somites and telsons of *Harpiosquilla harpax* (de Haan, 1844), dorsal views. A, male (OMNH-Ar-12076, TL 204 mm); B, male (OMNH-Ar-12074, TL 181 mm); C, male (OMNH-Ar-12076, TL 172 mm); D, male (OMNH-Ar-12065, TL 141 mm); E, male (OMNH-Ar-12072, TL 116 mm); F, female (OMNH-Ar-12076, TL 193 mm); G, female (OMNH-Ar-12074, TL 162 mm); H, female (OMNH-Ar-12067, TL 132 mm).

length-width ratio ranging from 1.06 to 1.19 (average: 1.12; Fig. 8); median carina narrower in smaller individuals (TL <ca. 140 mm; Fig. 7E, H), posterior spine on median carina defaced in 33% individuals.

Rostral plates and telsons of the type specimens (Fig. 9). Rostral plate lacking distinct apical projection; anterolateral margins weakly convex (Fig. 9A, B, C) or nearly straight (TL 93 mm, Fig. 9D). Telson longer than broad in all specimens (length/width: 1.05–1.11). Another paralectotype (RMNH.CRUS.S.460, female, TL ca. 148 mm) not examined in the present study, rostral plate with convex anterolateral margins (cf. Yamaguchi and Baba, 1993).

Maximum TLs of the specimens examined. Male: 210 mm. Female: 204 mm.

Coloration in life (based on OMNH-Ar-12074, TL 181 mm; Figs. 4A, C, 7B). Eyes greenish silver. Antennal scale translucent, with gray anterior and posterior margins. Carapace pale brown, with dark patch on middle-posterior part. Raptorial claw, merus pinkish light brown, meral saddle pale yellow, with large and small black marks dorsomedially; propodus white, distal end yellow; dactylus white. Thoracic and abdominal somites yellowish light brown, their posterior margins brown, lateral surfaces pinkish, submedian carinae on sixth somite dark green. Telson slightly-pinkish light brown, median carina dark green, proximal part beside median carina with pair of dark brown oval patches, other carinae green, marginal spines yellow, denticles white. Uropod, proximal segment of exopod light brown, with dark brown inner margin, outer marginal spines yellow, outer two thirds of distal segment yellow, inner one third dark brown; protopod light brown, with brownish green ridge, distal spines yellow; endopod light brown, with dark brown margins.

Remarks. The present specimens are characterized particularly by having the rostral plate lacking a distinct apical projection (Fig. 6) and the telson longer than broad (Figs. 7, 8) which has been overlooked in the previous studies. Because morphological characters including these characters of the specimens agree well with those of the type specimens of *H. harpax* (Fig. 9) [although there are minor differences from the figure of De Haan (1844) (Fig. 1A)], the specimens are identified as *H. harpax*. The characters also coincide with those of *Harpiosquilla japonica* especially in the rostral plate lacking a slender anterior projection and the type locality of the species is contained in the Kii Channel. Moreover, *H. raphidea* sensu Fukuda (1913), which was referred to *H. japonica* by Manning (1969), has a telson longer than broad (Fig. 1B); therefore, although the anterolateral margins of the rostral plate are almost straight in the figures of Manning (1969) and Fukuda (1913), *H. japonica* is synonymized with *H. harpax*.

On the other hand, many specimens having a distinct apical projection on the rostral plate and shorter telson have been misidentified as *H. harpax* (see above synonym lists); they should be referred to another species of *Harpiosquilla* as discussed below.

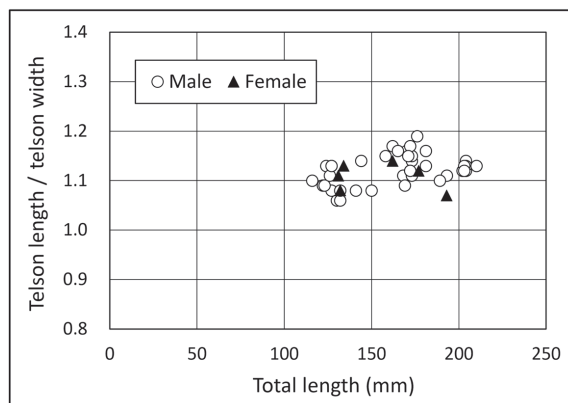


Fig. 8. *Harpiosquilla harpax* (de Haan, 1844). Telson length / telson width relative to total length.

Distribution. Japan, Taiwan (Ahyong et al., 2008), China (Liu, 1949), Vietnam (Manning, 1995), New Caledonia (Manning and Michel, 1973) and Australia (Ahyong et al., 2008).

Distribution in Japan: Misaki (Komai, 1927), Seto (Komai, 1927; 1938), Tanabe (Komai, 1938), Wakanoura (Rathbun, 1902; Komai, 1938; Manning, 1969), Kii Channel (Hamano, 1988; present study), Osaka Bay (Ariyama, 2004; present study), Tosa Bay (Machida and Yamamoto, 2006), Kashiwajima (Fukuda, 1913; Komai, 1927), Toyama Bay (Motoh, 2007), Kunda Bay and Miyazu Bay (Motoh, 2005), Imari Bay (Hamano, 1988), Nagasaki (Komai, 1927), Nomozaki (Hamano, 1988), and Yatsushiro Sea (Ugai et al., 2008).

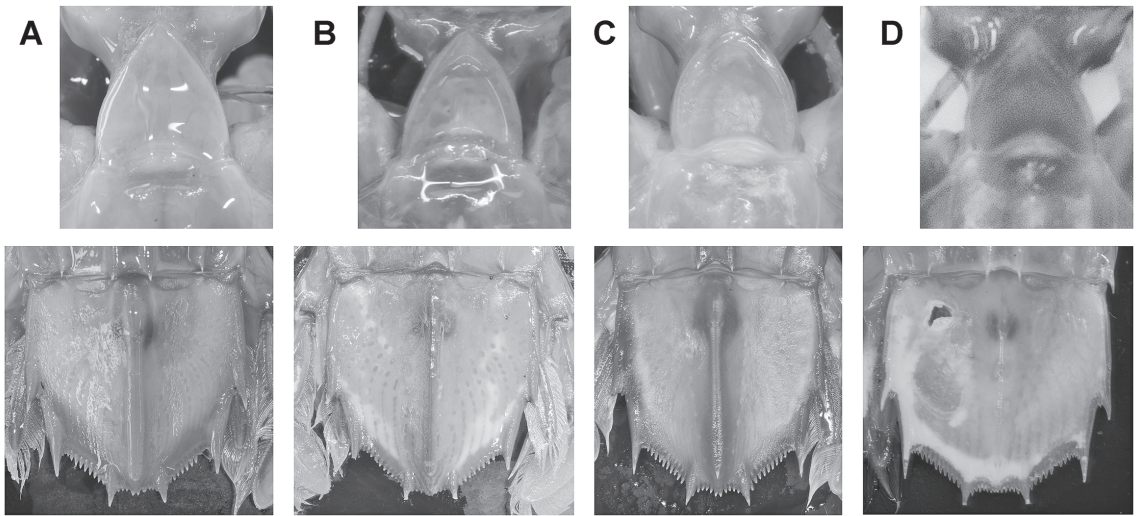


Fig. 9. Photographs of rostral plates (upper) and telsons (lower) of *Harpiosquilla harpax* (de Haan, 1844), dorsal views. A, male (lectotype, RMNH.CRUS.S.28, TL 152.5 mm); B, female (paralectotype, RMNH.CRUS.S.478, TL 204 mm); C, male (paralectotype, RMNH.CRUS.S.478, TL 177 mm); D, male (paralectotype, RMNH.CRUS.S.478, TL 93 mm).

Harpiosquilla sp.

(Figs. 10 and 11)

Material examined. Two females (RUMF-ZC-00768, TL 262, 157 mm), Nakagusuku Bay, Okinawa Island, 1993. Two males and one female (RUMF-ZC-00769, TL 177, 173, 144 mm), Haneji Bay, Okinawa Island, 19, 21 May, 1985.

Description. Body slender, raptorial claw large (Fig. 10). Rostral plate varying in shape; apical projection distinct (Fig. 11A, D), small (Fig. 11B) or indistinct (Fig. 11C, E); anterolateral margins strongly concave (Fig. 11A, D), slightly concave (Fig. 11B) or nearly straight (Fig. 11C, E). Telson as broad as long (length/width: 0.97–1.01; Fig. 11A, C-E) or slightly broader than long (length/width: 0.92; Fig. 11B). Other characteristics almost identical to those of *H. harpax* sensu Manning (1969).

Maximum TLs of the specimens examined. Male: 177 mm. Female: 262 mm.

Remarks. The specimens collected from Okinawa Island are quite different from the true *Harpiosquilla harpax* in the shapes of rostral plate and telson, and can be identified as *H. harpax* sensu Manning (1969) mainly in having the rostral plate with concave anterolateral margins. *Harpiosquilla harpax* sensu Manning (1969) including its synonyms has been recorded from various localities: Taiwan (Balss, 1910; Ah Yong et al., 2008), China (Ah Yong et al., 1999), Vietnam (Serène, 1954; Manning, 1995), Australia (Manning, 1969; Ah Yong, 2001), India (Boone, 1938; Tiwari and Biswas, 1952; Dutt and Ravindranath, 1975; Ghosh, 1987), Pakistan (Tirmizi and Manning, 1968), Red Sea (Ingle, 1963), Madagascar (Manning, 1968a; 1969; 1978) and South Africa (Barnard, 1950). This species is widely distributed in the Indo-West Pacific and there is a possibility that multiple similar species are included; therefore, the species name of the specimens from Okinawa Island cannot be determined at present. Further studies of morphology and genetic analysis on the material from various localities are needed.

If all of *Harpiosquilla harpax* sensu Manning (1969) are included in a single species, its species name might be *H. malagasiensis* Manning, 1978 or *H. paradipa* Ghosh, 1987, both synonymized with *H. harpax* by Ah Yong (2001), and the former has priority in the scientific name. *Harpiosquilla malagasiensis* was described based on a single specimen (female, TL 196 mm) from Madagascar (Manning, 1978). Although the holotype of *H. malagasiensis* has an apically rounded rostral plate, Ah Yong (2001) stated that this shape appears to be the result of damage. *Harpiosquilla paradipa*

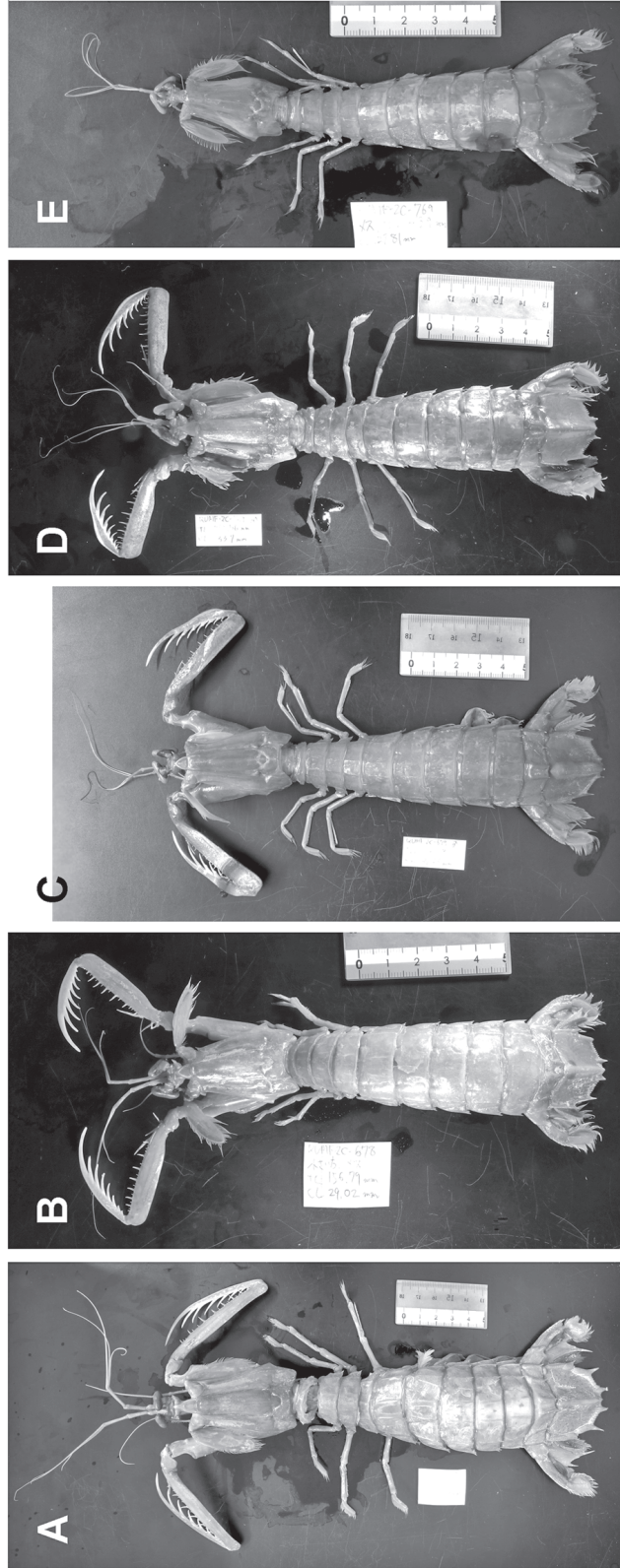


Fig. 10. Photographs of *Harpisquilla* sp. collected from Okinawa Island. Preserved specimens, dorsal views A, female (RUMF-ZC-00768, TL 262 mm); B, female (RUMF-ZC-00768, TL 157 mm); C, male (RUMF-ZC-00769, TL 177 mm); D, male (RUMF-ZC-00769, TL 173 mm); E, female (RUMF-ZC-00769, TL 144 mm).

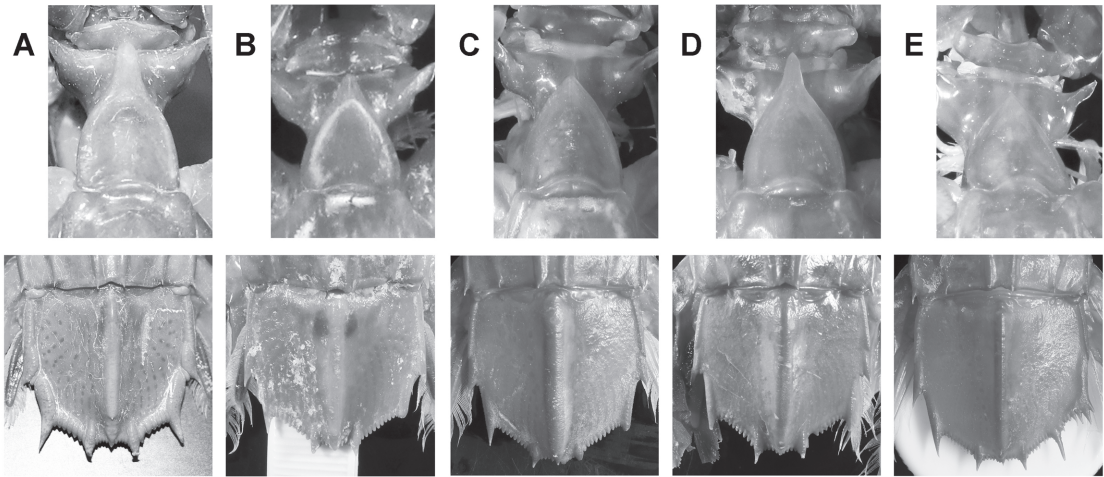


Fig. 11. Photographs of rostral plates (upper) and telsons (lower) of *Harpiosquilla* sp. collected from Okinawa Island, dorsal views. A, female (RUMF-ZC-00768, TL 262 mm); B, female (RUMF-ZC-00768, TL 157 mm); C, male (RUMF-ZC-00769, TL 177 mm); D, male (RUMF-ZC-00769, TL 173 mm); E, female (RUMF-ZC-00769, TL 144 mm).

was described based on also a single specimen (male, TL 148 mm) from India (Ghosh, 1987).

Distribution in Japan. Only from Okinawa Island in the Ryukyu Archipelago (present study).

Acknowledgments

We express our sincere thanks to Dr. Masayuki Osawa of Research Center for Coastal Lagoon Environments, Shimane University, and Dr. So Ishida of OMNH for appropriate comments on the manuscript. HA would like to thank Mr. Yasuji Oketani for gathering specimens from Osaka Bay, and Dr. Yukio Ueta of Tokushima Agriculture, Forestry, and Fisheries Technology Support Center for donating specimens caught in the Kii Channel.

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