Two monstrolloid copepod species belonging to the genus *Monstrilla* Dana are newly recorded from Korea: *M. grandis* Giesbrecht, 1891 and *M. hamatapex* Grygier and Ohtsuka, 1995. Specimens were obtained from inshore waters around the coasts of South Korea, using a light trap installed at quays and wharves overnight. Based on the Korean specimens, the two species are redescribed, with brief accounts of their affinities and morphological variabilities. Remarkable morphological discrepancies are confirmed in female leg 5 of *M. grandis* between type material from Southern Hemisphere and European and Asian specimens, which raise a strong doubt on their conspecificity. Korean specimens of *M. hamatapex* well coincide with the type specimens from Japan, except for some variations in the setal armature of leg 5 and antennules. This is the second taxonomic paper on the monstrolloid copepods in Korea, and the genus *Monstrilla* is newly added to Korean fauna.

**Keywords:** Copepoda, *Monstrilla*, Monstrolloida, Monstrellidae, new records, taxonomy

**INTRODUCTION**

Monstrolloid copepods are basically endoparasites of marine invertebrates during their juvenile stages, but adults lacking mouthparts are free-swimming and non-feeding (Suárez-Morales, 2011; see Suárez-Morales et al., 2014 for detailed life history). The extremely reduced mouth field in non-feeding adults and the overwhelmingly constant segmentation and invariable seta/spine armature of thoracic legs 1–4 are major obstacles in monstrolloid taxonomy, which have been employed as the most discriminative and decisive characters in the taxonomy of other copepod orders. Furthermore, only a single sex has been recognized and described for most of the known species, whereas both males and females are known in ‘only reduced number of species, which makes it difficult to link both sexes’ (Suárez-Morales, 2000). In consequence, many species may have been mistakenly recognized as different species, while, conversely, a certain nominal species may actually represent a species complex including a few or several distinct species. Although the generic nomenclature is still somewhat unsettled (Boxshall and Halsey, 2004; Walter and Boxshall, 2014), about 127 species of five valid genera are currently recognized in the single family Monstrillidae Dana, 1849 (Suárez-Morales, 2011; Suárez-Morales and McKinnon, 2014). Among these genera, the major one is *Monstrilla* Dana, 1849, which currently comprises 56 species, about 44% of all recorded monstrolloid species.

In Korea, taxonomic study of monstrolloid copepods is still nearly lacking. Since the 1990s, the author has tried to collect monstrolloid copepods around the coasts of South Korea and stored in the Department of Biological Science, Daegu University, but the collection data were sporadic and sometimes incomplete, and the specimens were inadequately preserved. Recently, I resumed survey for monstrolloids by using a light trap, and intensively gathered lots of specimens. From this material, a new species, *Cymbasoma striifrons* Chang, 2012, has been described from the east coast of Korea (Chang, 2012). As the second taxonomic study on Korean monstrolloid copepods, I now record two species belonging to the genus *Monstrilla*, *M. grandis* Giesbrecht, 1891 and *M. hamatapex* Grygier and Ohtsuka, 1995. Herein, I redescribe them, based on the Korean specimens, with brief accounts of their affinities and morphological variabilities.
MATERIALS AND METHODS

The material examined in the present study was collected using a light trap installed at quays and wharves overnight. The trap consisted of a PVC pipe (15 cm in diameter, 42 cm long) and a couple of flash lights for SCUBA divers hanging inside the pipe. Samples were filtered at dawn through a conical plankton net or a hand net, both with 64 µm mesh, and copepods were fixed in 4% buffered formalin or in approximately 90% ethanol in the field. Methods for preparation in the laboratory, microscopic observation, and measurements were the same as in the previous paper dealing with Korean monsters (Chang, 2012).

Voucher specimens for *M. hamatapex* Grygier and Ohtsuka are deposited in the National Institute of Biological Resources (NIBR), Incheon, Korea.

General terminology for monstrilloid taxonomy follows Huys and Boxshall (1991), and the nomenclature for the monostiloid plankton net or a hand net, both with 64 µm mesh, and a couple of flash lights for SCUBA divers hanging inside the pipe. Samples were filtered at dawn through a conical plankton net or a hand net, both with 64 µm mesh, and copepods were fixed in 4% buffered formalin or in approximately 90% ethanol in the field. Methods for preparation in the laboratory, microscopic observation, and measurements were the same as in the previous paper dealing with Korean monsters (Chang, 2012).

SYSTEMATIC ACCOUNTS

Order Monstrilloida Sars, 1903
Family Monstrillidae Dana, 1849
Genus *Monstrilla* Dana, 1849

*Monstrilla grandis* Giesbrecht, 1891 (Figs. 1, 2)

*Monstrilla grandis* Giesbrecht, 1891 (cited from Giesbrecht, 1893); 1893: 586, Pl. 46, figs. 2, 8, 11, 17, 19, 24, 25, 35, 39; Rose, 1933: 344; Anraku, 1953: 191; Shen and Bai, 1956: 233, Pl. 13, figs. 100–105; Isaac, 1974a: 128, fig. 1; 1974b: 131; Huys and Boxshall, 1991: 155, figs. 2.5.1-2; Suárez-Morales, 1994: 265; 2000: 107, figs. 2, 3; Grygier, 1995: 9; Boxshall and Halsey, 2004: 836, figs. 289B, E.

*Strilloma grandis* Isaac, 1975: 6, fig. 36.

**Material examined.** Korea: 1 ♀, Gangwon-do, Donghae, Mukho Port, 13 Oct 2012, Chang CY, Son YJ; 3 ♀ ♀ (1 ovi.), Gyeongsangbuk-do: Pohang, Guryongpo, Samjeong Beach, 10 Dec 2008, Chang CY, Lee J; 3 ♀ ♀, Gyeongju, Gampo-eup, 16 Nov 2008, Chang CY, Lee J; 1 ♀, Pohang, Youngil Bay, 11 Oct 2012, Chang CY, Son YJ; 6 ♀ ♀, Ulsan, Mipo Bay, 6 Feb 1999, Chang CY, Lee J; 13 ♀ ♀, Jeollanam-do: Namhae-gun, Samdong-myeon, Eunjeom-ri, Namhae Island, 19 Oct 2012, Hong SS; 1 ♀, Namhae-gun, Seosang-ri, Seomyeon, Namhae Island, 20 Oct 2012, Hong SS; 11 ♀ ♀, Wando-gun, Jung-ri, Bogil Island, 2 May 1996, Chang CY; 9 ♀ ♀, Jeollabuk-do, Buan-gun, Byeonsan-myeon, Wangpo, 2 Aug 1998, Chang CY, Lee J.

**Description. Female:** Body (Fig. 1A, B) rather slender and large, 1,150–1,690 µm long (mean 1,420 µm, standard deviation 274, n=8), measured from anterior end of cephalothorax to posterior margin of caudal rami, excluding antennules and caudal setae.

Cephalothorax (Fig. 1A–C) incorporating first pedigerous somite, somewhat large and relatively long, accounting for about 58% of total body length; anterior two-fifths swollen laterally and ventrally. Forehead slightly concave medially in dorsal view; anterior part just behind antennular bases abruptly curved inward. Anteriormost part of ventral surface with small, round protuberance furnished with 8–10 minute denticles (Fig. 1B, C). All three cups of nauplius eye round, not well developed (Fig. 1A). Weak, fine longitudinal wrinkles running behind antennular bases on each side of lateroventral surfaces, flanked by 3 pairs of small nipple-like scars and 2 pairs of sensory pores, ahead of oral papilla. Oral papilla (Fig. 1B, C) situated slightly posterior to midlength of cephalothorax (52.4%), slightly protruding midventrally.

Urosome (Fig. 1A, B) consisting of 4 urosomites, viz., fifth pedigerous somite, genital double-somite, third urosomite, and anal somite, followed by caudal rami, altogether accounting for 21.7% of total body length, excluding caudal setae. Genital double-somite slightly swollen laterally, bearing paired, long ovigerous spines, inserted on middle of ventral surface, basally separated, representing 37.5% of total body length, nearly twice as long as urosome, with tips pointed, not swollen (Figs. 1B, 2D), extending far beyond tips of caudal setae. Anal somite trapezoidal; lacking wrinkles or striae both on dorsal and ventral surfaces; lateral margin nearly smooth, without apparent notch.

Caudal rami (Figs. 1A, 2D) a little divergent, about 1.8 times longer than wide, with small cuticular protuberance at inner distal corner of ramus and anterior to bases of lateral caudal setae; armed with 6 well-developed caudal setae, of which 3 distal, 2 lateral, and 1 dorsal.

Antennule (Figs. 1A, B, 2A) long and slender, slightly longer than 48% of total body length, about 73% as long as cephalothorax; 3-segmented (ratio of lengths of segments from proximal to distal 12.4 : 17.2 : 70.4), measured from anterior end of cephalothorax.

**Genital double-somite** (Fig. 1A–C) incorporating first pedigerous somite, somewhat large and relatively long, accounting for about 58% of total body length; anterior two-fifths swollen laterally and ventrally. Forehead slightly concave medially in dorsal view; anterior part just behind antennular bases abruptly curved inward. Anteriormost part of ventral surface with small, round protuberance furnished with 8–10 minute denticles (Fig. 1B, C). All three cups of nauplius eye round, not well developed (Fig. 1A). Weak, fine longitudinal wrinkles running behind antennular bases on each side of lateroventral surfaces, flanked by 3 pairs of small nipple-like scars and 2 pairs of sensory pores, ahead of oral papilla. Oral papilla (Fig. 1B, C) situated slightly posterior to midlength of cephalothorax (52.4%), slightly protruding midventrally.

Urosome (Fig. 1A, B) consisting of 4 urosomites, viz., fifth pedigerous somite, genital double-somite, third urosomite, and anal somite, followed by caudal rami, altogether accounting for 21.7% of total body length, excluding caudal setae. Genital double-somite slightly swollen laterally, bearing paired, long ovigerous spines, inserted on middle of ventral surface, basally separated, representing 37.5% of total body length, nearly twice as long as urosome, with tips pointed, not swollen (Figs. 1B, 2D), extending far beyond tips of caudal setae. Anal somite trapezoidal; lacking wrinkles or striae both on dorsal and ventral surfaces; lateral margin nearly smooth, without apparent notch.

Caudal rami (Figs. 1A, 2D) a little divergent, about 1.8 times longer than wide, with small cuticular protuberance at inner distal corner of ramus and anterior to bases of lateral caudal setae; armed with 6 well-developed caudal setae, of which 3 distal, 2 lateral, and 1 dorsal.

Antennule (Figs. 1A, B, 2A) long and slender, slightly longer than 48% of total body length, about 73% as long as cephalothorax; 3-segmented (ratio of lengths of segments from proximal to distal 12.4 : 17.2 : 70.4), measured from anterior end of cephalothorax.

**Material examined.** Korea: 1 ♀, Gangwon-do, Donghae, Mukho Port, 13 Oct 2012, Chang CY, Son YJ; 3 ♀ ♀ (1 ovi.), Gyeongsangbuk-do: Pohang, Guryongpo, Samjeong Beach, 10 Dec 2008, Chang CY, Lee J; 3 ♀ ♀, Gyeongju, Gampo-eup, 16 Nov 2008, Chang CY, Lee J; 1 ♀, Pohang, Youngil Bay, 11 Oct 2012, Chang CY, Son YJ; 6 ♀ ♀, Ulsan, Mipo Bay, 6 Feb 1999, Chang CY, Lee J; 13 ♀ ♀, Jeollanam-do: Namhae-gun, Samdong-myeon, Eunjeom-ri, Namhae Island, 19 Oct 2012, Hong SS; 1 ♀, Namhae-gun, Seosang-ri, Seomyeon, Namhae Island, 20 Oct 2012, Hong SS; 11 ♀ ♀, Wando-gun, Jung-ri, Bogil Island, 2 May 1996, Chang CY; 9 ♀ ♀, Jeollabuk-do, Buan-gun, Byeonsan-myeon, Wangpo, 2 Aug 1998, Chang CY, Lee J.
Fig. 1. Monstrilla grandis Giesbrecht, female: A, Habitus, dorsal; B, Habitus, lateral; C, Cephalothroax, ventral. Scale bar: A–C=200 μm.
Fig. 2. *Monstrilla grandis* Giesbrecht, female: A, Antennule; B, Leg 1; C, Leg 4; D, Urosome, ventral; E, First to third urosomites, lateral. Scale bars: A=200 μm, B–E=100 μm.
and b₅ slender, short, not branched; b₆a, 6aes absent. Distal 2 claw-like spines (6₁ and 6₂) slightly different in length, 6₂ about 1.2 times longer than 6₁.

Legs 1–4 all with both endopod and exopod 3-segmented. Coxa of legs 1–4 lacking seta; intercoxa sclerite with smooth posterior margin; both anterior and posterior surfaces smooth without transverse row of spinules or setules. Coxa and basis not markedly divided. Basis lacking seta distomedially; outer seta slender, naked, except for that on leg 3, which is much longer and setulate. First and second endopodal segments of legs 1–4 slightly swollen laterally with hairs along outer distal margin. Outer distal spines on first and third exopodal segments of legs 1–4 feeble, much shorter than segments bearing them (Fig. 2B, C). Seta/Spine armature on swimming legs 1–4 as follows (Roman numerals indicate number of spines, and Arabic numerals indicate number of setae):

| Coxa | Exopod | Endopod |
|------|--------|---------|
| Leg 1 | 0-0 | 1-0 | 1-1; 0-1; 1,1,3 | 0-1; 0-1; 1,2,2 |
| Legs 2–4 | 0-0 | 1-0 | 0-0; 1,1,4 | 0-1; 0-1; 1,2,2 |

Leg 5 (Fig. 2D, E) bilobed, both members of pair fused medially. Outer lobe elongate, lateral margin curved outward, armed with 3 long, plumose setae; thumb-like process present medially. Outer lobe oblong, about 2 times as long as wide, its tip not quite reaching distal end of outer lobe, furnished with 2 apical setae of subequal length.

**Male**: Not collected.

**Remarks.** This species was originally and briefly diagnosed by Giesbrecht in 1891 from material collected off southern Patagonia in the southeastern Atlantic Ocean (49°S, 65°W) (Grygier, 1995). Later, Giesbrecht (1893) provided a more detailed, but still rather inadequate description and illustrations of males and females, based on this material. Neither his text nor his illustrations note the presence of a thumb-like or knob-like process on the outer lobe of leg 5 in the female. The present Korean specimens share it with Shen and Bai’s (1956) Chinese specimens, Isaac’s (1974a) and Huys and Boxshall’s (1991) British specimens, and Suárez-Morales’ (2000) specimens from Toulon Bay in the northwestern Mediterranean Sea. Isaac (1974a) mentioned another difference between his material and Giesbrecht’s (1893) figure: the two apical setae on the inner lobe of leg 5 were nearly equal in length in Isaac’s specimens, but the inner seta was much shorter than the outer in Giesbrecht’s figure. All the Korean specimens examined, as well as the other records above, agree with Isaac’s description. Dr. Grygier (personal communication) provided a very significant suggestion about this, as follow: “Taking these facts into account, as well as biogeographical considerations, it seems unlikely that the original material of *M. grandis* from the Southern Hemisphere could truly be conspecific with European and East Asian populations in the Northern Hemisphere, even if the latter are conspecific with each other. Other Argentine specimens were described and illustrated by Ramirez (1971), but no morphological description was offered of specimens reported from Chilean fjords by Marín and Antezana (1985) and from various places in Brazil. Further speculation in this direction is beyond the scope of the present paper, but to clarify the taxonomic status of Northern Hemisphere populations of *M. grandis*, either the type material, Ramirez’s (1971) material, or new topotypic specimens of both sexes should be compared with European and Asian specimens in accordance with current descriptive standards and/or by molecular systematic means”.

The relative length of the ovigerous spines is rather consistent in the Korean specimens, slightly less than twice as long as the urosome, which agrees well with Huys and Boxshall (1991) and Suárez-Morales (2000).

A long and slender antennule, equal to about half of the total body length, is a characteristic of this species. Suárez-Morales (2000) provided an excellent illustration of the antennules and analyzed the setation pattern in detail for the first time, using Grygier and Ohtsuka’s (1995) nomenclature. The setal armature of the present Korean female specimens coincides with that of Suárez-Morales’ (2000) Mediterranean specimens, except that the seta b₃ on last segment is lacking in Suárez-Morales (2000) specimen, while the weakly-branched seta b₅ is present in all the Korean specimens examined (cf. Fig. 2A). Furthermore, the relative length of the antennules shows a little variability: slightly less than half the total body length in the Korean specimens and the British specimens of Huys and Boxshall (1991, fig. 2.5.1), but slightly longer than 53% of the total body length in Suárez-Morales’ (2000) specimens.

**Distribution.** Northeast Atlantic from Britain to Morocco, Mediterranean and Black Seas, Suez Canal, West Indies (Barbados, Puerto Rico), Brazil, Argentina, Chile, China (Bohai Bay, Chefoo, South China Sea), Vietnam, Japan (Hokkaido, Shimonoseki), Korea (Yellow Sea, South Sea, East Sea).

*Monstrilla hamatapex* Grygier and Ohtsuka, 1995 (Figs. 3, 4)

*Monstrilla* sp. Sekiguchi, 1982: 26, fig. 2.

*Monstrilla hamatapex* Grygier and Ohtsuka, 1995: 703, figs. 5, 6; Toda, 1997: 1002, Pl. 234.

**Material examined.** Korea: 4♀♀ (1 ovi.), Gyeongsangbuk-do: Yeongdeok-gun, Gamyung-myeon, Geumjin-2-ri, 27 Jul 2007, Chang CY, Lee J; 4♀♀, Pohang-si, Songra-myeon, Hwajin-1-ri, 17 Aug 2010, Chang CY, Yoo JG; 7♀♀, Pohang-si, Youngil Bay, 11 Oct 2012, Chang CY, Son YJ; 2♀♀, Pohang-si, Yangpo-ri, 30 Jun 2012, Chang CY, Son
Fig. 3. Monstrilla hamatapex Grygier and Ohtsuka, female: A, Habitus, dorsal; B, Habitus, lateral. Scale bars: A=200 μm, B=300 μm.
Fig. 4. *Monstrilla hamatapex* Grygier and Ohtsuka, female: A, Urosome, dorsal; B, Antennule; C, Leg 1; D, Leg 3; E, Outer spine and outer apical seta on third exopodal segment of leg 3; F, Leg 5. Scale bars: A–F = 100 \( \mu \text{m} \).
Description. Female: Body (Fig. 3A, B) large, relatively stubby; 1,321–1,642 μm long (mean 1476.2 μm, standard deviation 153, n=12), measured from anterior end of cephalothorax to posterior margin of caudal rami, excluding antennules and caudal setae; widest at posterior margin of cephalothorax, mean of length to width ratio 0.29, then tapering regularly posteriorly. Prosome comprising cephalothorax and 3 thoracic somites, each bearing pair of biramous swimming legs. Cephalothorax, incorporating first pedigerous somite, bullet-shaped, large (mean 667 μm long), accounting for about 45% of body length; anterior third slightly swollen laterally; dorsal surface ornamented with several sensory pores on anterior end of cephalothorax, flanking 2 pairs of large pores posteriorly, then with 1 transverse row of 4 small pores at level of anterior quarter of cephalothorax; 4 pairs of small pores situated middorsally just behind midlength of cephalothorax, these being furnished with subcuticular ducts; 4–5 pairs of sensilla present dorsolaterally near posterior margin of cephalothorax.

Nauplius eye consisting of 1 anteroventral and 2 lateral small cups, widely separated from each other in dorsal view (Fig. 3A). Longitudinal wrinkles present behind antennular bases on each side of ventral surface, flanked by paired nipple-like scars (Fig. 3B). Oral papilla (Fig. 3B) situated slightly anterior to midlength of cephalothorax (42.4%), slightly protruding ventrally. Weak wrinkles present around oral papilla and nipple-like scars.

Urosome (Figs. 3A, B, 4A) consisting of fifth pedigerous somite, genital double-somite, third urosomite, and anal somite with caudal rami, accounting for about 29% of body length, excluding caudal setae. Genital double-somite slightly produced outer posteriorly, with transverse wrinkles along posterior margin anterior to midlength of cephalothorax, approximately 0.67 of total body length, nearly 1.5 times longer than urosome, with tips pointed, not swollen (Fig. 3B), extending far beyond tips of caudal setae. Anal somite (Fig. 4A) trapezoidal; lacking wrinkles or striae both on dorsal and ventral surfaces; lateral margin nearly smooth, without apparent notch.

Caudal rami (Fig. 4A) a little divergent; ramus suboval, with nearly straight inner margin, about 1.3 times longer than wide; furnished with 5 long, plumose setae, subequal in length and breadth, and 1 slender, short, naked seta dorsal to second medial seta.

Antennules (Fig. 4B) short and relatively stubby, about 19% of total body length, and about 43% as long as cephalothorax; 2-segmented, consisting of short, basal segment and long, compound distal segment. Basal segment bearing 1 short, naked seta (seta 1) anterodistally. Distal compound segment not clearly defined, with 5 indented parts, possibly representing original segments 2–6, showing standard arrangement of long, plumose setae, 1-2-3-0 from proximal to distal. Short, spiniform setae arranged normally in 1-5-1-5-1-2 pattern; seta 4v2 not doubled, much larger than 4v1. Two aesthetasc (long 4aes and short 6aes) present as usual. Six outer distal b-setae not branched. Distal 5-seta and apical 6-seta modified to form long, hook-like spines. Apical 2 chela-like spines (61 and 62) differing in length by 2.4–2.7 times.

Legs 1–4 all with both endopod and exopod 3-segmented. Coxa of legs 1–4 lacking seta; intercoxal sclerite subrectangular, with smooth posterior margin slightly produced laterodistally; both anterior and posterior surfaces smooth without transverse row of spinules or setules. Coxa and basis not fully divided. Basis lacking seta distomedially; outer seta slender, naked, of similar length in all 4 limbs. First and second endopodal segments of legs 1–4 slightly swollen laterally with hairs along lateral margin. Outer distal seta on third exopodal segment spiniform, with heterogeneous ornamentation along outer and inner margins; outer distal spines on first and third exopodal segments of legs 1–4 feebly, slightly shorter than segments bearing them, ornamented with minute secondary setules (Fig. 4E).

Seta/Spine armature of swimming legs 1–4 as follows (Roman numerals indicate number of spines, and Arabic numerals indicate number of setae):

- **Coxa**
  - Leg 1: 0-0-1-0
  - Leg 2–4: 0-0-1-0

- **Basis**
  - Leg 1: 0-1-1,1
  - Leg 2–4: 0-1-1,1,4

- **Exopod**
  - Leg 1: 0,0-1,1,4
  - Leg 2–4: 0-0-1,1,4

- **Endopod**
  - Leg 1: 0-0-1-0,1,2,2
  - Leg 2–4: 0-0-1-0,1,2,2

Leg 5 (Fig. 4F) single-lobed, medial margin with slight swelling representing vestige of endopodal lobe; exopod armed with 2 plumose apical and subapical setae, subequal in length.

**Male:** Unrecognized.

**Remarks.** This species was originally reported as “Monstrilla sp.” by Sekiguchi (1982) from Ago Bay, central south coast of Honshu Island, Japan, and later described as a new species by Grygier and Ohtsuka (1995), based mostly on the single female (holotype) from Tanabe Bay, Kii Peninsula, Honshu Island. They also examined Sekiguchi’s specimen, designated it as a paratype, and noted some variations between two specimens. The Korean specimens examined in this study
coincide well with the original description, especially with Sekiguchi’s specimen. The Korean specimens and Sekiguchi’s share a relatively weaker inner swelling of leg 5 representing the endopod, as compared with the holotype, and rather smooth exopodal lobes lacking a vestigial medial seta on both right and left legs, whereas the right leg 5 of the holotype has such a seta. They also share the same antennular setation, that is, a single seta 4v2, as opposed to the anomalously doubled setae 4v2 on the holotype’s right antennule.

This species is evidently the most common and frequent monstrilloid species in South Korea, and it occurs all year round.

**Distribution.** Japan (Tanabe Bay and Ago Bay, Honshu), Korea (East Sea, South Sea).

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**REFERENCES**

Anraku M, 1953. Seasonal distribution of pelagic Copepoda at Oshoro Bay, west coast of Hokkaido. Bulletin of the Faculty of Fisheries, Hokkaido University, 3:187-192.

Boxshall GO, Halsey SH, 2004. An introduction to copepod diversity. Vol. 166. Part II. The Ray Society, London, pp. 422-966.

Chang CY, 2012. First record of monstrilloid copepods in Korea: description of a new species of the genus Cymbasoma (Monstrilloida, Monstrillidae). Animal Systematics, Evolution and Diversity, 28:126-132.

Giesbrecht W, 1893 (dated 1892). Systematik und Faunistik der Distribution. 214 Anim. Syst. Evol. Divers. 30(3), 206-214.

Grygier MJ, Ohtsuka S, 1995. SEM observation of the nauplii of Monstrilla hamatapeX, new species, from Japan and an example of upgraded descriptive standards for monstrilloid copepods. Journal of Crustacean Biology, 15:703-719.

Huys R, Boxshall GA, 1991. Copepod evolution. Vol. 159. The Ray Society, London, pp. 1-468.

Isaac MJ, 1974a. Copepoda Monstrilloidea from south-west Britain including six new species. Journal of the Marine Biological Association of the United Kingdom, 54:127-140.

Isaac MJ, 1974b. Monstriloid copepods in the zoological museum, Berlin. Mitteilungen aus dem Zoologischen Museum, Berlin, 50:131-135.

Isaac MJ, 1975. Copepoda, sub-order: Monstrilloidea. Fiches d’Identification du Zooplancton, Conseil International pour l’Exploration de la Mer, 144/145:1-10.

Marín V, Antezana T, 1985. Species composition and relative abundance of copepods in Chilean fjords. Journal of Plankton Research, 7:961-966.

Ramírez FC, 1971. Nuevas localidades para Monstrilla grandis Giesbrecht 1892 y Monstrilla helgolandica Claus 1863 (Copepoda, Monstrilloidea) hallados en aguas de la plataforma Argentina. Fysis, Buenos Aires, 30:377-383.

Rose M, 1933. Copépodes pelagiques. Faune de France, 26:1-374.

Sekiguchi H, 1982. Monstrilloid copepods from Ago Bay, central Japan. Proceedings of the Japan Society of Systematic Zoology, 22:24-34.

Shen CJ, Bai SQ, 1956. The marine Copepoda from the spawning ground of Pneumatophorus japonicus (Houttuyn) off Chefoo, China. Acta Zoologica Sinica, 8:177-234.

Suárez-Morales E, 1994. Monstrilla elongata, a new monstrilloid copepod (Crustacea: Copepoda: Monstrilloidea) from a reef lagoon of the Caribbean coast of Mexico. Proceedings of the Biological Society of Washington, 107:262-267.

Suárez-Morales E, 2000. Taxonomic report on some monstrilloids (Copepoda, Monstrilloidea) from Toulon Bay, France. Bulletin de l’Institut Royal des Sciences Naturelles de Belgique, Biologie, 70:107-118.

Suárez-Morales E, 2011. Diversity of the Monstrilloidea (Crustacea: Copepoda: Monstrilloidea) hallados en aguas de la plataforma Argentina. Fysis, Buenos Aires, 30:377-383.

Toda T, 1997. Order Monstrilloidea. In: An illustrated guide to marine plankton in Japan (Eds., Chihara M, Murano M). Tokai University Press, Tokyo, pp. 1002-1004.

Walter TC, Boxshall GA, 2014. Monstrillidae [Internet]. World Copepoda database. Accessed 3 May 2014, <http://www.marinespecies.org/copepoda/aphia.php?p=taxdetails&id=1977>.