

NEBALIELLA BREVICARINATA N. SP. FROM THE
BATHYAL DEPTHS OFF THE PRINCESS
RAGNHILD COAST, ANTARCTICA
(CRUSTACEA: LEPTOSTRACA: NEBALIACEA)

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Abstract: *Nebaliella brevicarinata* sp. nov. (Leptostraca, Nebaliacea) is described on the basis of a single female, which was collected by the 27th Japanese Antarctic Research Expedition (JARE-27) from the bathyal depths, off the Princess Ragnhild Coast. The new species is easily distinguished from three known species of the genus by having a well marked vertical short carina near the anterolateral lower angle of the carapace.

In the genus *Nebaliella*, there have been described only three species, two of which have been recorded from the Antarctic Sea and one from the east coast of North America. The genus was established by THIELE (1904) for the type species, *Nebaliella antarctica*, from off Kerguelen (type locality) and South Island of New Zealand, 9–20 m deep, and *N. extrema* THIELE, from the Kaiser Wilhelm II Land (type locality, east side of Antarctica) (THIELE, 1905) and the Palmer Archipelago (west side of Antarctica, 160–385 m deep) (CANNON, 1931) was referred to the genus. The third species, *N. caboti* CLARK, 1932, has been recorded from the North Atlantic off the coast of North America, 378–2085 m deep. (CLARK, 1932; HESSLER and SANDERS, 1965).

One female specimen referable to this genus was found in the crustacean collection taken by the 27th Japanese Antarctic Research Expedition (JARE-27) from the bathyal depths off the Princess Ragnhild Coast. A detailed examination shows that the specimen represents a species distinct from the three known species, and thus in the present paper it is described as a new species, *N. brevicarinata*. The type specimen is deposited in the National Science Museum, Tokyo (NSMT).

Nebaliella brevicarinata sp. nov.

(Figs. 1–4)

Material: JARE-27 Station 1, (70°10.8'S, 24°11.4'E), beam trawl at a depth of 270 m; 1 adult female (holotype, NSMT-Cr 11088); 27 December 1985.

Size: Total body length (including caudal rami) of female holotype 12.8 mm, carapace length 4.7 mm, depth of carapace 6.2 mm.

Description of female holotype: Integument soft and membranous. Carapace almost oval in shape as seen from lateral side, its length about 1.5 times as long as

width. Dorso-lateral hind margin of carapace almost reaches the middle portion of fourth abdominal segment (Fig. 1a). In dorsal aspect, dorsal hind margin deeply creft and finely spinulous along its inner edge (Fig. 1c). Third and fourth abdominal segments only dorsally exposed (Fig. 1a). Near antero-ventral corner of carapace, a short, distinct vertical carina extending upward from its lower edge and being about 0.2 times as long as depth of carapace (Fig. 1b). Distal portion of rostrum has a narrow and tuberculate projection on its proximal ventral portion (Fig. 1f). Rostrum about 0.3 times as long as carapace, and its basal portion abruptly robust, almost oval in shape, about 0.3 times as wide as long and slightly more than half as long as its length, its distal portion narrowly projects forwards (Fig. 1g).

Eyestalk (Fig. 1d, e) articulated with head, without any ornamentations and visual elements; its articulate portion dorsally covered with rostral flange.

First antenna (Fig. 2d) with four-segmented peduncle; first peduncular segment short and robust, without stout setae; second segment elongate, bearing fine distal setae on its dorsal and ventral portions; third segment semitriangular in shape, with fine setae on its distal portion; fourth segment provided with several setae on anterior edge; antennular scale a little longer than fourth peduncular segment, about 3.0 times longer than wide, and densely setose on both sides; flagellum about 3.5 times longer than scale and consists of about 20 segments, of which basal one is composed of several

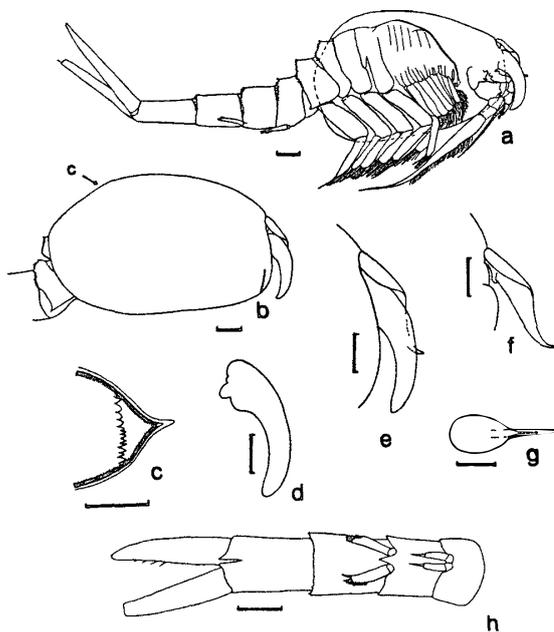


Fig. 1. *Nebaliella brevicarinata* sp. nov., female, holotype. a, female, total length 12.80 mm (including caudal lrami), lateral view (right side of carapace removed); b, carapace in lateral view; c, posterior end of carapace and second abdominal somite in dorsal view; d, eye in lateral view; e, eye and rostrum; f, rostrum; g, rostrum in dorsal view; h, abdomen in ventral view. Scale bars indicate 0.5 mm.

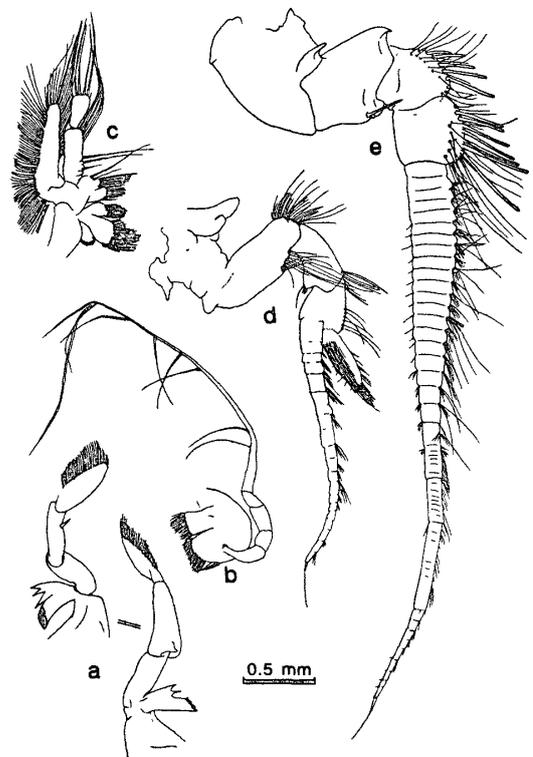


Fig. 2. *Nebaliella brevicarinata* sp. nov. female, holotype. a, mandible; b, first maxilla; c, second maxilla; d, first antenna; e, second antenna.

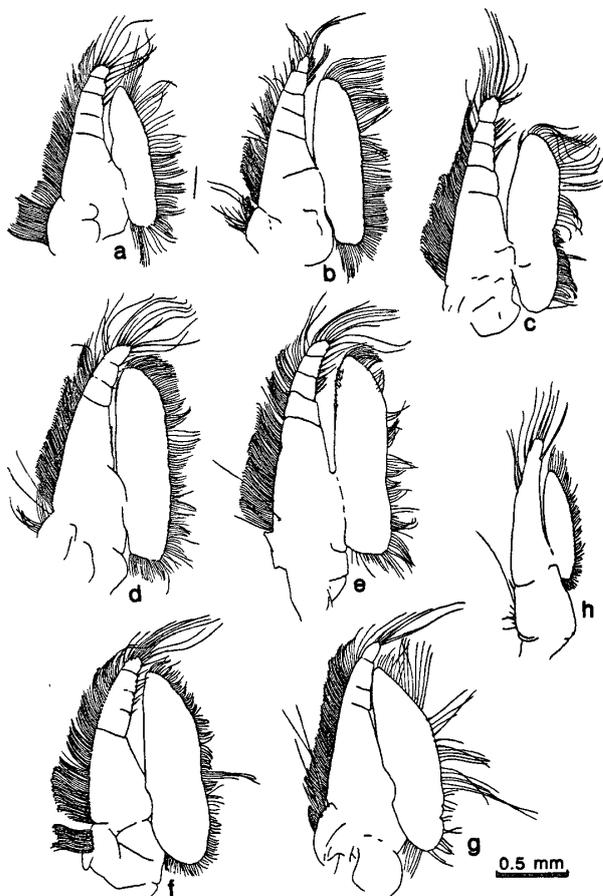


Fig. 3. *Nebaliella brevicarinata* sp. nov. female, holotype. a, first thoracopod; b, second thoracopod; c, third thoracopod; d, fourth thoracopod; e, fifth thoracopod; f, sixth thoracopod; g, seventh thoracopod; h, eighth thoracopod.

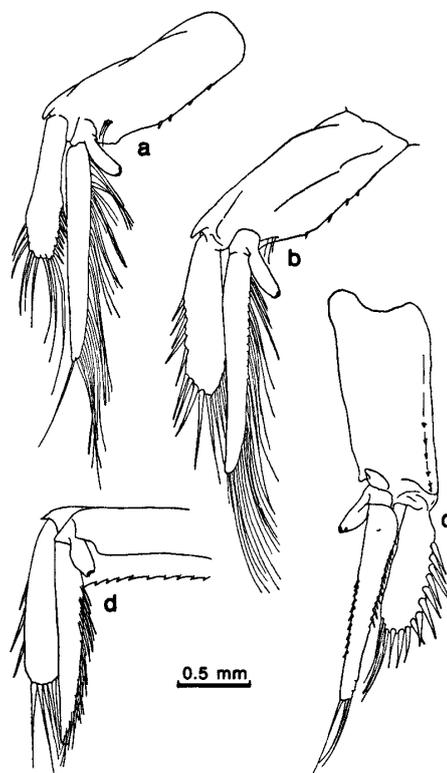


Fig. 4. *Nebaliella brevicarinata* sp. nov. female, holotype. a, first pleopod; b, second pleopod; c, third pleopod; d, fourth pleopod.

fused segments.

Second antenna (Fig. 2e) with four-segmented peduncle; first peduncular segment robust and provided with short and stout spine on dorso-distal edge; second segment about same size with first peduncular segment and furnished with hooklike projection on its dorsal end and one long spine on disto-ventral portion; third segment as long as fourth one and almost the same in shape, and furnished with strong slender spines and fine setae on anterior edge; flagellum rather long, almost reaches fourth pleopod in natural position and consists of about 35 segments, distal several segments of flagellum fused together.

Palp of mandible (Fig. 2a) consists of subequal 3 segments, second segment bears one strong spine in distolateral portion, third one elliptical in shape having plumose setae on ventral margin, incisor process with 3 acute teeth, and molar process with grinding surface.

Distal endite of first maxilla (Fig. 2b) 1.7 times longer than proximal one; palp very long, its distal flagellum about 3.6 times longer than four-segmented protopod,

distal portion of palp indistinctly segmented.

Second maxilla (Fig. 2c) with 5 endites setose, fifth endite bearing one long seta on its distal edge; endopod two-segmented, proximal segment about 1.6 times longer than distal one; exopod a little shorter than endopod.

All thoracopods similar in shape, without epipod; endopod moderately tapering off to pointed tip and densely setose on its inner margin. Endopod of first thoracopod (Fig. 3a) has 4 distal segments, distal two completely demarcated and proximal two incompletely separated by transverse line; exopod about 4.0 times longer than wide. Distal 4 segments of endopod of fifth thoracopod (Fig. 3e) well demarcated; exopod 3.8 times longer than width.

Endopod of eighth thoracopod (Fig. 3h) slender, without any trace of segmentation and with 8 strong setae on its distal portion, not setose on inner margin; exopod 4.0 times longer than wide.

First 4 pleopods similar in shape. Postero-lateral lower corner of first to third pleonites rounded, and that of fourth pleonite pointed (Fig. 1a).

Protopod of first pleopod (Fig. 4a) with minute spines on inner margin; exopod about 0.7 times as long as distal segment of endopod, armed with 8 short spines and 9 long setae; endopod slender, two-segmented, distal segment about 8 times longer than proximal one, 10 times longer than wide and provided with 2 long spines on distal margin and setose on inner margin, proximal segment provided with retacula (appendix interna) on its inner side.

Expod of third pleopod (Fig. 4c) 0.6 times as long as distal segment of endopod, armed with 11 stout spines and 3 long setae on its external margin; endopod two-segmented, distal segment slender, narrowed distally, truncated at tip and bears 3

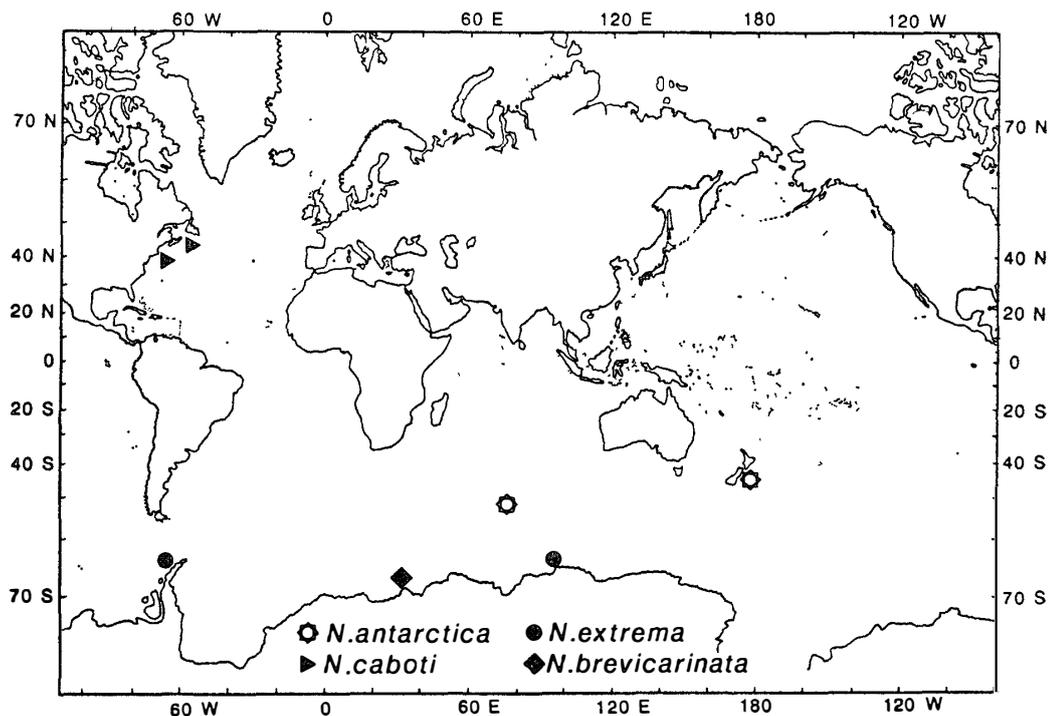


Fig. 5. Geographical distribution of four species of *Nebaliella*.

Table 1. Occurrence of the genus *Nebaliella* in the world ocean.

Species	Expedition	Locality	Lat.	Long.	Depth (m)	No. ind.
<i>N. antarctica</i> THIELE, 1904	Gazelle, 1875	Kerguelen	48°30'S	69°40'E	9	1
	Valdivia, 1898–9	Kerguelen	48°30'S	69°40'E	10–20	2
	(Copenhagen Museum)	Akaroa Harbour, N. Z.	43°50'S	172°55'E	—	1
<i>N. extrema</i> THIELE, 1905	Gauss 1902–3	Kaiser Wilhelm II Land	66°29'S	89°38'E	380–385	15
	Discovery, 1927	Palmer Archipelago	64°20'S	63°01'W	160–335	1
<i>N. caboti</i> CLARK, 1932	Prince, 1917	Cabot Strait	47°05'N	60°00'W	373	1
	WHOI, 1965	off New Jersey	39°43'N	70°40'W	2085	1
<i>N. brevicarinata</i> sp. nov.	JARE-27	Princess Ragnhild Coast	70°11'S	24°11'E	270	1

Nebaliella brevicarinata sp. nov.

long distal setae, and row of minute spines on its lateral margins, short proximal segment with retinacula on its inner side.

Last 2 pairs of pleopods very short, two-segmented, and uniramous. Fifth pleopod (Fig. 1h) about 0.3 times as long as fourth, distal segment 3.8 times longer than proximal one and furnished with one strong spine at its end.

Sixth pleopod (Fig. 1h) about 1.5 times longer than fifth, distal segment 6.0 times longer than proximal one and bears 6–8 short marginal spines.

Telson (Fig. 1a, h) about 1.4 times longer than seventh abdominal segment. As seen from ventral side, anal cleft deep, about 0.3 times as long as telson itself, on both sides of anal cleft one pair of broad anal scales with fairly narrow pointed apex.

Caudal rami (Fig. 1a, h) as long as last abdominal segment and telson combined, each ramus spinose on inner margin, except for its terminal portion.

Remarks: In the genus *Nebaliella* there have been described three species, two of which, *Nebaliella antarctica* and *N. extrema*, have mainly been described from the Antarctic and subantarctic regions and *N. caboti* has been recorded from the North Atlantic (Fig. 5, Table 1). They may very rarely occur, having been enumerated only 22 for the three species mentioned above (Table 1).

Nebaliella brevicarinata sp. nov. is proposed only on the basis of a single female from upper layer of the bathyal depths, 270 m, in the Antarctic Sea. The new species is most allied to *N. antarctica* and *N. extrema*, but easily distinguished from *N. antarctica* by having much more longer caudal rami and from *N. extrema* by having smaller carapace. Besides these differences, it also differs from the two species by having a slender long spine at external distal corner of second peduncular segment of second antenna, instead of a horn-like process.

The new species is well differentiated from the congeners in the genus by the presence of a short vertical carina near lower corner of antero-lateral part of carapace.

Table 2. Main features of four species of the genus *Nebaliella*.

Characters	<i>N. caboti</i>	<i>N. antarctica</i>	<i>N. extrema</i>	<i>N. brevicarinata</i>
Total length (TL, mm)	7.50	12.50	11.50	12.80
Carapace length (CL, mm)	4.35	4.50	5.45	4.70
TL/CL	1.72	2.78	2.11	2.72
Length of rostral keel/Length of rostrum	0.40	0.23	0.50	0.50
Eye length/Rostrum length	1.41	1.00	1.16	1.30
Length of 1st antenna/Length of 2nd antenna	0.50	n. d.	0.33	0.50
No. of segments of 2nd antennal flagellum	46	35	23	35
Length of 6th pleopod/Length of 6th abdominal segment	1.00	0.50	1.12	0.81
Length of caudal rami/Length of telson	1.36	1.56	1.67	1.88
2nd antenna/CL	1.57	n. d.	0.59	0.94
Antero-ventral vertical carina	absent	absent	absent	present

Comparisons among four species of the genus *Nebaliella* revealed some numerical differences which are shown in Table 2.

Etymology: The specific name *brevicarinata* is derived from Latin, short keel, referring to the short vertical carina near lower corner of antero-lateral part of carapace.

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