

## AMPHIPOD CRUSTACEANS FOUND NEAR SYOWA STATION, ANTARCTICA—(1)

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**Abstract:** Taxonomical study was carried out on amphipod crustaceans found near Syowa Station, Antarctica. Four species of *Orchomene rossi*, *O. plebs*, *Uristes murrayi* and *Waldeckia obesa* were dealt with. Distinguishing characters between the first two species were remarked and figured. As for the last two species, special emphasis of the discussion was laid on the number of plumose setae on the inner plate of the first maxilla.

### 1. Introduction

Since the end of the nineteenth century, a large number of the Antarctic amphipod species have been reported by many workers. However, there are few records on the distribution of the respective species, and also on the number of specimens at each station by species. Recently, a great many of gammaridean amphipod specimens belonging to the genus *Orchomene* have been collected by baited trap under the Ross Ice Shelf (HURLEY, 1965a; LIPPS *et al.*, 1979). It is of great interest that such gammaridean scavengers swarmed about the baited trap lowered to the sea bottom under the ice, as often seen in the abyssal sea floor.

The sampling of amphipods by traps has also been undertaken at Syowa Station, and many specimens of various species have been already offered to me for study. Baited trap will be the easiest and most efficient sampling gear for this kind of animals, and more specimens will be taken from Syowa Station in future. Under these circumstances, I attempted to prepare a check-list of amphipod fauna in the vicinity of Syowa Station, Antarctica.

This is the first report of the series of taxonomical study on amphipod crustaceans found near Syowa Station, Antarctica. This paper describes taxonomical features of *Orchomene rossi*, *O. plebs*, *Uristes murrayi* and *Waldeckia obesa*, all belonging to the family Lysianassidae.

### 2. Materials

The collection of the Amphipoda treated in this paper was supplied by Prof. T. HOSHIAI, National Institute of Polar Research, who took part as a zoologist in the Japanese Antarctic Research Expedition. Collection data are as follows (Fig. 1):

No. 1: Stn. 5', Ongul Strait, 615m, August 7-9, 1982, long line, coll. by M. FUKUCHI, A. TANIMURA and H. OHTSUKA. *Orchomene rossi* and *O. plebs*.

No. 2: Kita-no-seto Strait, 19m, 1982, baited trap, coll. by T. HOSHIAI. June 1,

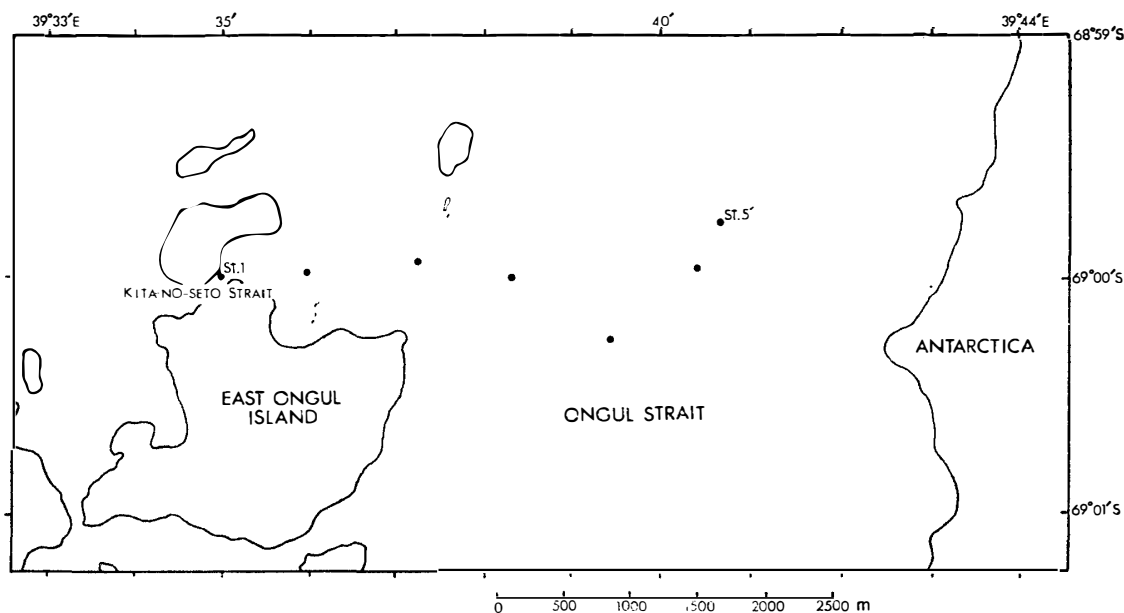


Fig. 1. Map showing the station localities, where the amphipod materials were collected.

*Orchomene plebs*, and June 17, *Orchomene rossi*.

No. 3: 1 km N. W. of Stn. 5', Ongul Strait, 510m, December 2, 1975, baited trap, coll. by T. HOSHIAI. *Uristes murrayi*.

No. 4: Kita-no-seto Strait, 9 m, May 31 to August 27, 1967, baited trap, coll. by T. HOSHIAI. *Waldeckia obesa*.

### 3. Taxonomical Accounts

*Orchomene rossi* (WALKER, 1903)

(Figs. 2A-D and 3)

*Orchomenella rossi*: HURLEY, 1965b, p. 155, figs. 1-2 (with references).

*Orchomene rossi*: BELLAN-SANTINI, 1972, p. 215.

Material examined: No. 1, 10 ♂♂ and 7 ♀♀, 23-37 mm long; No. 2, 1 ♂ and 5 ♀♀, 17-28 mm long.

Remarks: HURLEY (1965b) redescribed and refigured the type specimens of *O. rossi* collected by the 'Southern Cross' Expedition to the Antarctic seas from Cape Adare to Franklin Island. *O. rossi* is an Antarctic circumpolar species, and recently has been abundantly collected from under the Ross Ice Shelf. It is very similar to *O. plebs*, which was separated as a distinct species from *O. rossi* by HURLEY (1965a). Moreover, as *O. plebs* has usually been taken in large numbers together with *O. rossi*, the two species have probably been reported previously as one species under the name of *O. rossi*. Then, HURLEY comprehensively reviewed various papers on *O. rossi* so far described, and finally mentioned *rossi* proper alone as a synonym of the species (HURLEY, 1965b).

One of the characteristic points in common with *rossi* and *plebs* is the shape of much expanded anterodistal corner of coxa 1, by which the two are distinguished from the other Antarctic species of *Orchomene*. As HURLEY said, *O. rossi* is separable from *O.*

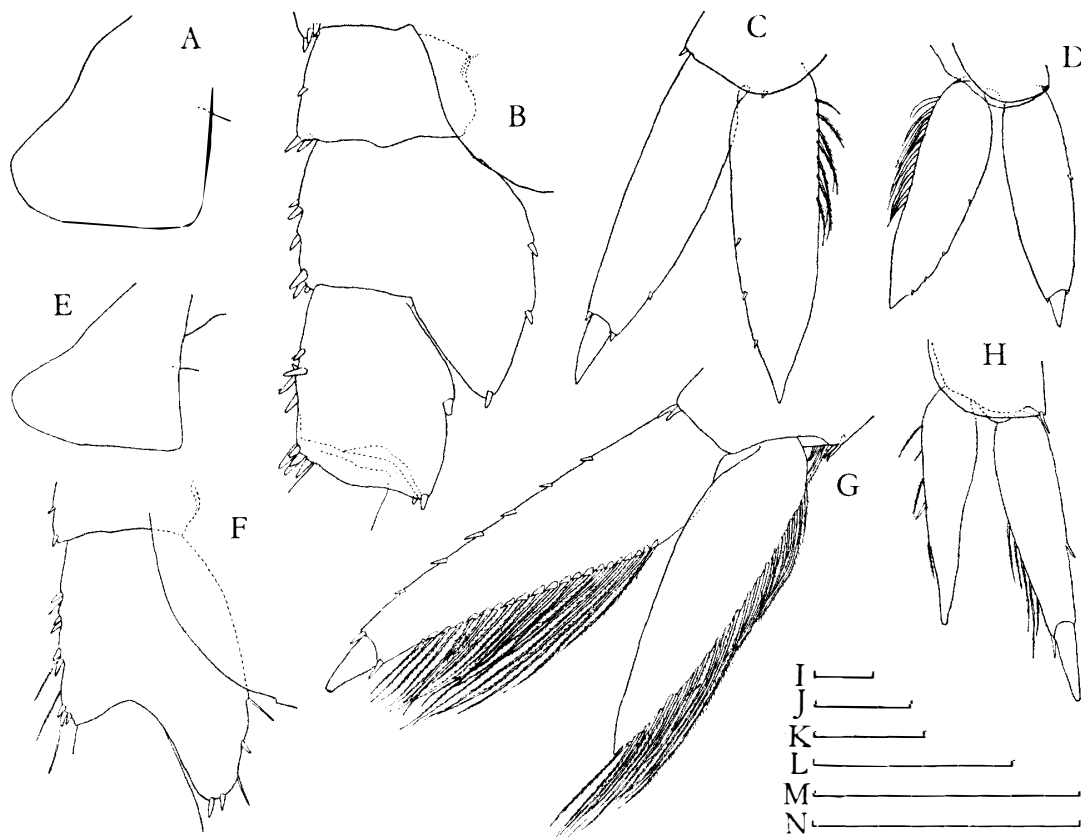


Fig. 2. *Orchemene rossi* (WALKER), female, 17 mm: A, coxa 1; B, article 4 of pereopod 3; C, uropod 3, left. *Ovig. female*, 35 mm: D, uropod 3, right. *Orchemene plebs* (HURLEY), *ovig. female*, 26 mm: E, coxa 1; F, article 4 of pereopod 3. *Ovig. female*, 24 mm: G, uropod 3, left. *Juv.* 10 mm: H, uropod 3, right. Scale: I, 1 mm (E); J, 1 mm (A); K, 1 mm (D); L, 1 mm (F); M, 1 mm (B, C, G); N, 0.5 mm (H).

*plebs* by the widely expanded article 4 of pereopods 3–5, by lacking any plumose setae on the outer ramus of uropod 3, and by the relatively longer inner ramus to the outer in uropod 3. HURLEY cited PEARSE's note in the marginal column, "While there are often a few bristles on the outer rami of uropod 3 of *rossi*, there are never any on the inner ramus" (HURLEY, 1965a, p. 112). The terms "outer" and "inner" noted above by him appear to be reversed. There are never any on the outer ramus throughout the present *rossi* specimens which ranged 17–37 mm long. The above-mentioned distinctive characters are illustrated in Fig. 2.

Distribution: The localities definitely known by HURLEY are as follows: Ross Sea (White Island), near surface (WALKER, 1903); 'Gauss' Winter Station (SCHELLENBERG, 1926); South Georgia, tow-net and otter trawl; South Shetlands, tow-net; Palmer Archipelago, tow-net and trap (BARNARD, 1932); Shackleton Ice Shelf, trap, not deeper than 4 to 270 fms (NICHOLLS, 1938); Ross Sea (Discovery Inlet), baited traps, 550–560 m (DAHL, 1954); Adélie Land, 136–142°E, dredge and trap, 115–320 m (BELLAN-SANTINI, 1972). Each locality is shown in Fig. 3.

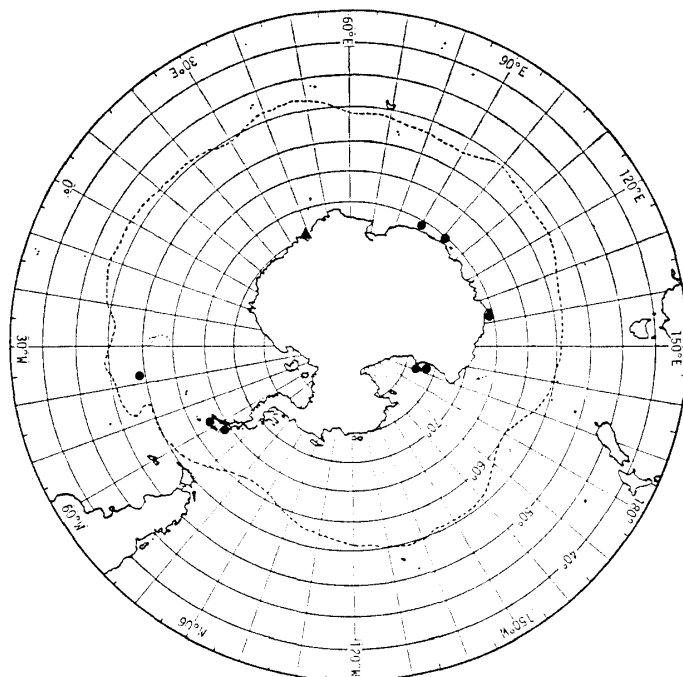


Fig. 3. *Orchomene rossi* (WALKER), locality records so far reported (refer to the text). Triangle indicates the present record.

*Orchomene plebs* (HURLEY, 1965)

(Figs. 2E–H and 4)

*Orchomenella plebs* HURLEY, 1965a, p. 107, figs. 1–2.

*Orchomenopsis proxima*: CHEVREUX, 1906, p. 13.

*Orchomenopsis chilensis* forma *proxima*: SCHELLENBERG, 1926, p. 290.

*Orchomene plebs*: BELLAN-SANTINI, 1972, p. 212.

Material examined: No. 1, 5 juv., 4 ♂♂ and 11 ♀♀, 8–26 mm long; No. 2, June 1, 1982, 3 ♂♂ and 3 ♀♀, 14–17 mm long.

Remarks: HURLEY (1965a) reexamined not only the Atlantic specimen, which is the type of *O. proxima* (CHEVREUX, 1903), but also the Antarctic specimens which was attributed to *O. proxima* by CHEVREUX (1906). As a result, he found the latter was not identical with the type of *proxima*, but identified as *O. plebs*. Furthermore, he said that the Antarctic material which SCHELLENBERG (1926) referred to *O. proxima* was also *O. plebs* (HURLEY, 1965a).

This species is different from the nearest species, *O. rossi*, by the narrower article 4 of pereopod 3, by having plumose setae on the outer ramus of uropod 3, and by the relatively shorter inner ramus to the outer in uropod 3 (refer to Fig. 2).

Distribution: Charcot Port, dredge, 20 m (CHEVREUX, 1906); 'Gauss' Winter Station (SCHELLENBERG, 1926); Ross Sea (White Island) (HURLEY, 1965a); Adélie Land, 136–142°E, 320 m, trap (BELLAN-SANTINI, 1972).

In addition to the above records, the following may be mentioned: "Considerable numbers in fish traps through holes in the Ross Ice Shelf, 20 miles from its outer edge, and also under the sea ice at McMurdo Sound" (LITTLEPAGE and PEARSE, 1962, quoted from HURLEY, 1965a); "In 1977 to 1978 a hole was successfully drilled at a site known

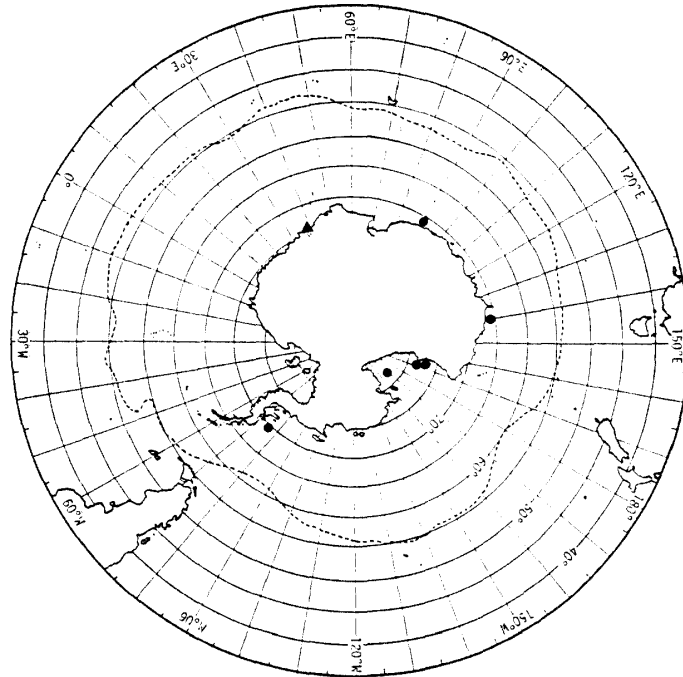


Fig. 4. *Orchomene plebs* (HURLEY), locality records (refer to the text).  
Triangle indicates the present record.

as J9 about 430 km from the open Ross Sea (82°22.5'S, 168°37.5'W) through 420 m of ice which was underlain by a water column 237 m thick. Water depth was 597 m." (LIPPS *et al.*, 1979).

*Uristes murrayi* (WALKER, 1903)

(Figs. 5, 6 and Table 1)

*Tryphosa murrayi* WALKER, 1903, p. 50, pl. 9, figs. 45–51; NICHOLLS, 1938, p. 27, fig. 12; DAHL, 1954, p. 281.

*Uristes murrayi*: HURLEY, 1965b, p. 165, figs. 7–8; BELLAN-SANTINI, 1972, p. 217, figs. 29–30.

Material examined: No. 3, 1 ♂, 32 mm long, and 1 ovig. ♀, 34 mm long.

Remarks: This species has been redescribed and refigured from the type deposited in the British Museum (Natural History) by HURLEY (1965b). The present specimens well agree with both HURLEY'S and BELLAN-SANTINI'S figures. Lacking eyes, sharply triangular lateral lobes of head, and the presence of the urosome boss are remarkably characteristic of this species in general appearance. Among 16 species assigned to the genus *Uristes* by BARNARD (1962) and HURLEY (1965b), only two species of *U. gigas* and *U. murrayi* bear such an upturned urosome boss. *U. murrayi* is obviously different from *U. gigas* by the shape of the third epimeral plate, and the number of plumose setae on the inner plate of maxilla 1; in *U. gigas*, the postero-inferior angle of the epimeral plate is very broadly rounded, and the number of the setae is only two.

The palm of gnathopod 1 oblique, minutely toothed, and bearing 2 defining spines; the marginal teeth on the palm are irregularly arranged as figured here. It is quite

unique for the species of this genus that the number of plumose setae on the inner plate of maxilla 1 counts 4–6 (usually 2, except for only one in *U. antennibrevis* BARNARD). Both WALKER and HURLEY did not touch at all upon the number, but NICHOLLS (1938, p. 28) said that CHILTON (1912) had found 4 setae in WALKER's type (15 mm long), and he observed it was markedly variable in his specimens, viz. 4 setae each in 2 specimens of juvenile (8 mm) and female (15 mm); 5 setae each in 2 males (13–15 mm) and 6 females (12–18 mm); 6 setae each in one male (23 mm) and 5 females (15–25 mm). BELLAN-SANTINI (1972, p. 218) also listed 4 and 5 setae in his Table 2, viz. 4 setae in 3 females (23–29 mm) and 5 in female (29 mm).

The present specimens are still larger (32 and 34 mm) than NICHOLLS's and BELLAN-SANTINI's specimens. Nevertheless, the number of setae still counts 5–6 (Table 1), and

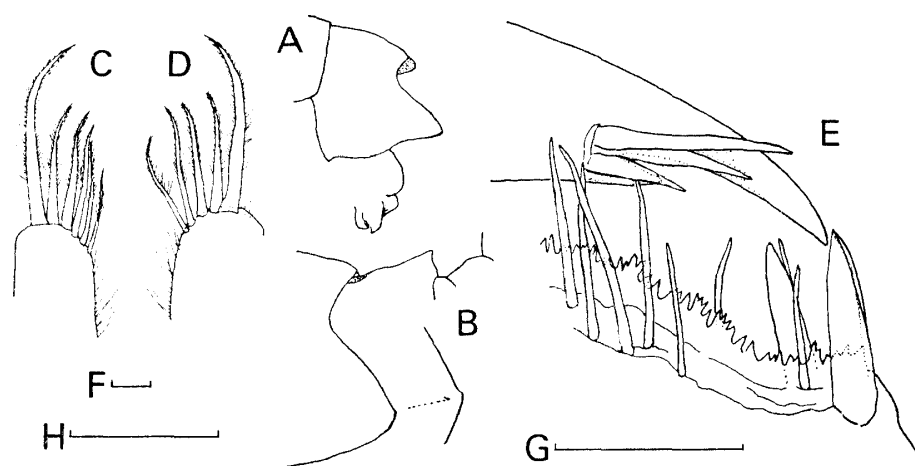


Fig. 5. *Uristes murrayi* (WALKER), male, 32 mm: A, head; B, third epimeral plate and dorsal profile of urosome; C and D, inner plates (left and right) of maxilla 1, inside view. Ovig. female, 34 mm: E, palm of gnathopod 1. Scale: F, 1 mm (A, B); G, 0.5 mm (C, D); H, 0.1 mm (E).

Table 1. Numbers of plumose setae, dentate spines, articles, and spines, each in the inner plate, the outer of maxilla 1, antennae, and uropod 2 in *Uristes murrayi* collected near Syowa Station, Antarctica.

Appendages		Male 32 mm long		Ovig. female 34 mm long	
		Left	Right	Left	Right
Maxilla 1	Inner plate	6	5	6	6
	Outer plate	11	11	11	11
Antenna 1	Primary flagellum	29	—	28	—
	Accessory flagellum	9	9	9	9
Antenna 2	Flagellum	—	51	—	41
Uropod 2	Peduncle				
	Outer ridge	—	16	—	16
	Inner ridge	—	7	—	7
Rami	Outer ramus	—	11	—	14
	Inner ramus	—	10	—	11

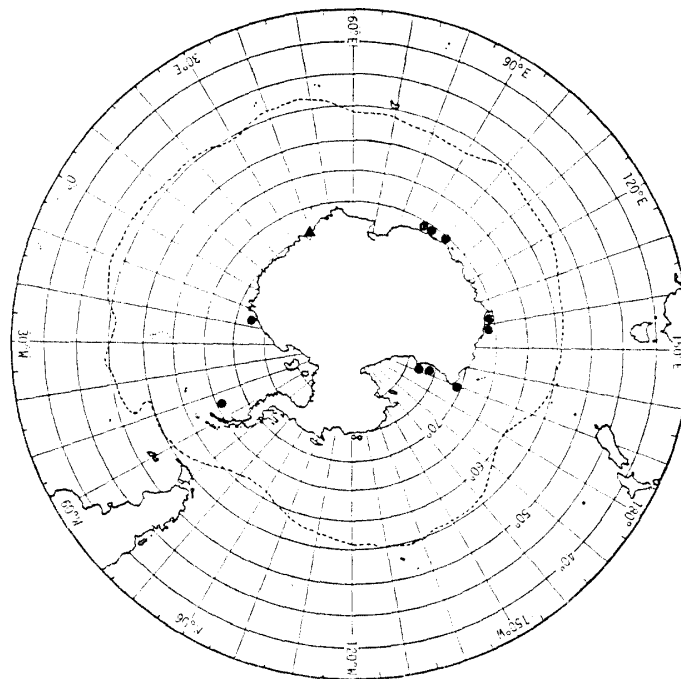


Fig. 6. *Uristes murrayi* (WALKER), locality records (refer to the text).  
Triangle indicates the present record.

there is no clear tendency of increase in number according to animal sizes, as mentioned above. As seen in Table 1, the inner plate of maxilla 1 has 6 setae in left and 5 in right in the male. NICHOLLS also gave a marginal note, "4 on one side and 5 on the other" among the specimens having the above-mentioned 5 setae.

Distribution: Antarctic circumpolar. The known localities are as follows: Cape Adare (type locality) (WALKER, 1903; HURLEY, 1965b); Cape Adare to 77°50'S (WALKER, 1907); 'Gauss' Winter Station (SCHELLENBERG, 1926); 65°56'S, 54°35'W, east of Graham Land, 920 m (SCHELLENBERG, 1931); Commonwealth Bay, 3-400 fms; Shackleton Glacier, 270 fms, fish-trap; Davis Sea, 358 fms (NICHOLLS, 1938); Ross Sea (Discovery Inlet), 550 m (DAHL, 1954); Adelie Land, 136-142°E, 60-140 m, dredge (BELLAN-SANTINI, 1972). They are plotted in Fig. 6.

*Waldeckia obesa* (CHEVREUX, 1905)

(Figs. 7 and 8)

*Charcotia obesa* CHEVREUX, 1905, p. 163, fig. 3.

*Waldeckia obesa*: CHEVREUX, 1906, p. 15, figs. 8-10; WALKER, 1907, p. 10, pl. 2, fig. 4; CHEVREUX, 1913, p. 91; SCHELLENBERG, 1926, p. 253, fig. 9; BARNARD, 1930, p. 323, fig. 1a; 1932, p. 43; NICHOLLS, 1938, p. 16, fig. 4; STEPHENSEN, 1947, p. 33; DAHL, 1954, p. 281; BELLAN-SANTINI, 1972, p. 218.

Material examined: No. 4, May 31, 2 spec.; June 9, 1 spec.; July 2, 1 spec.; August 27, 1 spec. All females, 15-23 mm in length.

Remarks: The present specimens agree well with CHEVREUX's and WALKER's description and figures except for some details. The body is very obese, and the integument is indurated. An obvious groove below the lower margin of coxa 5 is also ob-

served in the present specimens, as noted by both SCHELLENBERG (1926) and BARNARD (1930). Antero-inferior angle of the first epimeral plate produced to a narrow lobe, bearing 3 spines at the distal; the second quadrate, the postero-inferior angle with a small blunt tooth; the third with the posterior margin slightly convex followed by a small notch above the rounded corner.

Gnathopod 2 with the dactylus very bulgy at the base, the distal half abruptly narrowed, then slightly curved, bearing a sharply long accessory tooth on the inner margin; the palm of article 6 evenly convex, the palmar angle provided with a pouch-like receptor (discernable from inside view), into which just the tip of dactylus goes.

NICHOLLS remarked that the inner plate of maxilla 1 has 6 terminal plumose setae in his specimens, but CHEVREUX (1906) described 2 setae, and SCHELLENBERG (1926) stated 3 ones, though WALKER (1907) mentioned 4-5 unequal ones. The present specimens ranging 15-23 mm long had 3 setae in both sides except for one specimen (21 mm) which had 2 setae in left, together with 3 in right (Fig. 7E-F). NICHOLLS's specimens ranged from 7 to 17 mm long and relatively smaller than the present ones. However, the number of setae in his specimens is quite larger than that of the present ones. This

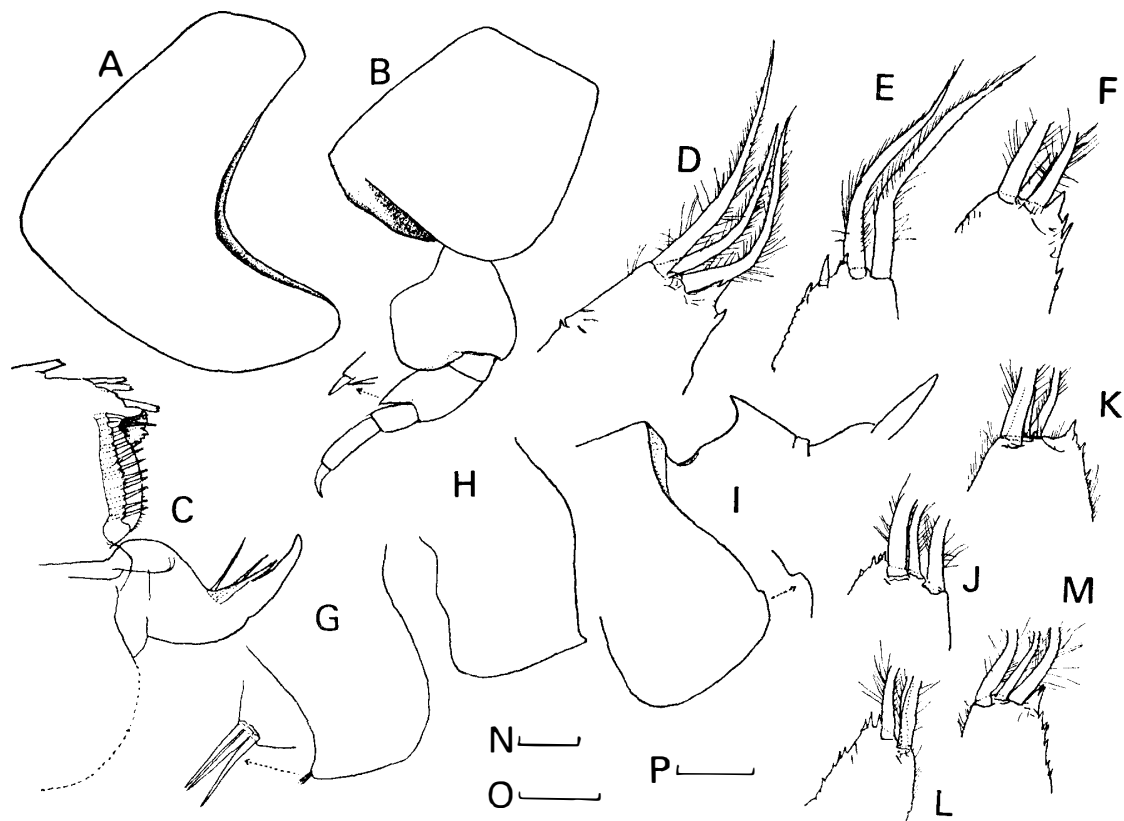


Fig. 7. *Waldeckia obesa* (CHEVREUX), female, 23 mm: A, coxa 4, inside view; B, pereopod 3, setae and spines omitted; C, palm and dactyl of gnathopod 2, inside view, most of setae omitted; D, inner plate of maxilla 1, right. Female, 21 mm: E and F, inner plate of the same, left and right. Female, 20 mm: G-I, epimeral plates 1-3 with dorsal profile of urosome; J and K, inner plate of the same, left and right. Female, 15 mm: L and M, inner plates of the same, left and right. Scale: N, 1 mm (A, B); O, 1 mm (G-I); P, 0.1 mm (C-F, J-M).



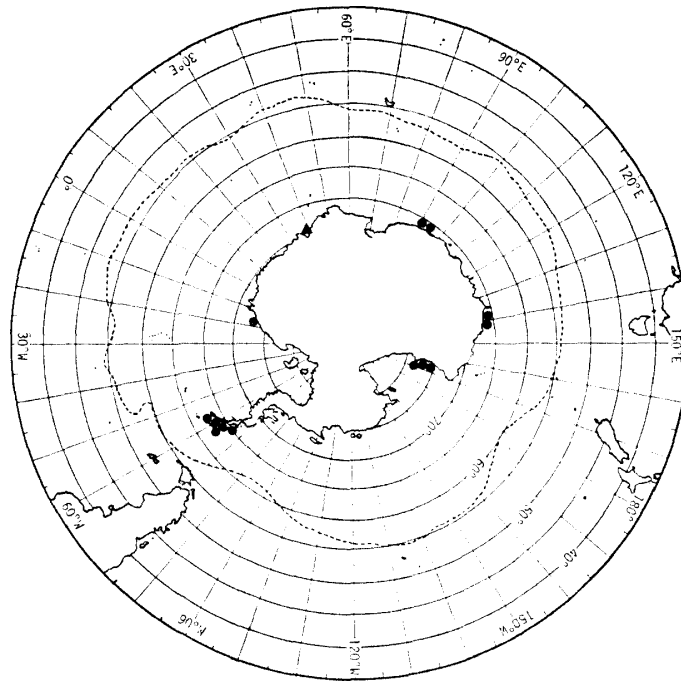


Fig. 8. *Waldeckia obesa* (CHEVREUX), locality records (refer to the text). Triangle indicates the present record.

discrepancy cannot be explained at present. Variability in the number of setae on the inner plate of maxilla 1 may be a characteristic feature of this genus. Anyhow, the present specimens' number is nearest to that of SCHELLENBERG's specimens (6.5–25 mm).

The number of spines on the outer plate of maxilla 1 was 11 throughout the present specimens without exception.

Distribution: Antarctic circumpolar. The localities are as follows: Anvers Island, Palmer Archipelago, 110 m, dredge (CHEVREUX, 1906); McMurdo Sound (WALKER, 1907); Palmer Archipelago and Graham Land, 92–200 m, dredge (CHEVREUX, 1913); 'Gauss' Winter Station (SCHELLENBERG, 1926); McMurdo Sound, 256–457 m (BARNARD, 1930); South Shetland Islands and Palmer Archipelago, dredges and traps, 7–525 m (BARNARD, 1932); Commonwealth Bay and Davis Sea, 110–300 fms (NICHOLLS, 1938); Graham Region, 90–120 m (STEPHENSON, 1947); Ross Sea, Discovery Inlet, 550 m (DAHL, 1954); Adélie Land, 136–142°E, dredges and traps (BELLAN-SANTINI, 1972). Each locality mentioned above is plotted in Fig. 8.

#### Acknowledgments

I am grateful to Prof. T. HOSHIAI, National Institute of Polar Research, for kindly placing the valuable materials at my disposal, and also to his staff, particularly Dr. M. FUKUCHI, Mr. A. TANIMURA, and Mr. H. OHTSUKA, for collecting the amphipod samples.

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(Received April 1, 1985; Revised manuscript received August 3, 1985)