

NEW RECORDS OF *LEBBEUS ANTARCTICUS* (HALE)  
(CRUSTACEA: DECAPODA) FROM THE  
ANTARCTIC PENINSULA

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**ABSTRACT.** The rare decapod crustacean, *Lebbeus antarcticus* (Hale), is described and illustrated in detail on the basis of material recovered from two Weddell seal stomachs, taken along the Antarctic Peninsula. These are the first records of this species outside the Indian Ocean Sector of the Southern Ocean.

INTRODUCTION

Only three species of shallow living benthic decapods of the suborder Natantia are known from Antarctic and sub-Antarctic waters (Yaldwyn, 1965). Of these, the hippolytid prawn *Chorismus antarcticus* (Pfeffer) and the crangonid shrimp *Notocrangon antarcticus* (Pfeffer) have wide circum-polar distributions. The third species, *Spirontocaris antarcticus*, was first described in 1941 on the basis of a single specimen, a male of 28 mm length, taken off the coast of Terre Adélie (66° 21' S, 138° 28' E) in a depth of 640 m (Hale, 1941).

Subsequently Yaldwyn (1965, p. 325), referring to the taxonomic revision of the genus *Spirontocaris* by Holthuis (1947), stated that it was clear from Hale's original description that *S. antarcticus* should be transferred to the genus *Lebbeus* White. Zarenkov (1970), on the basis of three further specimens, taken from *Ob* stations 330a (63° 53' S, 114° 01' E) and 335 (67° 45' S, 147° 10' E), supplemented Hale's description and concurred in assigning the species to the genus *Lebbeus*. Thus only four specimens of *Lebbeus antarcticus* (Hale) have been described in the literature, all caught off Terre Adélie in the cold waters of the East Wind Drift. In addition, Numanami and others (1984) recorded the capture in a baited trap of a single specimen taken in 450 m of water from the north-eastern part of Lützow-Holm Bay (69° 10' S, 37° 30' E), although no further description is given. Recent examination of the stomach contents of two female Weddell seals, *Leptonychotes weddelli*, taken from the southern part of the Antarctic Peninsula has revealed a further eight, albeit partially digested specimens, from which it has been possible to provide a fuller description of this rare Antarctic decapod. The locality is given more precisely in Table I.

MATERIALS AND METHODS

As a result of partial digestion, the fine structure of much of the material was not easily seen upon initial examination. Several specimens were therefore placed in 0.1 M NaOH and heated at 50°C in a water bath until adhering soft tissue had dissolved, leaving the exoskeleton intact and clearly visible. Drawings were then made using a Zeichentubus attached to a Wild M5 microscope equipped with an eyepiece measuring graticule. Carapace measurements were made from the rear of the orbit to the rear of the carapace in the dorsal midline, using a pair of vernier calipers. Data are presented in Table I. Some of the material on which this paper is based has been deposited in the British Museum (Natural History), Accession numbers BM (NH)

Table I. *Lebbeus antarcticus*: length and sex of specimens taken from Weddell seal stomachs.

Seal No.	Location and date of capture	<i>Lebbeus antarcticus</i>		
		Sex	Carapace length (mm)	Telson length (mm)
C213	Jones Ice Shelf East, 67° 30' S, 67° 00' W 7 February 1973	F	16.50	9.50
		F	17.80	11.70
		F*	17.80	12.80
		F	19.00	Broken
		F	15.80	Broken
G390	Bagnold Point, 67° 02' S, 67° 29' W 12 February 1973	M	12.70	9.80
		F	—	10.90
		F	—	10.90

\* Left side of carapace distorted due to presence of bopyrid isopod parasite in branchial chamber.

1985.316, and the remainder is held in the collections of the British Antarctic Survey (Cambridge).

#### DESCRIPTION

Family Hippolytidae Bate, 1888

*Lebbeus* White, 1847

*Lebbeus antarcticus* (Hale, 1941)

*Spirontocaris antarcticus* Hale, 1941

*Lebbeus antarcticus* Yaldwyn, 1965

*Lebbeus antarctica* Zarenkov, 1970

*Lebbeus antarctica* Numanami and others, 1984

Rostrum slender, slightly downcurved, acutely pointed and strongly toothed (Fig. 1a). Teeth variable in number, extending along median dorsal line of carapace. On the basis of these new specimens, Zarenkov's (1970) formula for the armature of the rostrum and mid dorsal line can be amended to: 4–8 teeth on the dorsal surface extending along the mid line of the carapace and 1–3 teeth along the ventral margin of the rostrum.

Dorsal surface of carapace carinate along approximately  $\frac{7}{8}$  of midline. Anterior margin produced into a blunt tooth below the orbit, immediately below which is the antennal spine. Pterygostomial spine small. Single strong supraorbital spine.

First segment of peduncle of antenna I reaching to or slightly beyond the tip of the rostrum (Fig. 1c). Inner margin of first segment setose and with an anteriorly directed spine on its ventrolateral surface approximately  $\frac{2}{3}$  of the way along its length and a strong triple spine near its outer angle. First segment is approximately twice as long as the second which in turn is twice as long as the third. Stylocerite ranging from  $\frac{2}{3}$  to almost as long as the first segment and acutely pointed. Second and third segments with strong single spines present on their outer angles. Flagella broken in all specimens.

Antenna II with scaphocerite reaching beyond peduncle of antenna I. Apical spine not exceeding lamellar portion. Peduncle of antenna II reaching just beyond middle of scale.

Mandible (Fig. 2a) with strong molar process. Two jointed palp subequal in length to incisor process.

Maxilla I (Fig. 2b) with tapering proximal endite and lobe-like distal endite. Endopod with bifid tip, the inner ramus of which is armed with one or two strong

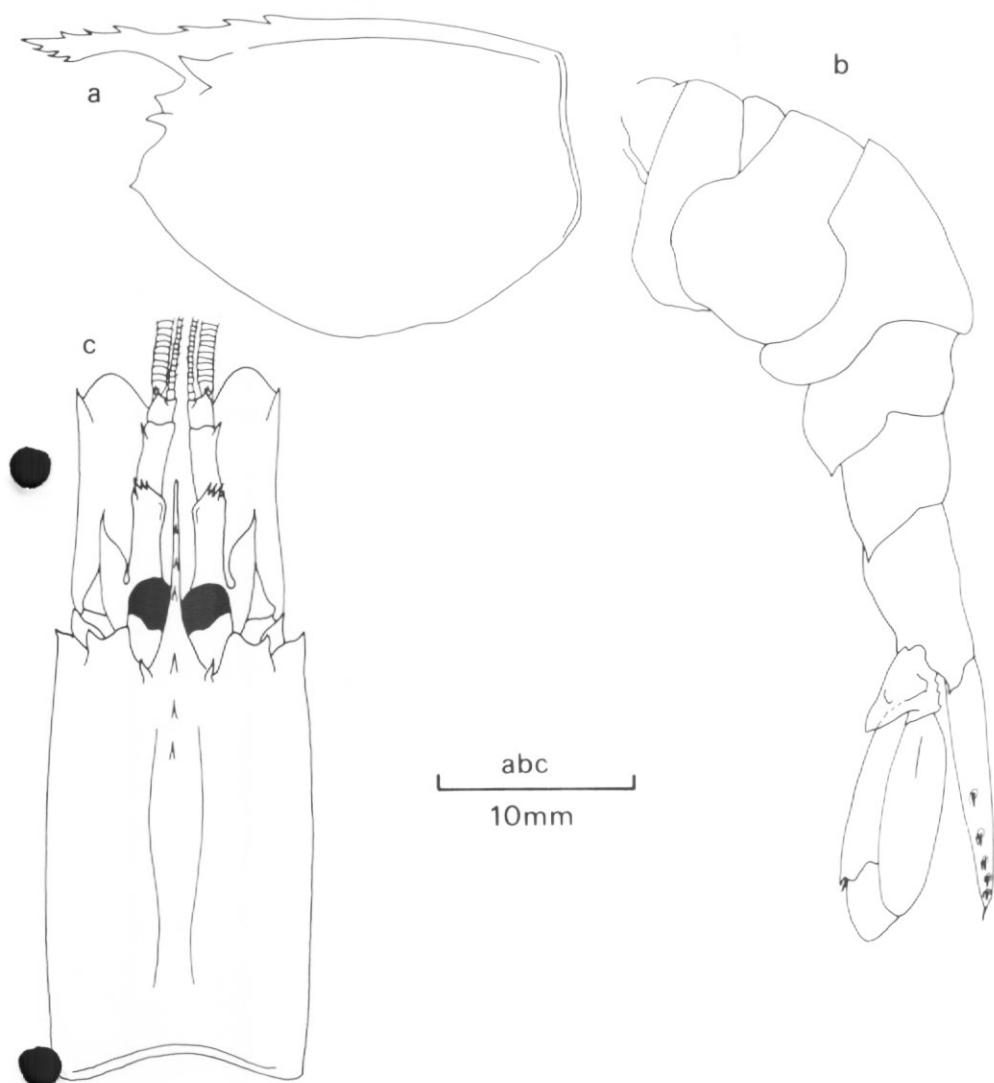


Fig. 1 a-c. *Lebbeus antarcticus*: a, lateral view carapace; b, lateral view abdomen; c, dorsal view carapace.

spines and the outer with three weaker ones. Distal endite bearing a double row of strong teeth, up to 17 on the inner row and 5-6 on the outer, and numerous setae along its inner edge.

Maxilla II (Fig. 2c) with proximal endite reduced and distal endite bilobed. Endopod simple and tapering.

Maxilliped I (Fig. 2d) with endites well developed and having a two jointed endopod. Exopod with broad base, epipod triangular.

Maxilliped II (Fig. 2e) with distal segment articulated distomedially with penultimate segment. Exopod long, epipod with podobranch present.

Maxilliped III (Fig. 2f) reaching slightly beyond antennal scale. Exopod absent,

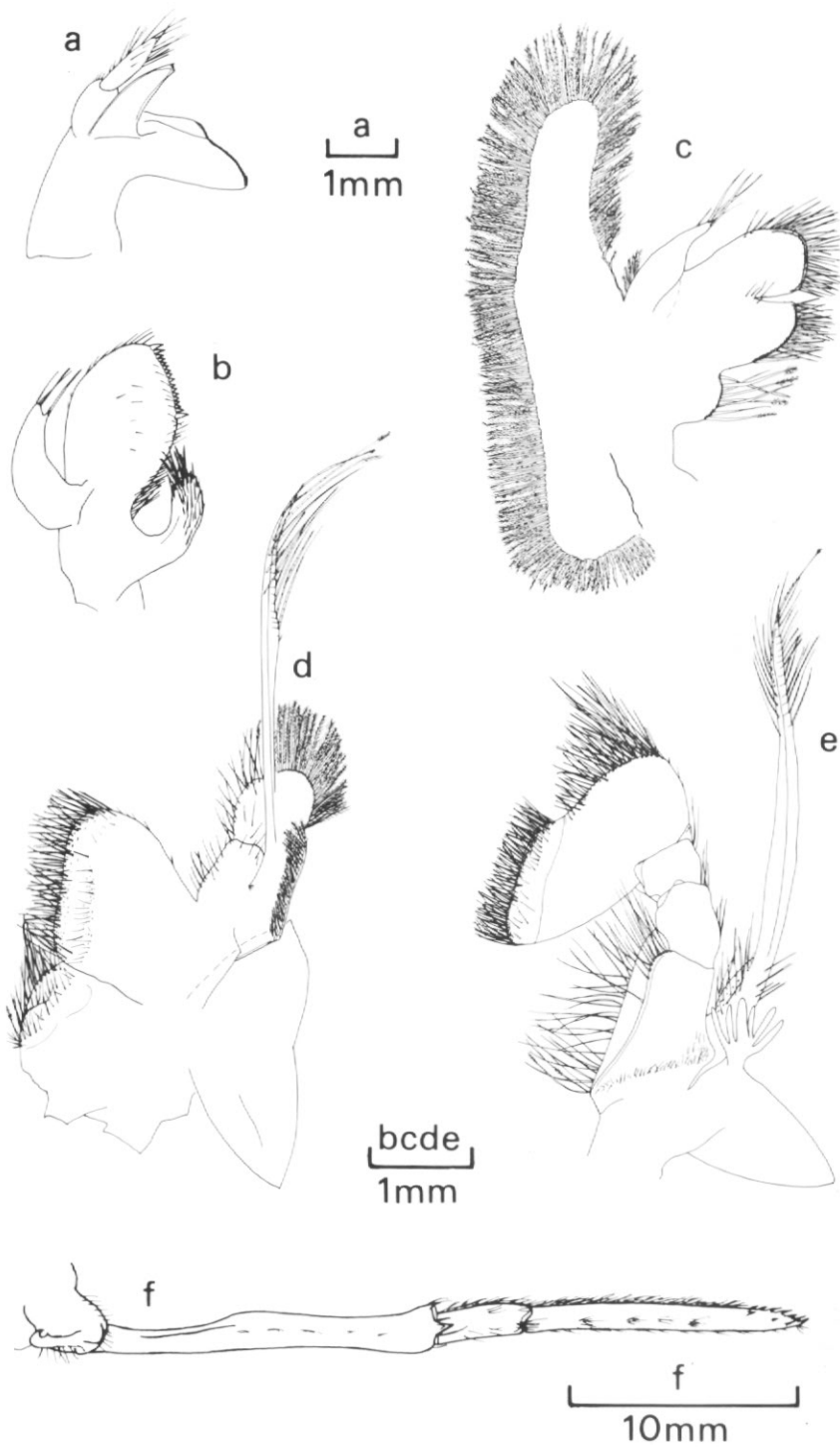


Fig. 2a-f. *Lebbeus antarcticus*: a, right mandible; b, right maxilla I; c, right maxilla II; d, left maxilliped I; e, left maxilliped II; f, right maxilliped III.

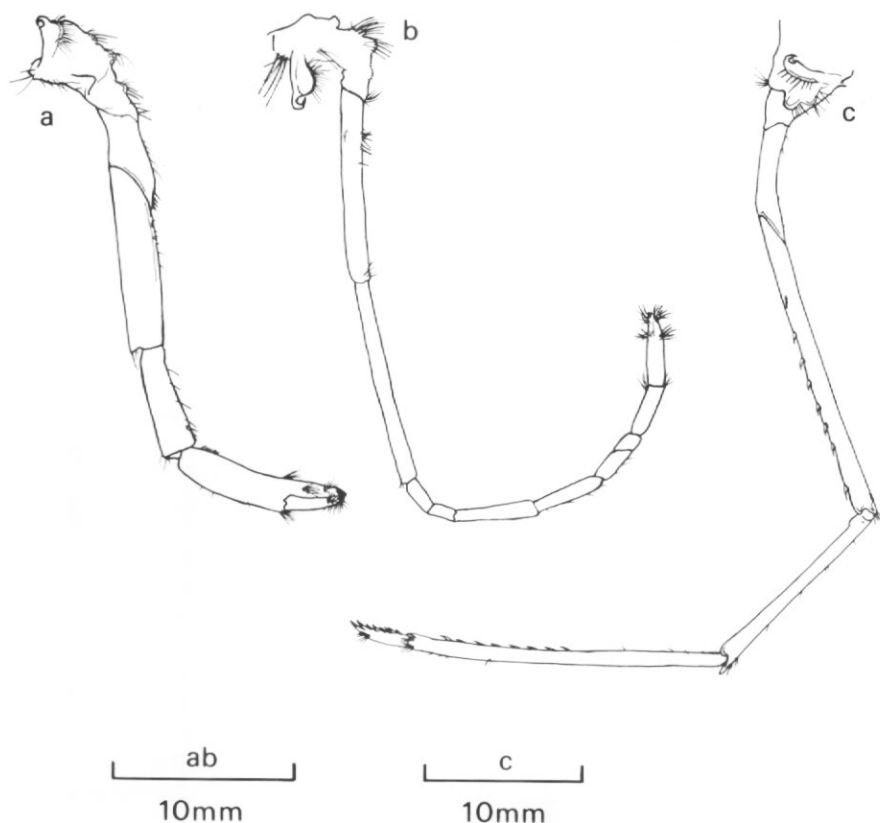


Fig. 3a-c. *Lebbeus antarcticus*: a, right pereopod, I; b, right pereopod II; c, right pereopod III.

epipod present. Antepenultimate segment flattened dorsoventrally for approximately  $\frac{1}{2}$  its length. Distal segment approximately three times longer than penultimate, both densely setose along inner edge. Distal segment terminating in a series of strong spines.

Pereopod I (Fig. 3a) with movable finger equal in length to fixed finger of propodus. Palm more than twice as long as fingers. Carpus  $\frac{3}{8}$  as long as propodus which is subequal in length to merus. Epipod present.

Pereopod II (Fig. 3b) slender. Carpus seven jointed, segment three being longer than any other. Ischium and merus subequal in length. Epipod present.

Pereopods III (Fig. 3c), IV and V basically similar in structure, long and slender, reaching well beyond antenna I. Dactylus approximately  $\frac{1}{2}$  length of propodus, ending in a stout spine and armed with a row of spines along its inner margin. Pereopod III possessing epipod. Pereopod V with a small patch of dense setae on hind distal border of propodus.

Pleural plates of the first three abdominal somites posteriorly rounded (Fig. 1b). Fourth with a small spine, fifth having a posteriorly directed spine and the sixth as long as the preceding two, with a strong, acutely pointed, posterolateral projection and a further projection each side of the telson insertion. Third pleural plate produced triangularly in the median dorsal line. Armature of the telson variable. 3-5 (more commonly 4) pairs of lateral spines present but often with different numbers on each

side, varying from 3/4–4/5. Spines unevenly spaced. Distally there are two conspicuous spines on each posterolateral corner, the inner being larger than the outer. Posterior edge of the telson armed with eight smaller spines arranged in groups of 3, 2 and 3.

#### DISCUSSION

The specimens examined here conform to the diagnostic characters of the genus *Lebbeus* as defined by Holthuis (1947) in his key to the genera and subgenera of the Hippolytidae. In this respect the bases of the pereopods lack arthrobranchs, the mandibular palp is two segmented, only one supraorbital spine is present and the carapace lacks a branchiostegal spine. Further, *Lebbeus antarcticus* may be placed in Holthuis's third subdivision of the genus, that is those members possessing epipods on the first three pereopods.

Several slight differences are apparent when the present material is compared with the description by Hale (1941) and Zarenkov (1970). Firstly, the number of teeth on the rostrum and dorsal midline of the carapace is variable. In particular, Hale's holotype has only one inferior rostral tooth although his specimen is admittedly small. Secondly, the basal segment of the peduncle of antenna I in Hale's specimen has a double spine at its outer angle, whereas a triple spine is present in those specimens of the current material where this feature can be clearly seen. Finally, in contrast to the branchial formula reported by Zarenkov (1970), maxilliped I possesses an exopod. In other respects the description given here tallies with the other two.

Little information can be provided about the general biology of this species. Whereas both *Chorismus antarcticus* and *Notocrangon antarcticus* have been taken by many past Antarctic expeditions, in waters both close to and distant from the Antarctic continent, *Lebbeus antarcticus* has been reported only, until now, from the colder waters of the Indian Ocean sector of the Southern Ocean immediately surrounding the continent. The four previous records are from depths in excess of 450 m and in this respect, the present material does not extend its known depth distribution, as Weddell seals are capable of diving to depths in excess of 600 m (Kooyman, 1981).

Although Weddell seals mainly eat benthic fish characteristic of shelf waters, cephalopods (mainly octopods) and crustaceans are not infrequent in stomach contents. Of 80 stomachs examined recently from the southern Graham Land area, 27 contained identifiable crustacean material. Of these, 5 included decapods and of the total of 21 specimens, 8 (38%) were *L. antarcticus*. In a similar study at McMurdo Sound in the Ross Sea (77° 30' S, 165° 00' E), Dearborn (1965) found decapods in 8 of 36 seal stomachs containing food but failed to record *L. antarcticus*.

The present records have extended the known geographical range of this species but it is clear that far more material is required before even the most fundamental aspects of its ecology can be described.

#### ACKNOWLEDGEMENTS

Thanks are due to Dr John Croxall for the opportunity to examine the seal stomachs and for commenting on the manuscript. Diana Evans and Drs Inigo Everson and A. A. Fincham also offered critical comment and A. C. Sylvester prepared the final form of the figures.

Received 16 November 1984; accepted in revised form 28 June 1985

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