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***Notobathynella longipes* sp. n. and new records of other Bathynellacea (Crustacea, Sincarida) from New Zealand**

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ABSTRACT

This paper deals with Bathynellacea collected by Entomology Division, DSIR, in 1972-73 by pumping water from wells and bores in different parts of New Zealand. *Notobathynella longipes* sp. n. is described from wells in Motueka (South Island). The distribution of the New Zealand Parabathynellidae is discussed briefly.

INTRODUCTION

The first attempts to look for Bathynellacea in New Zealand seem to have been made at the end of the last century. Chilton, who was among the first in the world to study Crustacea from subterranean waters, appears to have expected their occurrence in New Zealand. In his reprint collection (now at Canterbury University) there is a copy of the publication by Vejdovsky (1882) in which a small crustacean of uncertain affinity is described from a well in Prague and given the same *Bathynella natans*. Inserted among the pages of Chilton's copy of this description is a loose sheet with notes by Chilton himself summarising the distinctive features of this peculiar crustacean. Yet Chilton failed to discover bathynellids in New Zealand, most likely because he collected only what he could see with the naked eye. Thus he was bound to overlook any bathynellids because of their small size and transparency.

Today bathynellids and indeed other interstitial syncarids are known to be well represented in New Zealand. On a collecting tour through New Zealand in 1967-68, almost 200 samples of freshwater interstitial fauna were taken (Schminke 1973, fig. 2). Thirty-six of them yielded specimens of syncarid Crustacea belonging to the Bathynellacea and to the family Stygocarididae of the order Anaspidacea, not considered here.

The Bathynellacea were found to be represented by five species, four of which belong to the family Parabathynellidae (Schminke 1973). All specimens of the family Bathynellidae appear to belong to the same species which, however, is still to be described.

Later Entomology Division, DSIR, became interested in the study of interstitial fauna and collected a series of samples by pumping water from wells and bores in different parts of New Zealand. The syncarids of this material were offered to me for study and it is with the bathynellids from this collection that the present paper is concerned.

MATERIAL

Family BATHYNELLIDAE

1 female specimen, Hunter's Bore I, Nelson (S20/478188), driven well, 18 July 1972.

A description of this species cannot be given at present because of lack of male specimens.

Family PARABATHYNELLIDAE

***Atopobathynella compagana* Schminke, 1973**

1 juvenile specimen, F. Harrison Young Well, Bright water, driven well, 27 May 1972.

1 female specimen, Lee River, 1 m from stream, temperature 21°C, 2 February 1973.

***Notobathynella* sp.**

1 female specimen, Eden's Bore 1, Nelson (S20/483209), driven well, 26 April 1972.

1 female specimen, sample No. Ph. 83, 1.75 km ENE of Greymouth (McGeedy) (S44/754889), driven well, temperature 17°C, 26 July 1973.

Both specimens cannot be identified further because of lack of male specimens.

***Notobathynella longipes* sp. n.**

1 male specimen (damaged), sample No. Ph 27, J. R. Talbot, Queen Victoria Street, Motueka, driven well, temperature 14.8°C, 2 June 1972. 2 males, 3 females (2 damaged) and 2 juvenile specimens, sample No. Ph. 54, K. L. Wilkins, near Motueka Bridge, near Catchment Board, Motueka, well, temperature 14°C, 2 June 1972.

***Notobathynella longipes* sp. n.**

Figs 1-15

DESCRIPTION

HOLOTYPE: Male

Length 150 mm. Body 11.5 times longer than wide. Head 1.4 times longer than wide.

Pleotelson with a short seta postero-laterally on each side. Anal operculum with median concavity. Caudal furca twice as long as wide, with 2 stout terminal spines and 5 smaller ones along the inner margin, with 2 dorso-lateral setae of which the outer is 3 times as long as the inner one and with a minute

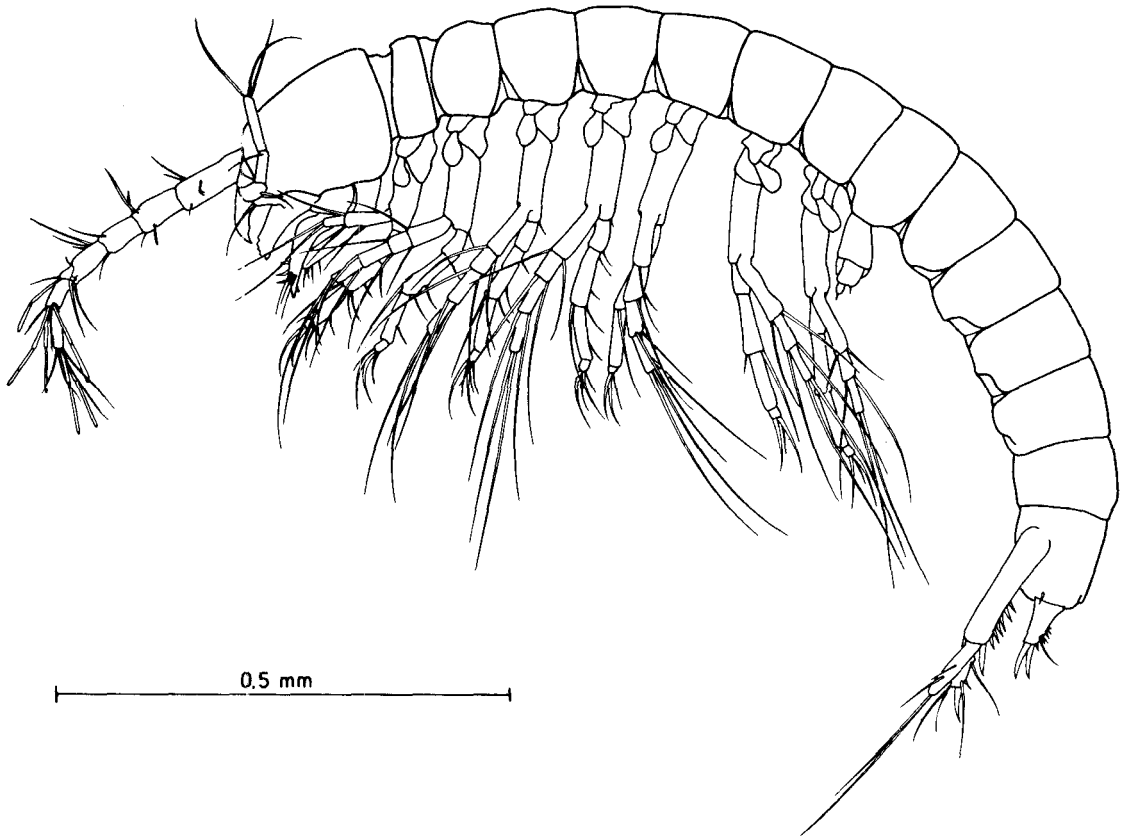


FIG. 1—*Notobathynella longipes* sp. n. paratype ♂ : lateral view.

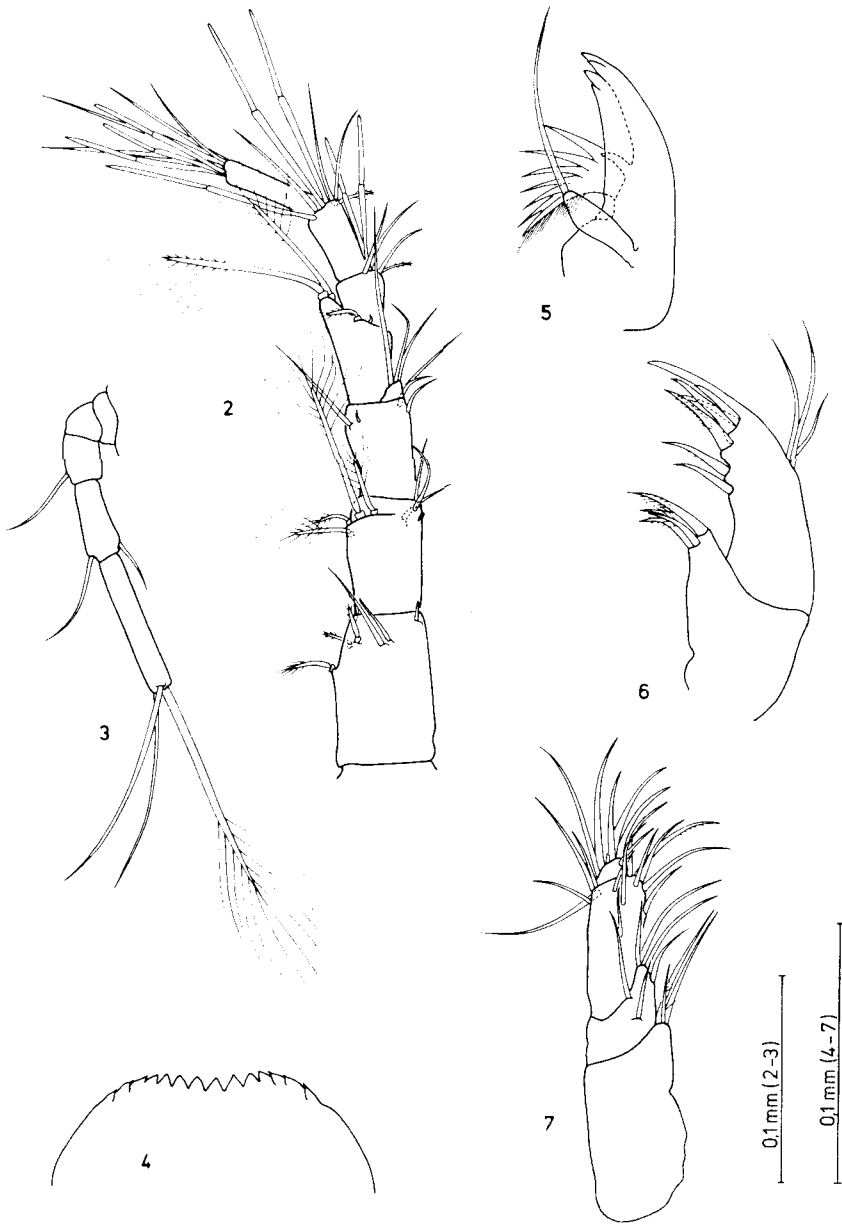
lateral "furcal organ". Antennules 1.8 times longer than head, each with 7 segments. Setation as in Fig. 2. Antennae flexed caudally; about half as long as the antennules. Setal formula: 0+0/0+0/1+0/1+1/3(1). Labrum with 8 strong teeth medially followed by 3 marginal ones on each side. Mandibles with incisor process of 4 teeth, a 5th being indicated by a slight notch. Proximal tooth of *pars incisiva* small. "Spine row" with seven claws. Apical seta of palp twice as long as basal segment. There is a distinct knob next to the base of the palp.

Maxillulae: proximal endite with 4 plumose claws which are almost equal in length. Distal endite with 7 claws which are plumose except for the 3 distal ones. The 2 proximal ones are somewhat set apart from the others. There are 3 setae on the outer margin. Maxillae of 4 segments. Setal formula: 3/6/11/8. Thoracopods gradually increasing in length from Th. I to Th. V, Th. VI and Th. VII becoming shorter again. Each of the ambulatory thoracopods with an epipodite. A single seta is present on the inner margin of the basipodite of Th. I-VII. Number of segments of exopodites of Th. I-VII: 2-3-3-3-3-2. Exopodite of Th. I and Th. VII with 1 dorsal and 1 ventral seta besides the 2 apical setae; Th. II and Th. VI with two dorsal and 2 ventral setae, Th. III-

Th. V with 3 dorsal and 3 ventral setae. Endopodite four-segmented. Setal formulae:

Th. I	2+1/3+1/3+1/3(1)
Th. II	1+1/2+2/1+1/4(2)
Th. III-V	1+1/1+2/0+1/4(2)
Th. VI	1+1/1+2/0+1/3(1)
Th. VII	0+0/1+1/0+1/3(1)

Thoracopod VIII: Coxopodite with bilobed protuberance, inner lobe tubercular. Epipodite originating with a broad base at the coxopodite, drawn out distally, of triangular shape, slightly more than half as long as basipodite. Basipodite rectangular with a small seta above its outer distal corner; median corner drawn out into a slightly curved tip pointing to the tubercular lobe of the coxopodite. Endopodite small, of a single segment with a small apical seta. Exopodite somewhat egg-shaped when viewed from anterior aspect, with medial toothed projection pointing to the tubercular lobe of the coxopodite; there are 2 small and delicate setae on the distal margin of the exopodite at the outer base of the toothed projection. Pleopods absent. Uropods bear a comb of 6-7 spines on the inner distal margin of the sympodite. The distal spine is considerably bigger than the other ones. Sympodite 5 times longer than broad. Endopodite (including distal spine) 80%

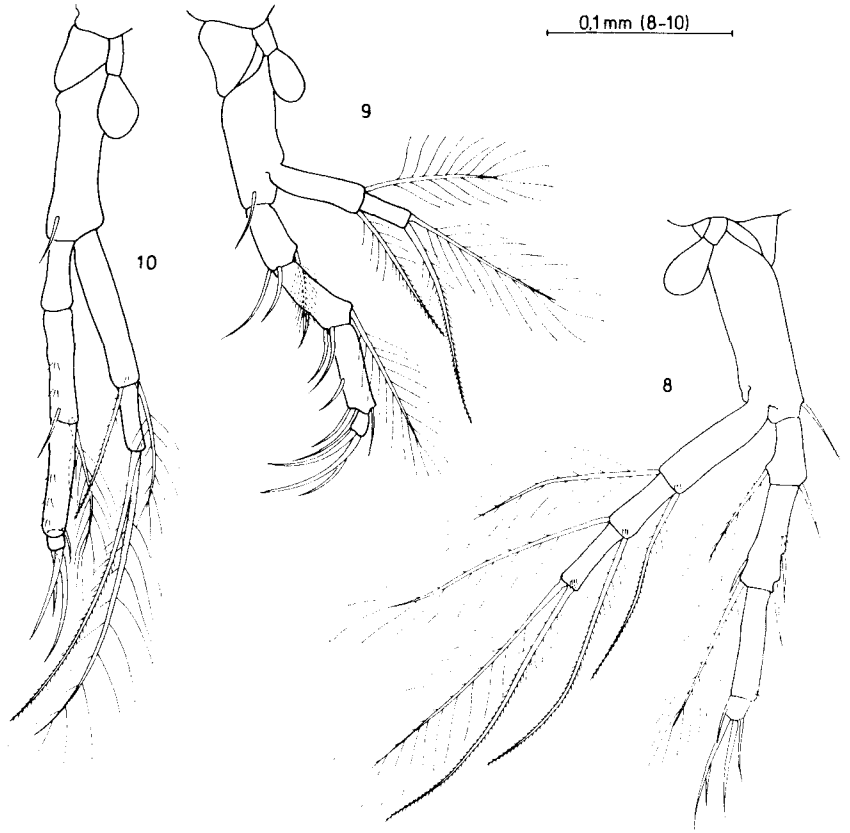


FIGS. 2-7 — *Notobathynella longipes* sp. n. holotype ♂ : 2 - antennule; 3 - antenna; 4 - labrum; 5 - mandible; 6 - maxillule; 7 - maxilla.

of length of sympodite, with 2 distinct spines, a bigger distal and a smaller proximal one. In addition there are 4 setae arising partly at the outer margin, partly dorso-laterally. Exopodite 70% of length of endopodite, with 2 long apical setae and 2 shorter ones along the outer margin. Near the apex on the inner side there is a row of fine setules.

ALLOTYPE: Female

Length 145 mm. Differs from the male specimen in the following details: The third segment of the antennules bears one ventro-medial seta only. The spine row of the mandibles consists of 8 claws. The setation of the exopodites of Th. I, II, VII is slightly more elaborate, the exopodite of Th. I bearing 2



FIGS 8-10 — *Notobathynella longipes* sp. n. holotype ♂: 8—thoracopod I; 9—thoracopod II; 10—thoracopod VII.

ventral setae, that of Th. II 3 dorsal and 3 ventral ones, that of Th. VII 2 dorsal and 2 ventral ones. Also the setation of the endopodites of Th. I-VII is not always identical with that found in the male. Setal formulae:

Th. I	1+1/3+1/3+1/3(1)
Th. II-IV	1+1/2+2/1+1/4(2)
Th. V	1+1/1+2/0+1/4(2)
Th. VI-VII	1+1/1+2/0+1/3(1)

The comb of spines along the inner distal margin of the sympodite of the uropods is composed of 8 spines. Thoracopod VIII is only a small papilla.

VARIATION: The differences between the male and female specimen described above have probably, except for the thoracopod VIII, nothing to do with sexual dimorphism. They rather fall within the range of variation observed in other closely related species. Another female specimen has the spine row of the mandibles even composed of 9-10 claws and the two distal segments of the maxillae bear 21 setae altogether. Segmentation of the exopodites of Th. I-VII is as follows: 2-3-4-4-4-3-5. Setation of the endopodites of Th. I-VII is somewhat richer than in the holotype male.

Even the male specimen shows some variation in the setation of some appendages. Thus the exopodite of Th. V has 3 ventral setae instead of 2 on the exopodite of the corresponding leg on the other side

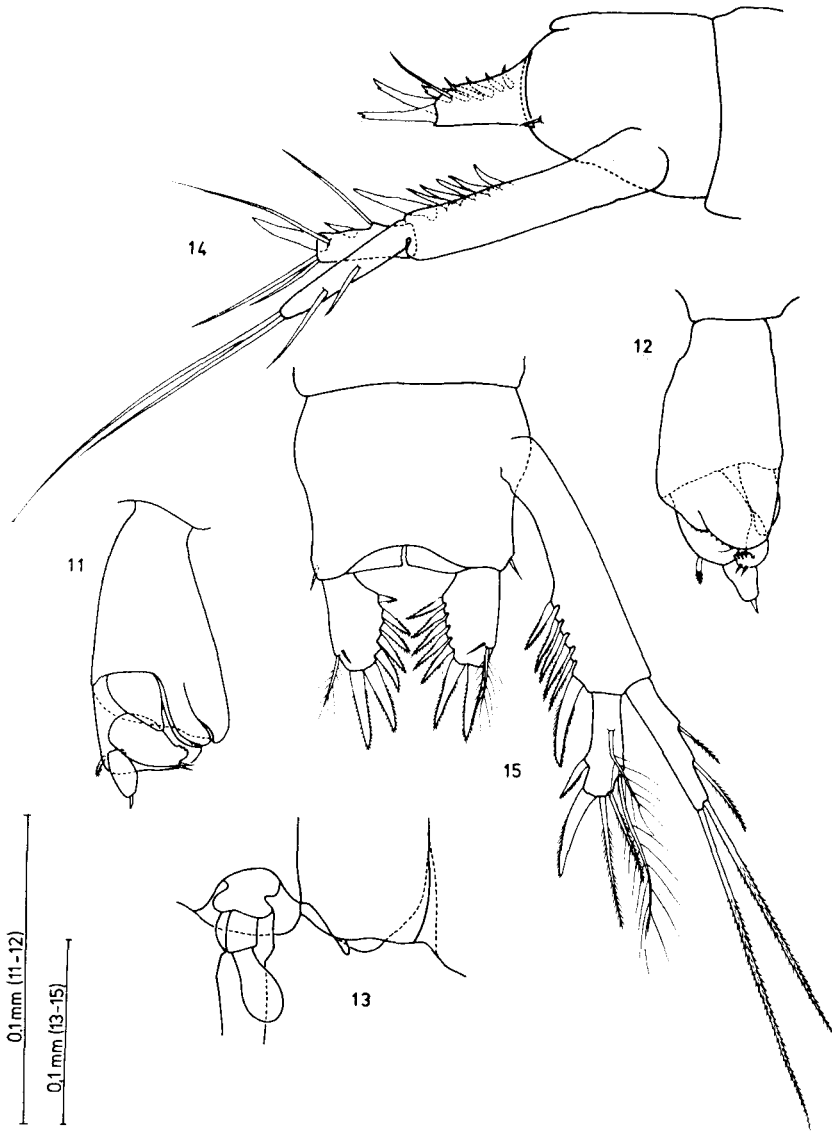
of the body. The comb of spines on the sympodite of the uropods consists of 6 spines on one leg and of 7 on the other.

TYPE LOCALITY: K. L. Wilkins, Motueka; 2 males, 1 complete and 2 damaged females, 2 juveniles.

The holotype male and the allotype female have been deposited in the collection of the Entomology Division, DSIR, Auckland, New Zealand (holotype male dissected on 6 slides, allotype female dissected on 6 slides). A paratype male is in the author's collection.

OTHER LOCALITY: J. R. Talbot's, Motueka; 1 male (damaged specimen, abdomen lacking).

Notobathynella longipes sp. n. differs from the Australian species of the genus, particularly in the structure of the male Th. VIII. The epipodite of this appendage has a broad base as in *N. hineoneae* Schminke, 1973. Unfortunately, the male of the second New Zealand species of the genus, *N. chiltoni* Schminke, 1973, is not known so that an ultimate evaluation of the position of *N. longipes* sp. n. in relation to the other New Zealand species is not possible at present. The structure of the endopodite of the uropods indicates, however, that the new species is quite distinct from *N. chiltoni*. In the latter species there are 2 big spines on the inner distal



FIGS 11-15 — *Notobathynella longipes* sp. n.: 11 — thoracopod VIII ♂, rostral view; 12 — thoracopod VIII ♂, latero-internal view; 13 — thoracopod VIII ♀ and part of thoracopod VII; 14 — pleotelson ♂, lateral view; 15 — pleotelson ♂, dorsal view, left uropod omitted

margin of the endopodite whereas in *N. longipes* sp. n. there is only one. In this character the new species also agrees with *N. hineoneae*. In *N. longipes* sp. n. this big spine is not fused with the endopodite proper whereas in *N. hineoneae* it is difficult to decide whether this actually is so or not. In the original description (Schminke 1973) I stated that fusion had occurred, but now having the new species before me and having a new look at *N. hineoneae* I find that this statement should be revised. Although not as distinct as in *N. longipes* sp. n. a weak line can be seen running between spine and endopodite of *N. hineoneae* indicating that both are separate.

The differences between *N. hineoneae* and *N. longipes* sp. n. seem less important since only differences in setation are involved. It cannot be excluded that these differences will ultimately be regarded as meriting distinction of both forms on subspecific level only, but as long as *N. chiltoni* is not fully known no clear decision can be made. *N. longipes* sp. n. is so far the only species of the genus bearing 3 setae instead of 4 on the apex of the distal segment of the antennae.

DISTRIBUTION

With the discovery of *N. longipes* sp.n. 5 species of Parabathynellidae belonging to 3 different genera are now known from New Zealand.

The genus *Atopobathynella* represented by only a single species, *A. compagana*, has the widest distribution within New Zealand, being known from the Wairarapa, the Nelson area, the Canterbury Plains, and Otago. *A. compagana* occurs also in Australia. Other species of the genus are known from South America, Australia and Tasmania, and have also been discovered recently in Madagascar (Schminke unpublished results).

The genus *Notobathynella* is represented in New Zealand by 3 allopatric species (each of which occurs in a different area of the South Island), *N. longipes* sp.n. from the Nelson area, *N. chiltoni* from the Canterbury Plains and *N. hineoneae* from Southland. Other species of the genus have been reported from Australia. The present collection also contains a female of the genus from Westland (near Grey-mouth). Since there are no males its specific status remains as yet uncertain.

The third New Zealand genus *Hexabathynella* is confined to the Western Plains in the South Island, where it is represented by only one species, *H. aotea-roae* Schminke, 1973. Further species have been recorded from all over the world: South America, Australia, Madagascar, Europe and there are now records also from South Africa (Schminke, unpublished results). This world-wide distribution seems to be due to euryhalinity which allowed secondary colonization of marine beaches thus opening up a new route for dispersal not utilizable by the other genera of the family.

Thus except for the genus *Hexabathynella* the relationships of the New Zealand Parabathynellidae are exclusively with those from other landmasses of the Southern Hemisphere, in particular with Australia/Tasmania and South America, but also with South Africa and Madagascar.

Within New Zealand it is noteworthy that Bathynellacea are more abundant in the South Island. The occurrence of *Atopobathynella compagana* together with the species of Bathynellidae in the Wairarapa are the only records from the North Island. This apparent scarcity of Bathynellacea in the North Island is almost certainly due to insufficient collecting. The Stygocarididae also seemed to be absent from the North Island but have now been discovered by Entomology Division, DSIR, in the Hawkes Bay area.

ACKNOWLEDGMENTS

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