

# A new species of *Pontocypria* (Ostracoda) living on *Chaetopterus* sp. (Annelida: Polychaeta) from Hauraki Gulf, New Zealand

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## Abstract

Ostracoda (Crustacea) that are parasitic or living in close association with different animals have been known for many years, but here we report an occurrence that appears to be the first from a polychaete worm. Some specimens of the cryptogenic polychaete *Chaetopterus* sp., collected off Omaha Beach, Leigh, carried one or two ostracods attached in the head region at the boundary between the ninth and tenth chaetigerous segment. *Pontocypria omaha* sp. nov. is described and is the first record of a species of *Pontocypria* from New Zealand.

Keywords: ostracod - polychaete - commensal - new taxon - Hauraki Gulf.

## Introduction

Commensal ostracods have been found associated with isopods (de Vos 1953), fish (Hart 1962), decapods (Hart 1970), sponges (Maddocks 1968), echinoids (Maddocks 1979), ophiuroids (Maddocks 1987), and a gastropod (Wouters 1991). Perhaps surprisingly, an association with tube-dwelling polychaetes has not been encountered until now. In particular, *Chaetopterus* worms often have commensals in their easily-entered tubes, mainly a variety of polynoid polychaetes and small decapods (Petersen & Britayev 1997).

Commensal ostracods belong to 26 genera (Baker & Wong 1968) in the families Entocytheridae, Hemicytheridae, Paradoxostomatidae, Xestoleberididae and Pontocyprididae. Ten other species of *Pontocypria* are known world-wide and a useful summary of the genus is found in Wouters (1991). They are found from high latitudes of both the northern and southern hemispheres almost to the equator, and in very deep and shallow environments, but have not been previously reported for New Zealand waters. They are mostly commensal on Echinodermata and Gastropoda.

A sample of numerous parchment worms, *Chaetopterus* sp. (Polychaeta: Chaetopteridae), was collected by scallop dredge from a sand gravel bottom, 25 m depth, at Leigh Reef in Omaha Bay, on 21 August 2000, at Station 45 by collector Hernando Acosta (NIWA station Y10331). Worms were kept alive in aquaria at the Leigh Marine Laboratory until removed from their tubes and examined by the second author GBR on 12 December 2000. Four of 15 specimens of the polychaetes had ostracods associated with them. No ostracods were found on *Chaetopterus* sp. from three other samples collected in the Omaha Bay area at the same time and treated identically to the Leigh Reef worms. In total seven complete specimens of *Pontocypria* were found, all attached laterally to the worms just anterior to the enlarged aliform parapodial lobes of the tenth chaetiger, one ostracod each side in three of the four worms (Plate 1, Fig. F). The adults are thought to be females but the preservation of the soft tissue is insufficient to verify that determination.

The holotype and two paratype specimens are deposited in the invertebrate collections at the Museum of New Zealand, Te Papa Tongarewa, Wellington, with four paratypes deposited in the NIWA invertebrate collection.

### Description

Ostracoda, Latreille, 1806

Podocopida Sars, 1866

Family Pontocyprididae Müller, 1894

Genus *Pontocypria* Müller, 1894

*Pontocypria omaha* sp. nov.

**Table 1.** Valve dimensions (mm) of Holotype and Paratypes.

	Length	Height	Width
<i>Holotype</i>			
Right Valve	1.07	0.65	
Left Valve	1.05	0.60	
<i>Paratypes</i>			
Carapace	1.10	0.65	0.60
Carapace	0.90	0.65	0.40

### Type Locality

Off Omaha Beach in 25 m of water, Omaha Bay, Hauraki Gulf. Latitude: 36° 17.7' S, longitude: 174° 49.86' E.

### Material

Holotype: A dissected female (?) with the valves stored dry and the appendages mounted in glycerine jelly on slides with the edges sealed. Catalogue number NMNZ CR 9999.

Paratypes: two specimens catalogue numbers NMNZ CR 10,000; 10,0001. Stored in ethanol.

Derivation of name from the locality Omaha as a noun in apposition.

### Diagnosis

The living specimen is red, with the maximum height posterior of the mid-point; two setae on the penultimate podomere of the mandibule; and with sub-equal setae and claws on the furca.

### Description

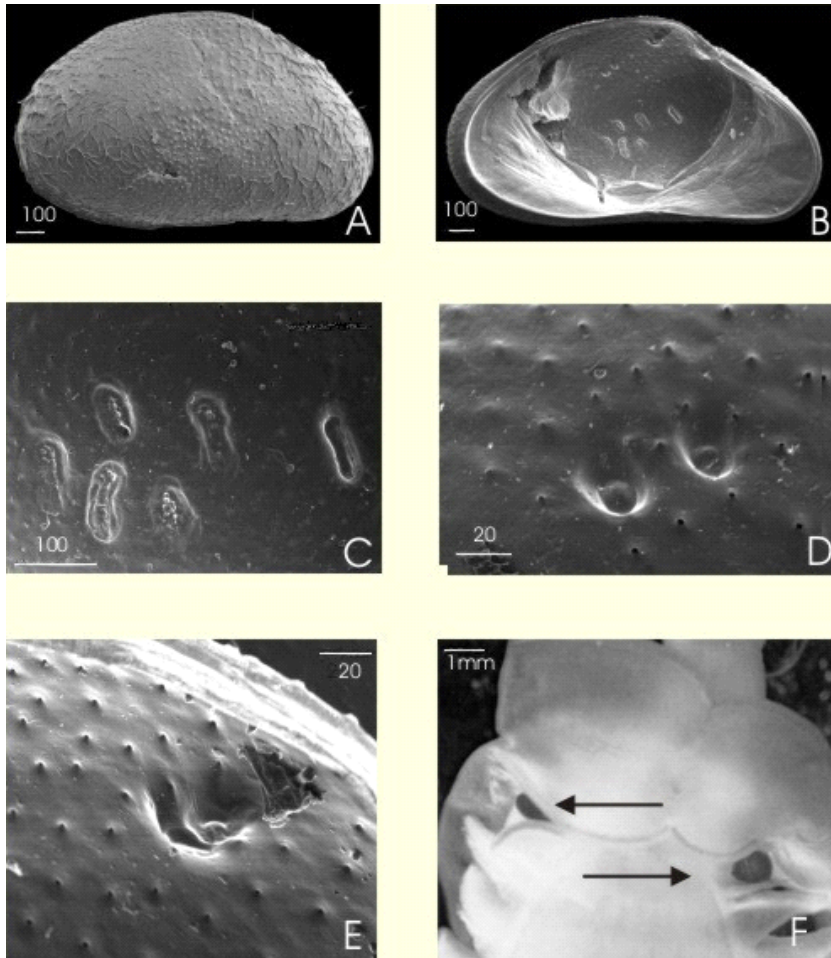
The living specimen is red in colour with a medium-large, fragile carapace, asymmetrically bean-shaped and covered in fine hairs, which are not obvious. The right valve is larger than the left (Table 1). Maximum height is posterior of the mid-point. The surface of each valve has many punctae and

there are two depressions on the postero-dorsal area. The hinge is adont, mainly straight and with a sinuous posterior extremity. The interior of the valves has uncalcified lamellae with large vestibules and a narrow zone of concrescence. The normal pore openings are small and have raised lips surrounding the apertures. The central muscle scars are indistinct but are composed of a simple group of five scars in a horizontal arrangement. Two small

dorsal adductor scars and a mandibular scar are present. The eye is black.

The terminology and abbreviations for the podomeres follows that proposed by Maddocks (1979).

*Antennula:* (Figure 1D) Simple and with five long swimming setae. Podomeres (iv) and (v) may be fused as there is no distinct boundary. Lengths of the distal podomeres are: 15:18:24:36:69:75 microns.



**Plate 1.** *Pontocypria omaha* **Fig. A.** Right valve, exterior. **Fig. B.** Left valve interior. **Fig. C.** Central muscle scars, left valve. **Fig. D.** Dorsal adductor muscle scars. **Fig. E.** Dorsal muscle scar field. **Fig. F.** Posterior head region of *Chaetopterus* sp. Two *Pontocypria*, indicated with arrows, attached in front of the aliform parapodia and ventral sucker. Scale bars in microns except Fig. F.

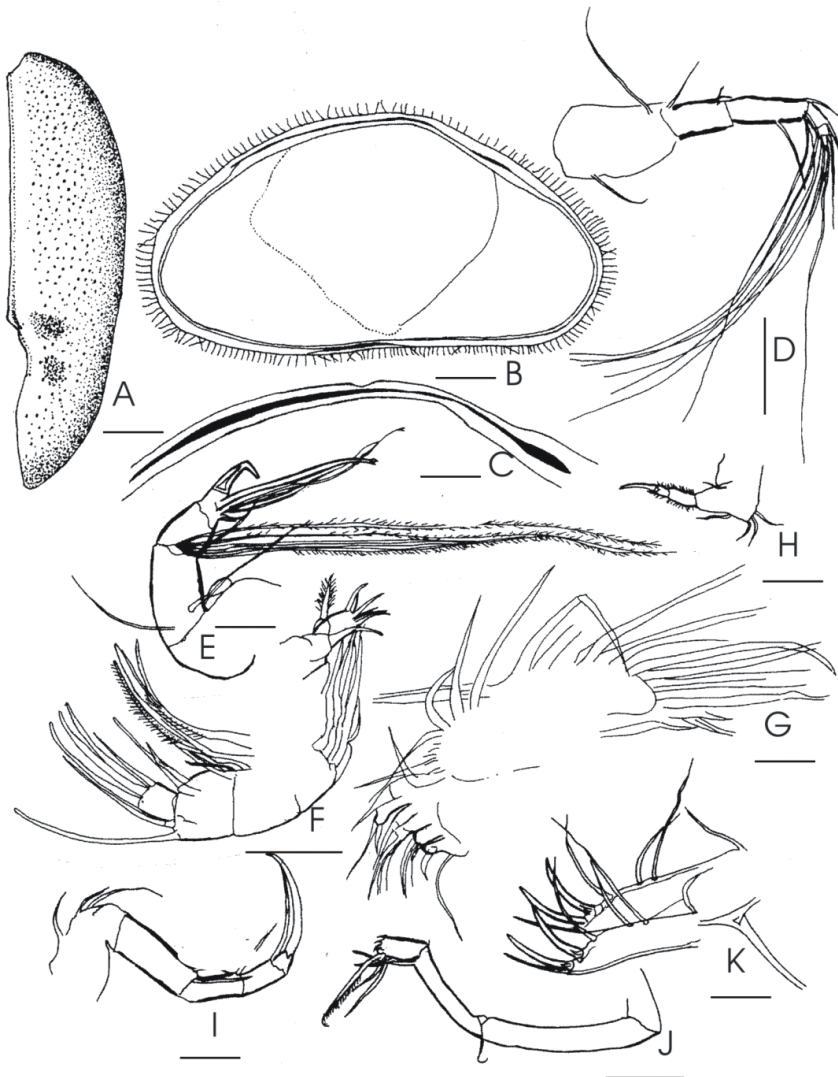
*Antenna*: (Figure 1E) With the characteristic hooked claw and two other bifurcating setae. Five natatory setae from podomere (iv), all of which are hairy; the terminal podomere (vi) has three bifurcating claws. Lengths of the distal podomeres are 39:48:120 microns.

*Mandible*: (Figure 1F) With three long claws on terminal podomere. There

are only two setae on each side of the penultimate podomere of the mandible; branchial plate with four setae.

*Maxilla*: (Figure 1G) With a large vibratory plate with 22 feathered rays. Endite with two, three and four bristles.

*1st Thoracic leg (P1)*: (Figure 1H) Similar to *P. coriocellae*, which is the



**Figure 1.** *Pontocypria omaha* A. Left valve, dorsal view. B. Left valve interior. C. Left valve: detail of hinge line. D. Antennula. E. Antenna. F. Mandible. G. Maxilla. H. 1<sup>st</sup> thoracic leg. I. Walking leg (P2). J. Cleaning leg (P3). K. Furca. Bar scales: A – C : 0.1mm; D – K : 100 microns.

only species illustrated with setae on the podomeres.

*Walking leg* (P2): (Figure 1I) This leg is five-segmented and the anatomy for this leg is the same for all species of *Pontocypria*. Lengths of the podomeres are 18:63:81:141 microns.

*Cleaning limb* (P3): (Figure 1J) With four podomeres, the terminal one has a claw with setae and three stout bristles. Lengths of the podomeres are 36:138:228 microns.

*Furca*: (Figure 1K) The hairs and claws are of similar length. Those of other species have shorter apical hairs, in particular.

*Furcal attachment*: (Figure 1K) A simple "Y"- shape.

*Colour*: Strong red to red/brown when living; brown to cream in ethanol preservative.

## Discussion

The species most similar to *P. omaha* is *P. helenae* Maddocks, 1968, which was collected attached to asteroids in about 300m depth of water in Antarctica. The carapace of *P. helenae* is less arched in lateral view; its maximum height is mid-point and it lacks the depressions in the dorsal area. *P. omaha* is smaller than *P. coriocellae* Wouters, 1991 and not sub-rectangular. The mandibule of *P. coriocellae* has three setae on the penultimate podomere but only two in *P. omaha*. As the adult specimens are female, there are no diagnostic features on the genitalia.

The epifaunal worm hosting *P. omaha* within its parchment-like tube may be a *Chaetopterus* new to science. It does not fit the description of known species (G. Read, unpublished report), but is as yet unnamed pending

resolution of confused taxonomy in the genus. It is a cryptogenic species which increased dramatically in abundance in and adjacent to the Hauraki Gulf region since first becoming conspicuous there in 1997 (Acosta 2000). Large numbers of *Chaetopterus* sp. have been examined from populations sampled in this wider region (Gulf Harbour, Whangarei Harbour, Tauranga Harbour) but further ostracods have not been found in worm tubes, and also other commensals did not occur (Read, unpublished data). Thus, the wider distribution of *P. omaha* is as yet unknown. The evidence to date suggests it is an occasional commensal of the worm. *Chaetopterus* sp. pumps water to trap microplankton food in a mucous net extending posteriorly from the aliform parapodia where the Leigh Reef *P. omaha* were attached. The attachment of all the ostracods only at this location suggests this was an optimum position for obtaining food within the worm tube.

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