



Amazing new Amphipoda (Crustacea, Epimeriidae) from New Zealand's deep-sea

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Abstract

Epimeriidae is an amphipod family with a worldwide distribution. Two new species have been discovered off New Zealand; *Epimeria sophie* sp. nov. and *Epimeria emma* sp. nov. Two new species have been discovered off New Zealand; *Epimeria sophie* sp. nov. and *Epimeria emma* sp. nov., which are described here in detail. This increases the number of *Epimeria* species known from New Zealand's deep-sea to seven. The morphological differences of the juveniles with the adult of *Epimeria sophie* sp. nov. are discussed. Extensive scanning electron microscope images reveal structurally very complex surface arrangements on *Epimeria emma* sp. nov. A key to the 14 species of Pacific *Epimeria* is provided.

Key words: taxonomy, New Zealand, deep-sea, Amphipoda, *Epimeria emma* sp. nov., *Epimeria sophie* sp. nov., juveniles, Scanning Electron Microscopy

Introduction

Two species of epimeriid amphipods new to science are described from New Zealand waters. These increase the number of known *Epimeria* from the Pacific to 14 and the number of *Epimeria* known worldwide to 53. All previously known Pacific *Epimeria* except one species, *Epimeria victoria* (Hurley, 1957), have been collected at depths below 1000 m (Lörz 2011). The herein described *Epimeria sophie* sp. nov. was collected at 830 m on the Chatham Rise, east of Zealand; *Epimeria emma* sp. nov. was collected in 494–570 m on the Challenger Plateau and the Chatham Rise, west and east off New Zealand, respectively (Fig. 1).

Photographs taken on board straight after sampling reveal the pale orange colour of the specimens. Scanning electron microscope images expose the amazing surface structure of the new amphipods, revealing the symmetric pattern of yet unknown shapes and cuticular patterns.

A key based on morphological characters visible by stereo microscope to the Pacific *Epimeria* is provided.

Material and methods

Amphipods were collected during RV *Tangaroa* voyages to the Chatham Rise in November 2011 and to the Challenger Plateau in June 2007. Specimens were immediately sorted on deck, often photographed alive on board, initially preserved in 98% ethanol and later transferred to 70% ethanol. Specimens were examined and dissected using a Leica MZ9.5 stereo microscope in Wellington, and a Leica M205 C stereo microscope in Berlin, and drawn using a *camera lucida* attachment. Small appendages (mouthparts, uropods, telson) were temporarily mounted in glycerin and examined and drawn using a compound microscope (Zeiss Axioscope2 plus in Wellington, and Leica DMLB in Berlin) fitted with a *camera lucida*. The body lengths of specimens examined were measured by tracing individual's mid-trunk lengths (tip of the rostrum to end of telson) using a *camera lucida*. All illustrations were inked electronically using a Wacom Intuous 3 Graphics Tablet and Adobe Illustrator CS2 following techniques as

	teeth each	<i>Epimeria victoria</i>	
-	Dorsal carinae starting on pereon 6; posterolateral corners of epimeral plates 1 and 2 rounded or weakly produced		11
4.	Eyes present		7
-	Eyes absent		5
5.	Coxa 5 produced		6
-	Coxa 5 not produced	<i>Epimeria yaquinae</i>	
6.	Pleonites 1–3 with dorsal carinae; urosomite 1 dorsally produced; coxae 1–3 ventrally rounded		12
-	Pleonites 1–2 smooth; pleonite 3 and urosomite 1 dorsally produced; coxae 1–3 ventrally pointed	<i>Epimeria subcarinata</i>	
7.	Urosomite 1 bearing dorsally pointed tooth. Rostrum expanding beyond first peduncle article of antenna 1		9
-	Urosomite 1 lacking dorsally pointed tooth. Rostrum not expanding beyond first peduncle article of antenna 1		8
8.	Protrusion of coxa 5 reaching posterior margin of epimeral plate 2. Telson not cleft, coxae 1–3 ventrally rounded.		
		<i>Epimeria norfanzi</i>	
-	Coxa 5 not produced. Telson cleft, coxae 1–3 ventrally pointed	<i>Epimeria pelagica</i>	
9.	Head ventral lobe not produced. Coxa 4 ventral protrusion as long as posterior protrusion, coxa 5 protrusion not reaching epimeral plates	<i>Epimeria cora</i>	
-	Head ventral lobe produced, coxa 4 twice as long as wide, coxa 5 protrusion nearly reaching second epimeral plate	<i>Epimeria pacifica</i>	
10.	Double dorsal carinae on pleonites 1–3		13
-	Single dorsal carinae on pleonites 1–3	<i>Epimeria bruuni</i>	
11.	Pereonites 6 and 7 laterally smooth; coxa 1 ventrally rounded.	<i>Epimeria horsti</i>	
—	Pereonites 6 and 7 laterally bearing projections; coxa 1 ventrally subquadrate	<i>Epimeria emma</i> sp. nov.	
12.	Rostrum not expanding beyond first peduncle article of antenna 1	<i>Epimeria glaucosa</i>	
-	Rostrum expanding beyond second peduncle article of antenna 1	<i>Epimeria morronei</i>	
13.	Pleonites laterally smooth	<i>Epimeria sophie</i> sp. nov.	
-	Pleonites laterally bearing several projections	<i>Epimeria ashleyi</i>	

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