

A New Species of the Genus *Texanobathynella* from California (Crustacea, Malacostraca, Bathynellacea)

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ABSTRACT

A new species of the genus *Texanobathynella* is described from California, USA. *Texanobathynella sachi*, new species, belongs to the family Parabathynellidae. A comparison of morphological details makes it possible to distinguish *Texanobathynella* from the genus *Iberobathynella*. *Texanobathynella* bears unique characters in construction of antennules, labrum, maxilla and mandible.

Key words: Bathynellacea, *Texanobathynella*, *Iberobathynella*, new species, California

INTRODUCTION

Bathynellacea are minute, malacostracous crustacea which are known from all over the world except Antarctica. Because of their phylogenetic age and dispersive capacity they are regarded as a suitable object for zoogeographical studies (Schminke, 1974). However, not many biologists are interested in the occurrence of this animal group because of its habitat. Bathynellacea live, with few exception, in subterranean waters in the interstitial spaces between sand grains.

There are 2 families in the order Bathynellacea, Bathynellidae and Parabathynellidae. Since the first description of bathynellid, *Bathynella natans* Vejdovsky, 1882, species have been continuously described every year and there are more than 150 known species of 42 genera in 2 families, as is apparent from a recent survey (Schminke, 1986).

This paper deals with the description of a new species of the genus *Texanobathynella* which belongs to Parabathynellidae. This genus was established by Delamare Debutteville *et al.* (1975) for

a single species *T. bowmani*. The material examined, was collected from California, USA. The samples were prepared and mounted in the mixture of glycerin-formalin. For the drawing and investigation, a Polyvar-Microscope of Reichert-Jung Company with the Interference-contrast equipment was used with oil immersion. Type specimens are deposited in the Arachnological Institute of Korea.

DESCRIPTION

Texanobathynella sachi n. sp. (Fig. 1-3)

Holotype, female: San Clement Canyon Park, San Diego, California, USA. 2 km from coast, about 80 m above the sea level, shadowed site on drained stream bed, pit 60 cm deep. temp. 19°C. 14. August 1973, leg. W. Noodt. Allotype (♂), 5 ♀♀ and 5 ♂♂ as paratypes.

Description of female (holotype). - Length 1.4 mm. Body 14 times as long as wide. Pleotelson on both sides with 1 seta at base of furcal rami. Anal operculum concave. Furcal rami 2 times as long as wide, bearing 6 spines on its inner margin, 2 pulvose setae on dorsal surface.

Antennule of 6 segments, setation as in Fig. 1-1. Antenna 3-segmented, first 2 segments without setae, last segment with 3 terminal setae and 1 additional seta halfway on outer margin.

Labrum with 8 main teeth on middle part, laterally denticulated. Mandible with incisor process of 5 main teeth, denticulated on outer margin. Tooth of ventral edge elongated and terminal forked as in Fig. 1-4a, 4b, spine row of 6 claws.

Maxillule of 2 segments, proximal segment with 4 claws, distal segment bearing 5 claws on inner margin and 3 setae on outer margin. Maxilla 4-segmented, distal segment with 1 prehensile seta, setal formula 1, 4, 13, 1.

Thoracopod I without epipodite. Thoracopods I-VII with 1 seta at distal inner margin of basipodite. Coxa with conical projection at inner distal border. Number of segments of exopodites of thoracopods: 1, 3, 3, 3, 2, 2, 2. endopodite of thoracopods I-VII 4-segmented, setal formulae:

Thoracopod I 1+0/1+1/0+1/2(1)

Thoracopods II-VII 0+0/1+0/0+1/2(1)

Thoracopod VIII small chitinated plate.

Pleopod I in form of setae.

Uropod bearing 7 spines on inner distal margin of sympodite, the most distal spine 2.5 times as long as the others of equal size. Endopodite half as long as sympodite. Exopodite as long as endopodite, with 2 terminal setae of unequal length, with each 1 outer and inner subterminal setae and 1 basiventral seta.

Description of male. - Length 1.3 mm. Thoracopod. VIII globular in form. Penial region 3-lobed, bearing 4-5 teeth on posterior face of *lobus denticulatus* and 1 small spine on *lobus internus*. *lobus externus* wide, fused with basipodite, curved inwards and ending in triangular tip. Basipodite with 1 seta at base of endopodite, inner margin of basipodite terminal with a chitinous projection. Exopodite small and square in form. Endopodite small, bearing 2 setae.

Etymology. - Named after Dr. Sach, Guenther (Univ. Kiel Germany), in gratitude for his aids during my stay in Germany.

DISCUSSION

Schminke (1973) characterized the genus *Iberobathynella* as follows: 3-segmented antenna, thoracopod VIII ♂ with a large protopodite, a wide epipodite and a relative small endopodite and exopodite of uropod bearing a ventromedial seta on its proximal part. Though the new species bears the three characters even mentioned, it may not belong to *Iberobathynella*, but *Texanobathynella*.

According to Delamare Deboutteville *et al.* (1975), *Texanobathynella* is characterized by 6-segmented antennule, labrum with 10 teeth, 4-segmented maxilla, multiple segmentation of exopodites of thoracopods II-VII, double protrusion on basipodite of thoracopod VIII ♂. However, Schminke and Noodt (1988) find no characters which are specific for the genus *Texanobathynella* in the original description of *T. bowmani*. After both authors all the characters revealed by Delamare Deboutteville *et al.* (1975) exist also in the genus *Iberobathynella*. The genus *Texanobathynella* was therefore synonymized with the genus *Iberobathynella* (Schminke, 1986). Because of the segmentation of antennule and the structures of the mouthparts, however, *Texanobathynella* should be regarded as a valid genus. The antennule of all *Iberobathynella*-species are 7-segmented but those of *Texanobathynella* 6-segmented. A 4-segmented maxilla as in *Texanobathynella* is not known within *Iberobathynella*. On labrum of *Iberobathynella* a group of eight median teeth is always laterally flanked by two additional teeth, but not by indefinite denticulation. Moreover, *T. bowmani* and *T. sachi* n. sp. bear the similar character of mandible, which is absent in *Iberobathynella*. *T. sachi* has a mandible of which the tooth of ventral edge is not triangular in form as in *Iberobathynella* but forked into three. Delamare Deboutteville *et al.* (1975) have reported that the spine row of mandible of *T. bowmani* consists of seven claws. But, the original Figure (Delamare Deboutteville *et al.* 1975: 2225, Fig. 2-C) shows that the distal claw stands aside from the others and is forked into two. Thus, it may be said that the so-called distal claw of *T. bowmani* is homologous with the tooth of ventral edge of *T. sachi* n. sp. The genus *Texanobathynella* is a valid taxon. It is clearly separated from the genus *Iberobathynella* through the following morphological characters: the 6-segmented antennule, the indefinite denticulation on the lateral margin of labrum, the 4-segmented maxilla with a prehensile seta and forked tooth of ventral edge of mandible.

As mentioned above, *T. sachi* n. sp. differs from *T. bowmani* in the structure of the tooth of ventral edge of mandible. Other differences are, because of insufficient description of *T. bowmani*, not recognizable except segmentation and ornamentation of some appendages as follows: segmentation of exopodites of thoracopods II-VII and the numbers of spines on sympodite of uropod and furcal rami. It cannot be excluded that these differences will be evaluated as distinction of both forms on subspecific level only. But, as long as the morphological details of *T. bowmani* are fully known, no clear decision can be made.

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RECEIVED: 13 November 1996

ACCEPTED: 21 December 1996

미국 캘리포니아산 *Texanobathynella* 속의 1신종
(갑각강, 연각아강, 고하목)

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요약

미국 캘리포니아에서 채집된 *Texanobathynella*속의 1신종, *T. sachi*를 기재하였다. 상세한 형태학적 특징들의 비교를 통해 *Texanobathynella*속을 *Iberobathynella*속과 구별하였다.

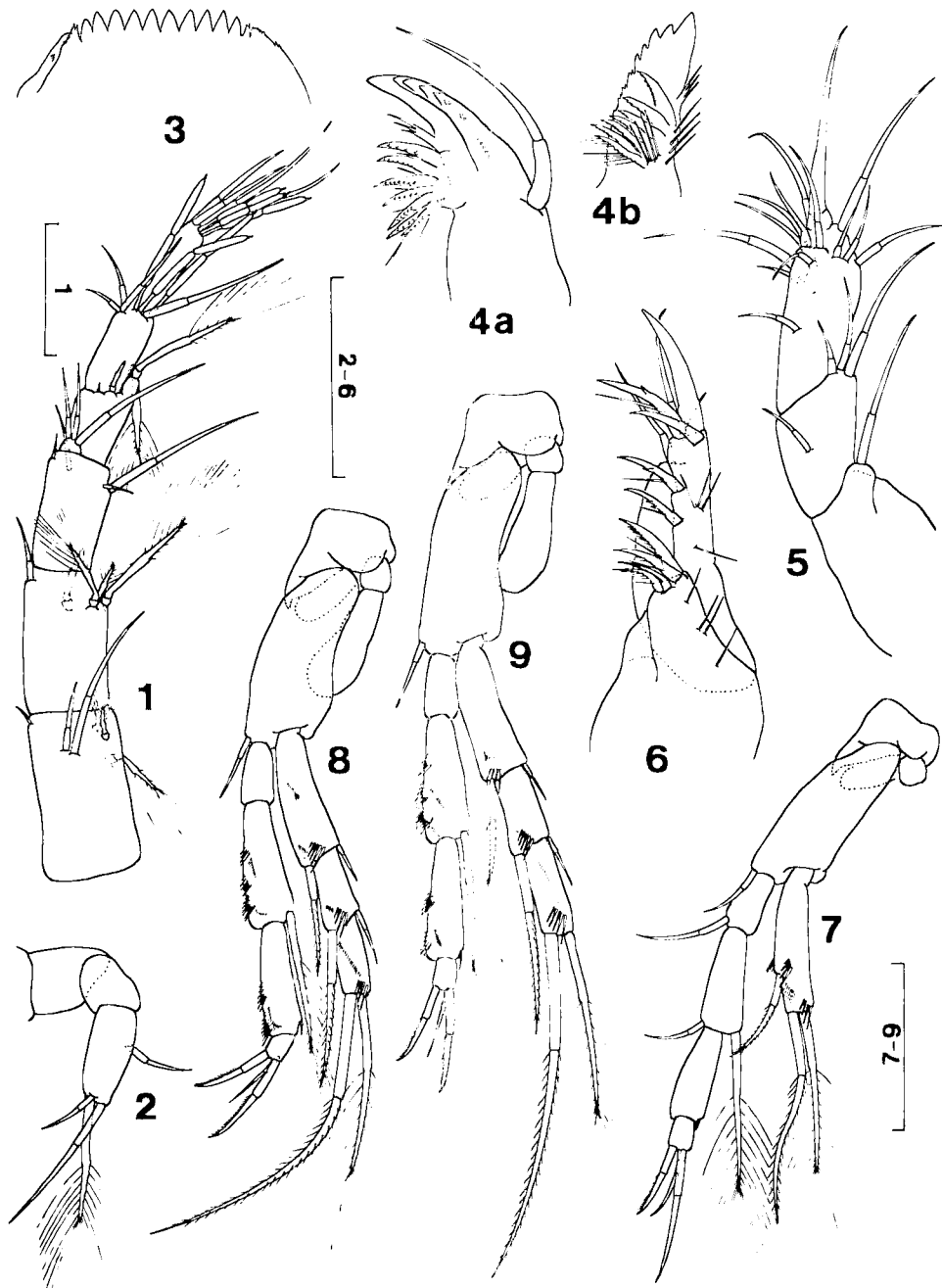


Fig. 1. *Texanobathynella sachi* n. sp.: 1. right Antennule (dorsal); 2. right Antenna (dorsal); 3. Labrum. (ventral); 4a. right Mandible. (dorsal); 4b. incisor process and spine row (frontal); 5. left Maxillule; 6. left Maxilla; 7. left Thoracopod I; 8. left Thoracopod II. 9. left Thoracopod III. Scales: 0.05 mm.

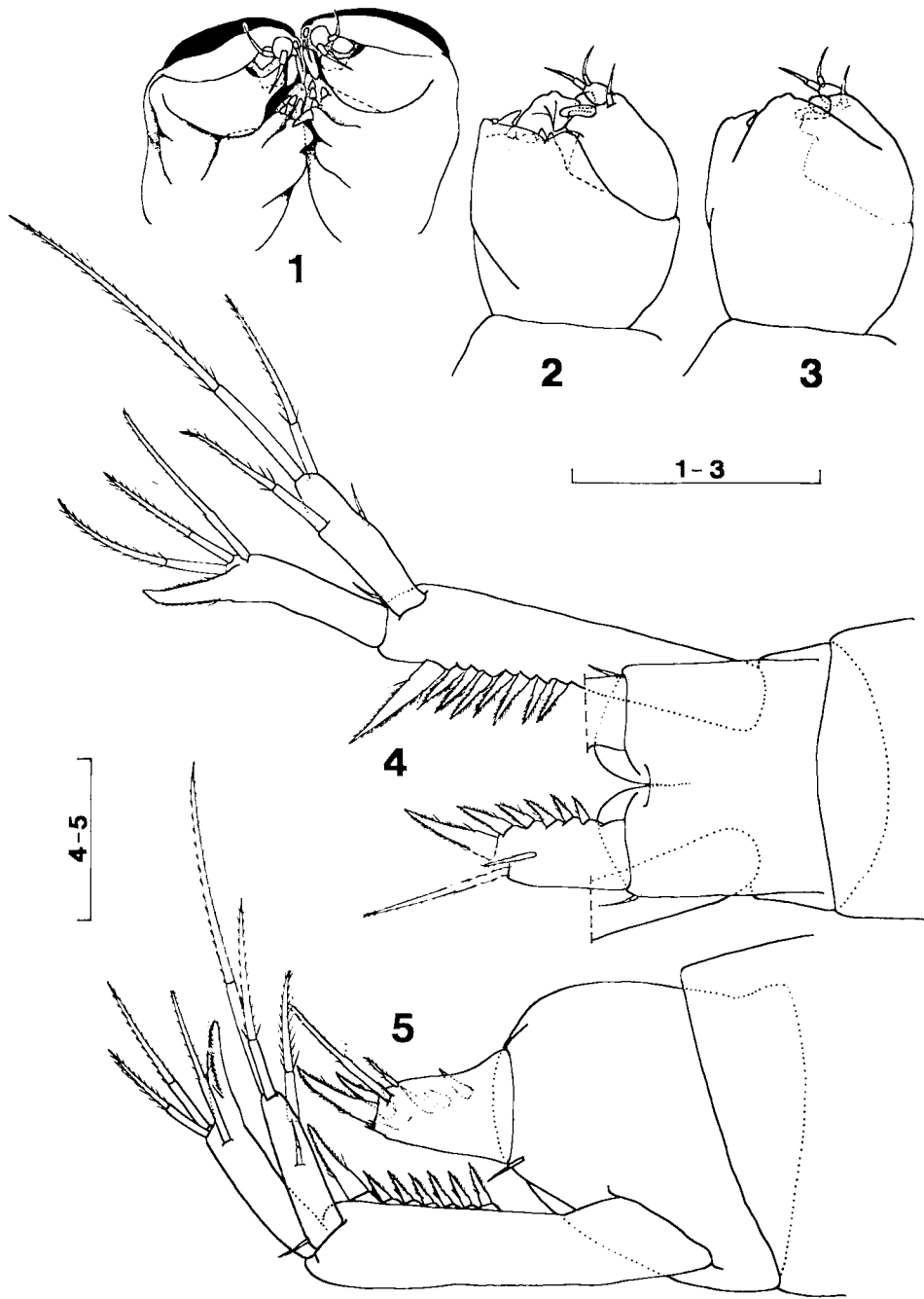


Fig. 2. *Texanobathynella sachi* n. sp.: 1. Thoracopod VIII ♂ (left and right, ventral); 2. right Thoracopod VIII ♂ (innen lateral); 3. ditto (outer lateral); 4. Pleotelson, furca and uropod (dorsal); 5. ditto (ventral). Scales: 1-3 = 0.025 mm, 4-5 = 0.5 mm.

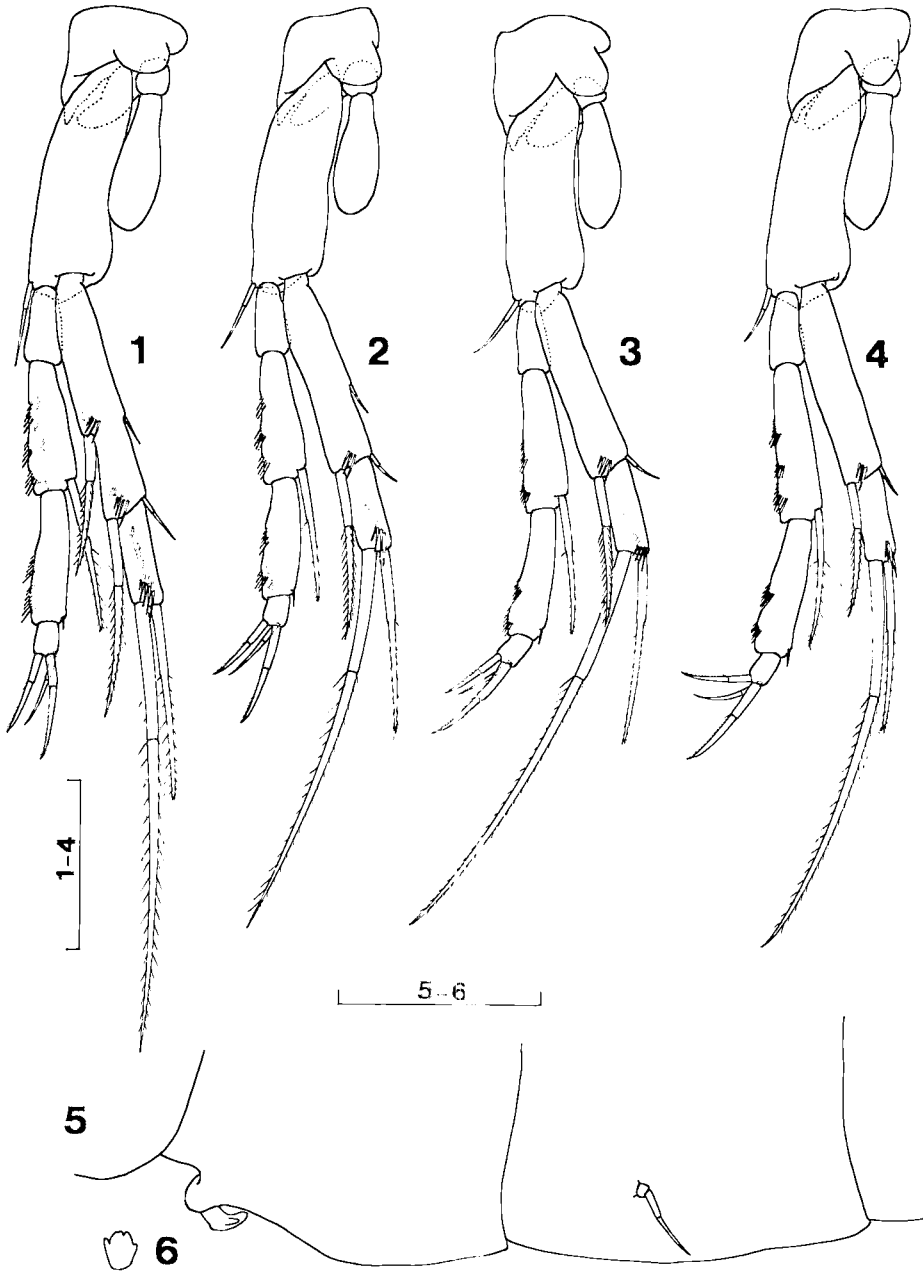


Fig. 3. *Texanobathynella sachi* n. sp.: 1. left Thoracopod IV; 2. left Thoracopod V; 3. left Thoracopod VI; 4. left Thoracopod VII; 5. Thoracopod VIII ♀ and Pleopod (left lateral); 6. Thoracopod VIII ♀ (ventral). Scales: 0.05 mm.