THAUMATELSONINE STENOOTHIOIDS (CRUSTACEA: AMPHIPODA): PART 1

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Abstract


The Thaumatelsonidae were separated from Stenothoidae by Walker (1906) and reduced to a subfamily of Stenothoidae by Barnard (1972). The history of the subfamily is reviewed and its included genera placed in two divisions. All genera and species of the less specialised division are revised here. Four new genera are erected, Raumahara, Ptychotelson, Pycnopyge and Yarra. Raumahara waroona and Yarra unguiserra are described as new species, Raumahara rongo Barnard placed in the newly erected genus Raumahara. All belong to this thaumatelsonine group but it is shown that similar structures in Pycnopyge are homoplasies which developed independently. This genus is removed from Thaumatelsoninae.

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Introduction

While Walker (1906) was studying the amphipods collected during the Discovery Antarctic expedition, he noted a totally unusual telson-shape and created a new genus for which he coined the generic name Thaumatelson (from Greek “thauma”, meaning “wonderful”). Gurjanova (1938) erected Parthaumatelson for Metapella nasica Stephensen, 1927. At the same time she created the family Thaumatelsonidae, comprising her genus, Thaumatelson Walker, 1906, Prothaumatelson Schellenberg, 1931 and Pseudothaumatelson Schellenberg, 1931, all having a very unusual urosome.

Barnard (1964: 71) was clearly uneasy with the generic division within the Thaumatelsonidae (and indeed the Stenothoidae s.l.) and later (1972b: 158) opined “... the Stenothoidae being unnaturally systematised ... at present signify not phyletic lines but grades of evolution ...” Barnard (1972a: 318) erected Raumahara and in 1972b noted (p. 160) “… this genus bridges the differences between Stenothoidae and Thaumatelsonidae to such an extent that the two families become qualitatively inseparable. The concept of a subfamily 'Thaumatelsoninae' remains useful.” Barnard had studied this mainly Australian group while having at his disposal very few specimens
(often single representatives) from Australian collections. His species have never been reported since.

Comparison of new material, studied at Museum Victoria (Melbourne), the Australian Museum (Sydney) and the Smithsonian Institution (Washington) revealed some errors in descriptions and drawings of this group. New taxa could be erected, others removed. This paper deals with only one group of thaumatelsonines, those that share a proximally thickened, three-dimensionally inserted and spoon-shaped telson (Table 1). Others will be discussed in later contributions. Similarities and differences between the groups are discussed in Conclusions at the end of this contribution.

The habitus was observed in glycerine, under stereo- as well as phase contrast microscope; dissected parts were mounted in Faure’s medium. The following abbreviations are used (in alphabetic order): AM, Australian Museum, Sydney, Australia; BMNH, Natural History Museum, London, United Kingdom; CTK, personal collection of Traudl Krapp, Bonn, Germany; MVR, Museum für Naturkunde der Humboldt-Universität, Berlin, Germany; NHRS, Naturhistoriska Riksmuseum, Stockholm, Sweden; NMV, Museum Victoria, Melbourne, Australia; NZOI, New Zealand Oceanographic Institut (now National Institute for Water and Atmosphere), Wellington, New Zealand; SAM, South African Museum, Cape Town, South Africa; USNM, US Natural History Museum, Smithsonian Institution, Washington, USA; WAM, Western Australian Museum, Perth, Australia; ZMH, Zoologisches Museum der Universität, Hamburg, Germany.

### Table 1. Species treated in this paper, with current generic placement.

<table>
<thead>
<tr>
<th>Original combination</th>
<th>Current generic placement</th>
</tr>
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<tbody>
<tr>
<td><em>Chucullba alla</em> Barnard, 1974</td>
<td><em>Chucullba</em></td>
</tr>
<tr>
<td><em>Chucullba warea</em> Barnard, 1974</td>
<td><em>Chucullba</em></td>
</tr>
<tr>
<td><em>Pseudothaumatelson patagonicum</em> Schellenberg, 1931</td>
<td><em>Pseudothaumatelson</em></td>
</tr>
<tr>
<td><em>Raumahara virdurorum</em> Krapp-Schickel and Andres, 1998</td>
<td><em>Ptychotelson</em></td>
</tr>
<tr>
<td><em>Prothaumatelson carinatum</em> Shoemaker, 1955</td>
<td><em>Pycnopyge</em></td>
</tr>
<tr>
<td><em>Raumahara derto</em> Barnard, 1972a</td>
<td><em>Raumahara</em></td>
</tr>
<tr>
<td><em>Raumahara judithae</em> Moore, 1981</td>
<td><em>Raumahara</em></td>
</tr>
<tr>
<td><em>Raumahara noko</em> Barnard, 1974</td>
<td><em>Raumahara</em></td>
</tr>
<tr>
<td><em>Raumahara waroona</em> sp. nov.</td>
<td><em>Raumahara</em></td>
</tr>
<tr>
<td><em>Raumahara rongo</em> Barnard, 1972b</td>
<td><em>Raukumara</em></td>
</tr>
<tr>
<td><em>Pseudothaumatelson cyproides</em> Nicholls, 1938</td>
<td><em>Thaumatelsonella</em></td>
</tr>
<tr>
<td><em>Thaumatelsonella kingelepha</em> Rauschert and Andres, 1991</td>
<td><em>Thaumatelsonella</em></td>
</tr>
<tr>
<td><em>Yarra unguiserra</em> gen. et sp. nov.</td>
<td><em>Yarra</em></td>
</tr>
</tbody>
</table>

### Taxonomy

**Key to thaumatelsonine species with spoon-shaped telson**

1. Gnathopod 2 chelate .......................................................... 2
   — Gnathopod 2 subchelate .................................................. 7
2. Gnathopod 1 subchelate .................................................... 3
   — Gnathopod 1 chelate .................................................... *Raumahara...* 4
3. Antenna 1 article 2 swollen .............................................. *Ptychotelson virdurorum*
   — Antenna 1 article 2 slender, ordinary .......................... *Raukumara rongo*
4. Uropod 3 ramus article 2 well developed; antenna 2 article 3 subquadrate .................................. *Raumahara noko*
   — Uropod 3 ramus article 2 reduced; antenna 2 article 3 ovoid ........................................ 5
5. Urosomite 1 dorsal hump reaching 50% of telson .............. *Raumahara derto*  
   — Urosomite 1 dorsal hump reaching <25% telson ............... 6

Type species. Raumahara dertoo Barnard, 1972

Diagnosis. General habitus bivalve-like (fig. 1). Antenna 1 peduncular article 2 ordinary to swollen, with dorsal process more or less overlapping article 3; accessory flagellum of 1 article. Antenna 2 article 3 rectangularly shortened, ovoid or bulbous. Mandibular palp reduced to 1 short article, or lacking. Maxilla 1 palp biarticulate. Maxilla 2 plates ordinary (tandem), or outer plate riding up on inner one. Maxilliped outer plate present, different, short. Gnathopods 1 and 2 propodochelate-forcipate. Pereopods 3–7 basis rectilinear, dactylus on inner and outer surface with a row of stiff, short setae, distally ending in a second tip. Pereopod 4 elongate, usually same as pereopod 3. Urosomite 1 dorsally thickened to a fold vaulting over urosomite 2 and reaching or overlapping telson insertion. Transparent septae (or wings) on urosomite 3. Uropod 3 ramus clearly of 2 articles, or article 2 reduced or lacking. Telson horizontal, spoon-shaped, dorsally excavated; posterior end of urosomite 1 process possibly fitting in this excavation; proximally thickened, three-dimensionally coalesced with urosomite 3.

Table 2 tabulates differences between the four species now placed in this genus.

Raumahara Barnard, 1972


Type species. Raumahara dertoo Barnard, 1972 (original designation).

Diagnosis. General habitus bivalve-like (fig. 1). Antenna 1 peduncular article 2 ordinary to swollen, with dorsal process more or less overlapping article 3; accessory flagellum of 1 article. Antenna 2 article 3 rectangularly shortened, ovoid or bulbous. Mandibular palp reduced to 1 short article, or lacking. Maxilla 1 palp biarticulate. Maxilla 2 plates ordinary (tandem), or outer plate riding up on inner one. Maxilliped outer plate present, different, short. Gnathopods 1 and 2 propodochelate-forcipate. Pereopods 3–7 basis rectilinear, dactylus on inner and outer surface with a row of stiff, short setae, distally ending in a second tip. Pereopod 4 elongate, usually same as pereopod 3. Urosomite 1 dorsally thickened to a fold vaulting over urosomite 2 and reaching or overlapping telson insertion. Transparent septae (or wings) on urosomite 3. Uropod 3 ramus clearly of 2 articles, or article 2 reduced or lacking. Telson horizontal, spoon-shaped, dorsally excavated; posterior end of urosomite 1 process possibly fitting in this excavation; proximally thickened, three-dimensionally coalesced with urosomite 3.

Table 2 tabulates differences between the four species now placed in this genus.

Raumahara dertoo Barnard

Figures 1, 18


Type material. Holotype. Western Australia, Cape Naturaliste, intertidal, common seaweeds, WAM (female, 1.55 mm).

Material examined. Paratypes. 6 specimens (USNM 230426).

Non-type. Western Australia. Walpole, ZMH K38211 (1 individual mounted on slide). Albany, ZMH K38203 (6 specimens in alcohol), ZMH K38204 (6 specimens in alcohol), ZMH K38205 (1 specimen in alcohol). Walpole, ZMH K38211 (1 specimen in alcohol).

Diagnosis. Antennae 1 and 2 subequal. Antenna 1 peduncular article 2 ordinary or weakly swollen; accessory flagellum of 1 article. Antenna 2 article 3 ovoid. Ocular lobes short, acute. Mandibular palp lacking. Gnathopod 1 propodochelate; gnathopod 2 propodochelate, dactylus about one-third propodus. Urosomite 1 with thick fold vaulting over urosome and half of telson (fig. 1).
Table 2. Diagnostic characters distinguishing species of *Raumahara* Barnard.

<table>
<thead>
<tr>
<th>Character</th>
<th>R. noko</th>
<th>R. dertoo</th>
<th>R. judithae</th>
<th>R. waroona</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna 1 peduncular article 2</td>
<td>overlapping article 3</td>
<td>weakly swollen</td>
<td>overlapping article 3</td>
<td>overlapping article 3</td>
</tr>
<tr>
<td></td>
<td>dorsally</td>
<td></td>
<td>dorsally</td>
<td>dorsally</td>
</tr>
<tr>
<td>Antenna 1 accessory flagellum</td>
<td>2 articles</td>
<td>1 article</td>
<td>2 articles</td>
<td>1 article</td>
</tr>
<tr>
<td>Antenna 2 peduncular article 3</td>
<td>subquadrate</td>
<td>ovoid</td>
<td>bulbous</td>
<td>suboval or bulbous</td>
</tr>
<tr>
<td>Mandibular palp</td>
<td>rudimentary</td>
<td>absent</td>
<td>absent</td>
<td>absent</td>
</tr>
<tr>
<td>Gnathopod 2 dactylus</td>
<td>30–33% propodus</td>
<td>30–33% propodus</td>
<td>40% propodus</td>
<td>33–40% propodus</td>
</tr>
<tr>
<td>Gnathopod 2 propodus proximally</td>
<td>slender</td>
<td>slender</td>
<td>slender</td>
<td>Slender to bulbous</td>
</tr>
<tr>
<td>Urosomite 1 hump</td>
<td>&lt; 25% telson</td>
<td>50% telson</td>
<td>&lt; 25% telson</td>
<td>&lt; 25% telson</td>
</tr>
<tr>
<td>Uropod 1 rami</td>
<td>subequal</td>
<td>subequal</td>
<td>unequal</td>
<td>subequal</td>
</tr>
<tr>
<td>Uropod 1 peduncle + rami</td>
<td>strong spines on peduncle + rami</td>
<td>small spines on peduncle</td>
<td>1 distal spine on peduncle</td>
<td>lacking spines or spines on peduncle</td>
</tr>
<tr>
<td>Uropod 3 rami article 1 apically</td>
<td>1 short seta or weak spine</td>
<td>1 long seta surpassing uropod 3 tip</td>
<td>1 seta shorter than uropod 3 tip</td>
<td>1 long seta sitting upon uropod 3 tip</td>
</tr>
<tr>
<td>Telson excavated</td>
<td>well visible, strong</td>
<td>reduced? to absent</td>
<td>reduced? to absent</td>
<td>totally absent</td>
</tr>
<tr>
<td></td>
<td>weakly</td>
<td>strongly</td>
<td>strongly</td>
<td>strongly</td>
</tr>
</tbody>
</table>
Figure 1. a. general habitus of *Raumahara* or *Ptychotelson* in normal position, where most parts of legs and antennae are hidden by the enlarged coxae; on anterior end thickened peduncle antenna 1, on posterior end thickened urosome plugging or protecting the filter groove.

b. *Raumahara dertoo* Barnard, urosome of 1.3 mm juvenile, showing the transparent “wings” connecting telson and uropod 3.

c. *Raumahara dertoo* Barnard, urosome of 1.5 mm adult; wings not visible as telson adjacent to uropod 3. Scale = 0.1 mm.
Uropod 3 ramus with long, visible seta subapically on article 1; article 2 may be prolongation on article 1, surpassing insertion of seta (fig. 1). Telson spoon-like, three-dimensional, proximally thickened and coalesced with urosomite 3 ventrally, depth in proximal half about two-thirds total length; directed horizontally.

Length 1.0–1.55 mm.

**Distribution.** Cape Naturaliste to Albany, south Western Australia; intertidal, common seaweeds.

**Biology.** Female ovigerous from September to November.

**Remarks.** Barnard’s assignment of this species to Stenothoidae was probably based on the lack of a nasiform process. Antenna 1 article 2 is subquadrate to weakly swollen; antenna 2 article 3 is not rectangular-slimber but ovoid (drawn but not in diagnosis of Barnard, 1972a); and uropod 3 ramus consists apparently of 1 article (although article 2 may be the minute, thin prolongation next to a long and striking seta inserted subapically on article 1). Barnard’s drawings of the urosome never show the ventral margin of the vaulting process of urosomite 1 which is a very thick fold for fortifying the whole urosome dorsally, and probably also plugs the body posteroventrally if necessary. There are some (glandular?) ducts of unknown function on the dorsal margin of this process (fig. 1). The telson can be in contact with uropod 3 but can also be in an upright position when transparent septae on the dorsal margins of urosomite 3 and uropod 3 peduncle become visible (fig. 1).

**Raumahara noko** Barnard

Figures 2, 3


**Type material.** Holotype. South Australia, Pearson Island, in algae, 18–24 m, SAM C3535 (female, 1.6 mm, in alcohol).

**Material examined.** Western Australia. Walpole, ZMH K39213, K39214 (1 adult, 1.6 mm, on 2 slides). Albany, ZMH K38204 (2), Ceduna, ZMH K38206 (1). South Australia. Port Lincoln, ZMH K38207 (7), Kangaroo Island, Hartmann, ZMH K38783 (3). Tasmania. The Gardens, St Helens, from tide pools, G.C.B. Poore, Feb 1980, NMV J3278, (1 juvenile on slide).

**Diagnosis.** Antennae 1 and 2 subequal. Antenna 1 peduncular article 2 weakly swollen, with age increasingly vaulting over article 3 proximally; accessory flagellum of 2 articles. Antenna 2 article 3 exceptionally short, subquadrate to trapezoid. Ocular lobes strong, subacute. Mandibular palp reduced to 1 short but clearly visible article. Gnathopod 1 propodochelate. Gnathopod 2 propodochelate, slender, dactylus about 30% propodus length. Urosomite 1 with fold vaulting over urosomite 2 and one third of telson, less voluminous than in type species. Uropod 3 ramus with 2 robust articles. Telson like a very flat spoon, basally thickened, three-dimensionally coalesced with urosomite 3, directed and inserted horizontally.

Length 1.0–2.0 mm.

**Redescription.** Antenna 1 subequal to shorter antenna 2. Antenna 1 subequal to head + pereonites 1+2 (dorsal length); peduncular articles 1 and 3 without process, article 2 dorsomedially slightly vaulting over article 3, extension depending on age, reaching as far as one third article 3, process bearing a duct and 1 long seta; ratio of lengths of articles 2 : 1 ≤ 0.5; article 3 longer than article 2 ventrally, subequal dorsally; accessory flagellum short, biarticulate; article 2 much narrower than basal article and with 1 long terminal seta; flagellum longer than peduncle, of 7 articles, aesthetascs present. Antenna 2 peduncular article 3 shortened, subquadrature, article 4 shorter than 5; flagellum subequal to peduncle, of 7 articles.

Upper lip ventrally notched, lobes rounded. Mandibular incisor well developed, with broad cusps; lacinia mobilis on left mandible broad, with major incisions, on right mandible with distal part finely serrated; raker spine row developed, 4 strong spines; molar cusp with 3 robust curved spines; palp clearly developed, of 1 short article; 1–2 setae apically (cf. fig. 2 in juvenile with 1 seta, fig. 3 in adult with 2 setae; cf. also Barnard, 1974: fig. 71 with 1 seta, on other drawings of mandible no palp shown). Lower lip inner lobes coalesced, mandibular lobes well developed. Maxilla 1 inner plate with 1 subapical seta; outer plate mediodistally setose, apically armed with 4 serrate robust spines, 1 stout simple spine and 1 thin, short and stiff one; palp biarticulate, extending beyond outer plate, with spines apically and medioapically. Maxilla 2 plates tandem-grouped; outer plate scarcely extending beyond inner one, apically with 3 setae (cf. fig. 3 here with Barnard, 1974: fig. 71 showing 4 setae), 1 on outer margin; inner plate with 2 long apical setae, on inner margin 1 shorter, stiff one mediodistally. Maxilliped inner plate reaching half length of ischium, with 1 seta and 2 spines apically; outer plate reaching 50% along merus (= palp article 1); with 2 setae apically, 2 medially; palp of 4 articles; length of merus and propodus subequal;
Figure 2. *Raumahara noko* Barnard. a, habitus 1.1 mm. b, anterior body of neonatus. c, sketch of mouthparts in situ. Antennae 1, 2 at scale = 0.1 mm. Mandible at scale = 0.05 mm.
Figure 3. *Raumahara noko* Barnard. Gnathopods 1, 2 at scale x = 0.1 mm; urosome (from 4 different specimens and in different shape of fixation; attention to the "wings" connecting uropod 3 with telson) at scale y = 0.1 mm; upper lip and maxilla 2 at scale z = 0.05 mm.
article 3 (propodus) much narrower than article 2; carpus, propodus distally and dactylus with inner margin furry.

Gnathopod 1 shorter than gnathopod 2. Coxa 1 reduced, subquadrangular, covered by coxa 2; basis with translucid lobe; merus posteriorly rounded, about as long as triangular carpus, which is very narrow between merus and propodus distally; propodus with parallel margins anter- and posteriorly, with 1 strong seta anteromedially and 2 weak ones distally; posterior margin slightly concave, length : breadth > 2 : 1; propodochelate, palm armed with short setae; palmar corner with a pair of robust spines, tip of propodus upwards curved; dactylus as long as palm, inner margin smooth, beset with few spines. Gnathopod 2 propodochelate-forcipate. Coxa 2 expanded, anterior margin regularly convex, posterior one nearly straight, ventrally straight to rounded; posterior margin with single spines; ischium slim, longer than merus; carpus subtriangular, lobe with dense, short setae and longer, forward-curved spines; propodus slender, length ratio of dactylus : total propodus = 33–40% (in juvenile propodus relatively shorter, thus dactylus more than one third propodus); terminally a hooked cusp and notch; palm with stiff setae; dactylus also terminally hooked, matching well with the propodal notch; inner margin with similar setae; outer margin with 1 long seta.

Pereopods 3 and 4 slender, subequal, but carpus in pereopod 4 longer; dactylus about half propodus length, hind margin on inner and outer surface with dense, stiff setae, at distal end of this row a second tip, thus dactylus seemingly bifid. Coxa 3 more than twice as deep as broad; posteriorly distally some spines. Coxa 4 dominant, wider than deep, getting wider with age; front margin slightly convex, ventral margin straight, posterior margin strongly convex; depth anteriorly and posteriorly subequal. Pereopods 5–7 slender, ratios of corresponding articles only slightly different; dactylus with prominent setal comb on anterior margin inside and outside. Coxae 5–7 short; coxa 5 trapezoid, weakly produced posterodistally; coxa 6 oblong, roundly produced posteriorly; coxa 7 blunt.

Gills and oostegites on pereopods 2–5, not found on pereopods 6 or 7.

Uropods 1–3 extending less far posteriorly in succession. All rami (and distal regions of peduncles) with very short setae dorsally. Uropod 1 peduncle subequal or longer than subequal rami; peduncle with 3 spines; inner ramus inserted much less distally; outer ramus (extending the further and more distally inserted) with 1 strong medial spine. Uropod 2 peduncle as long as longer ramus, with 1 strong spine distally, 1 medially; inner ramus very little shorter and inserted more proximally; without spination. Uropod 3 peduncle + ramus about as long as peduncle of uropod 2; peduncle distally with 1 spine, subequal to biarticulate ramus; ramus article 1 > article 2, article 1 distally with 1 spine, article 2 nail-like, well developed. Large, transparent septum on urosomite 3 dorsally; on uropod 3 peduncle dorsally also a thin, transparent “wing”.

Telson not reaching end of uropod 3 ramus; basis situated under the vaulted urosomite 1 and fused with urosomite 3 medially (fig. 3); distally tapering, apex rounded, spoon-like, dorsolaterally and basally with sclerotic clasps; with 1–2 pairs of setae. Telson not always in contact with body as urosomite 3 has 2 thin plates in the gap (figs 2, 3), and uropod 3 and telson may be retracted (and protected?) between them (cf. Barnard, 1974: fig. 71, uropod 3). (This may be what Barnard (1974: 113) meant by “urosmite 3 very distinct.”)

Colour. Antenna 1 articles 1 and 2, eyes, and broad dorsal stripe on pereonites 1–7 brick-red, mesosome and urosome orange, gnathopods 1 and 2 and pereopods 3–7 yellow-green, coxae yellow.

Distribution. South coast of Australia from extreme west to Tasmania. Littoral and sublittoral, 18–24 m (Barnard, 1974) including tide pool.

Biology. Eggs in December to January.

Remarks. Having a well developed uropod 3 article 2, this species is the most plesiomorphic within its genus. Also, the flat spoon-like telson, rectangular antenna 2 article 3 and mandibular palp, though very reduced, confirm this impression. The other species, R. dertoo, R. judithae and R. waroona have reduced or no second article on uropod 3 ramus, an ovoid to bulbous antenna 2 article 3 and no mandibular palp. The process on antenna 1 article 2 shows a (glandular?) duct and a long sensory seta; the process on urosomite 1 has some (glandular?) ducts dorsally.

This species was described from a single female of 1.6 mm and has not been reported since. As Barnard’s description is very short a detailed redescription is given.

Raumahara judithae Moore

Figures 4, 5

Raumahara judithae Moore, 1981: 959, figs 14, 15.

Type material. Holotype. Tasmania, Tinderbox, from algae, 3–4 m, BMNH 1980:187 (female, 1.5 mm).
Figure 4, *Raumahara judithae* Moore. Habitus female, 1.8 mm; antenna 1, 2, maxilliped at scale x = 0.1 mm; maxillae 1, 2 at scale y = 0.1 mm; mouthpart-complex (mandible, upper and lower lip) at scale z = 0.1 mm.
Figure 5. *Raumahara judithae* Moore. Gnathopods 1, 2, urosome at scale = 0.1 mm; pereopods 3, 4 at scale = 0.2 mm; uropod 3 in free enlargement.
Material examined. Western Australia, Albany, ZMH K38785 (2). South Australia, Kangaroo Island, ZMH K38210 (3).

Diagnosis. Antenna 1 peduncular article 2 nasiform, swollen; accessory flagellum with 2 articles. Antenna 2 article 3 bulbous. Mandibular palp lacking. Gnathopod 1 propodochelate. Gnathopod 2 propodochelate, propodus strongly bulging anteroproximally and less slender than in other species; dactylus about 40–50% of propodus length. Urosomite 1 with fold vaulting over urosomite 2 and insertion of telson; uropod 3 ramus with 2 articles, article 2 minute, vanishing, spiniform, articulation between article 1 and article 2 vanishing; telson boat-like, three-dimensional, proximally coalesced with urosomite 3, inserted horizontally. Length 1.2–2.0 mm.

Distribution. Tasmania; Kangaroo Island (South Australia), Albany (Western Australia); 3–4 m depth.

Biology. Female ovigerous in November and December.

Remarks. Gnathopod 1 propodus has 1 or 2 medial (plus 1 distal) spines anteriorly. Gnathopod 2 appears to be more powerful than in other species, the bulbous basis of propodus showing strong bundles of muscles. Because of the “wings” or septae on urosomite 3 the insertion of uropod 3 is partly hidden. Uropod 3 ramus article 2 is reduced to a tiny, spine-like peak on article 1, and the articulation is scarcely visible. But, as mentioned by Barnard (1974: 113), article 2 shows always (as in article 1) a seta at its insertion and this indicates the region of the barely observable articulation. Cox 4 is trapezoid, anteriorly deeper than posteriorly, only little overlapping coxa 3.

The urosome is specialised compared to other members of this genus being the only species with the rami of uropod 1 clearly different in length, while in uropod 2 the rami are as in all species slightly unequal. Uropod 3 is reduced, directly in line with the lengthened urosomite 3 as a robust, solid short cone with spine-like article 2 nearly fused to article 1. Spination is extremely poor; uropod peduncles have only one spine each, rami are smooth, and the telson has 0–2 setae.

The species was described from a single specimen and has not been reported again until now.

Raumahara waroona sp. nov.

Figures 6, 7

Material examined. Holotype. Western Australia. Groyne, Cape Peron (32°16´S, 115°41´E), R. Springthorpe, AM P54514 (1 slide, sex?, 1.2 mm).

Paratype. Type locality, AM P54515 (1 specimen in alcohol, sex?, 1.2 mm).

Additional material. Type locality, AM P54516 (2 specimens in alcohol); AM P54517–P54520 (4 slides).

Diagnosis. Antenna 1 peduncular article 2 with strong process dorsally. Antenna 2 peduncular article 3 suboval to subrectangular. Mandibular palp lacking. Maxilla 1 palp of 2 articles. Maxilla 2 inner plate reduced. Maxilliped very slender, outer plate short. Gnathopod 1 propodochelate. Gnathopod 2 propodochelate-forcipate, dactylus about 33–40% length of propodus. Urosomite 1 very elongate, with large hump overlapping; urosomite 2 reduced to small triangle: urosomite 3 rectangular, fused with broad basis of telson. Uropods 1 and 2 with subequal rami, subequal to peduncle, without spines or setae; uropod 3 ramus clearly of only 1 article, semicircularly rounded, not reaching ramus insertion of uropod 2, article 2 absent; with 1 apical, centrally inserted, long seta. Hump of urosomite 1 reaching half way along telson. Telson spoon-like, deeply excavated. Length 1.0–1.2 mm.

Description. Body smooth, very similar to most species of Raumahara. Head about as long as pereonite 1. Rostrum inconspicuous. Eyes of stenothoid shape, normal. Lateral cephalic lobes shortly produced, rounded. Midcephalic keel and epistome developed. Pereonite 4 about as long as pereonites 1–3 together. Urosomites 1 and 2 free; urosomite 3 broadly coalesced with telson. Urosomite 1 with large dorsal hump vaulting over urosomite 2 and insertion of telson, hump showing similar structure as nasiform process on antenna 1 article 2.

Antenna 1 shorter than antenna 2, as long as head + pereonites 1–3 together (dorsal lengths). Antenna 1 peduncle articles 1 and 3 without process, article 2 nasiform dorsomedially, with very dense aesthetascs; length ratio of articles 1 : 2 : 3, about 5 : 3 : 2 on dorsally visible margin, but articles strongly overlapping; accessory flagellum short, broad, uniarticulate, 2 terminal setae; flagellum longer than peduncle, of 7 articles, with many long aesthetascs. Antenna 2 peduncle article 3 suboval to subrectangular, article 3 as long as article 4, article 4 shorter than article 5; flagellum shorter than peduncle, of 7 articles.
Figure 6. Raumahara waroona sp. nov. Antennae 1, 2, gnathopods 1, 2 at scale 0 = 0.1 mm; maxilla 1, 2, mandible, upper lip, maxilliped at scale y = 0.1 mm; maxilla 2 in free enlargement.
Figure 7. *Raumahara waroona* sp. nov. Pereopods 3, 4, 5 at scale x = 0.1 mm; urosome from 3 specimens and in different fixation, at scale y = 0.1 mm; uropod 3 in free enlargement.
Upper lip ventrally notched, lobes rounded. Mandible incisor on both sides well developed, left and right mandible not very different; raker spine row developed, of 3 (−4?) spines; molar cusp with 3 robust spines; palp absent. Lower lip inner lobes coalesced, mandibular lobe present. Maxilla 1 inner plate subquadrangular, truncate, with 1 subapical seta; outer plate with 1 mediadistal long seta, apically armed with 4 serrate, robust spines, 1 stout simple spine and 1 thin, short and stiff one; palp biarticulate, ratio of lengths, 2 : 5, extending much beyond outer plate, with few spines and teeth apically and medioapically. Maxilla 2 inner plate reduced, short, and outer plate curved over inner plate (always, or artefact in slide?); outer plate apically with 3 long setae, 1 on outer margin; inner plate with 1 long apical seta, 1 shorter on inner margin medio-distally. Maxilliped inner plate reaching half length of ischiium, with 1 seta and 1 spine apically; outer plate reaching one third of merus (= palp article 1), with 1 seta subapically, 1 mediadly; palp of 4 articles; article 3 (propodus) narrowly like article 2; propodus distally and dactylus inner margin furry.

Gnathopod 1 shorter than gnathopod 2; coxa 1 reduced, subquadrate, covered by coxa 2; merus posterodistally rounded, about as long as triangular carpus, which is slightly produced between merus and propodus; propodus rectangular, anterior margin slightly convex, with 1 seta; posterior slightly concave; length : breadth about 2 : 1; propodochelate, palm armed with small distal and medial spines; palmar corner curved upwards; dactylus about 40% of propodus length. Gnathopod 2 propodochelate–forcipate; coxa 2 expanded, longer than basis, anterior margin regularly convex, posterior one nearly straight, ventrally rounded; posterior and posteroventral margin with single, short spines; ischiium longer than merus; carpus subtriangular, lobe with dense, short setae, distoapically some longer ones; propodus slender, length ratio of dactylus: total propodus = 33–40%; terminally a hooked cusp and notch, but no defining spines; dactylus also terminally hooked, matching well with the propodal notch.

Pereopods 3 and 4 slender, subequal; dactylus about half propodus length, hind margin on inner and outer surface with dense, stiff setae; coxa 3 more than twice as deep as wide. Coxa 4 dominant, wider than deep, front margin slightly convex, ventral margin straight or very slightly concave, posterior margin strongly convex, anteriorly deeper than posteriorly. Pereopods 5–7 slender, ratios of corresponding articles only slightly different; dactylus with prominent setal comb on anterior margin inside and outside; coxae 5–7 short; coxa 5 trapeziform, produced posterodistally; coxa 6 oblong, rounded produced posteriorly; coxa 7 blunt.

Uropod 2 extending less far posteriorly than uropod 1, uropod 3 very short. Uropod 1 peduncle subequal to subequal rami, without spines, setae or pectination. Uropod 2 peduncle as long as subequal rami, inner one inserted more proximally; no spination or pectination like uropod 1. Uropod 3 ramus consisting of 1 clear article, semicircular, not reaching ramus insertion of uropod 2, article 2 absent; with 1 apical long seta, centrally inserted. Urosomite 1 very long, large hump vaulting over urosomite 2 and shortly over telson insertion; urosomite 2 reduced to small triangle; urosomite 3 rectangular, fused with broad basis of telson.

Telson spoon-like, shorter than uropod 1 rami, about half length of hump of urosomite 1, horizontally inserted, deeply excavated and with characteristic semicircular hump proximoventrally; insertion of telson three-dimensionally thickened and fused with urosomites 3 and 2.

**Distribution.** Cape Peron, Western Australia.

**Etymology.** This material was found on Cape Peron, south of Perth. A nearby locality with an aboriginal name is Waroona, which with its double “o” reminded me of *R. dertoo*, the closest species.

**Remarks.** This species is very similar to *R. judithae*. While in *R. noko* uropod 3 is composed of peduncle and a biarticulate ramus, in *R. dertoo* and *R. judithae* article 2 is vanishing; in *R. waroona* sp. nov. no traces of article 2 are to be found, article 1 is as long as wide and bears apically one long seta. Thus this new species resembles the genus *Chuculliba* in having uropod 3 reduced to only one article, probably the peduncle, with the — steadily present — apical long seta. Also, maxilla 2 of the present species is similar to *Chuculliba* but the latter has fewer setae. Finally, reduced body length is common to both. While basic *Raumahara* females are ovigerous at 2 mm, the new species, *R. waroona*, reaches only 1.2 mm and the specialised species of *Chuculliba* are also rarely longer than 1 mm. However, the morphology of the gnathopods and the nasiform swollen antenna 1 article 2 (instead of article 1) places this new species undoubtedly in *Raumahara*. 
**Raukumara** gen. nov.

*Type species.* Raumahara rongo Barnard, 1972b.

*Diagnosis.* Antenna 1 ordinary, peduncle slender. Mandibular palp lacking. Maxilla 2 plates ordinary, i.e. in tandem, but outer plate unusually slender, with 2 long setae apically. Coxa 4 trapezoid, enlarged. Gnathopod 1 subchelate-rectipalmate. Gnathopod 2 propodochelate-forcipate, strong. Dactylus of pereopods unusually short, inside and outside with comb-like row of setules; propodus to merus feebly, ischium very long. Urosomites free, no dorsal process, but urosomites 2 and 3 triangular, dorsally much shorter than ventrally; urosomite 1 longer than urosomites 2+3 together. Uropod 3 ramus of 2 articles. Telson flat, but spoon-like and excavated dorsally, basically fused with urosomite 3.

*Etymology.* For the Raukumara Range on Auckland Island, New Zealand, alluding also to Raumahara (feminine).

*Remarks.* Barnard (1972b: 318) wrote “The retention of *R. rongo* in *Raumahara* is provisional and based on the probability that other species will be discovered that will clarify the generic partition of the thaumatelsonin stenothoids.”

Characters shared with species of *Raumahara* are: antenna 2 peduncular article 3 ovoid, as in *R. dertoo*; shape of gnathopod 2 with dactylus c. 40% of propodus as in *R. judithae*; a comb of setules on inner and outer sides of pereopodal dactyl; the pereopodal dactyl bifid as in all species of Raumahara; urosomite 3 and peduncle uropod 3 forming transparent “wings” dorsally; and the telson basically coalesced with urosomite 3.

Differences from specialised species of *Raumahara* and *Ptychotelson* gen. nov. are: antenna 1 peduncular article 2 ordinary, slender (even in hyperadults), and urosomite 1 ordinary, without dorsal prolongation, and not longer than urosomites 2+3 together.

One character shared with *Ptychotelson* is the subchelate-rectipalmate first gnathopod.

The characters unique to *Raukumara* are: pereopods 3–7 dactyl extremely short, their propodus to merus elongate, feebly, and ischium very long, 3–4 times as long as wide (versus twice as long as wide in other genera).

This new genus differs from the others in the following main characters: from *Raumahara* and *Ptychotelson* gen. nov. in the shape of antenna 1 peduncular article 2; ratio of gnathopod 1 to gnathopod 2; shape of pereopods 3–7; length of urosomite 1 and spination of uropod 1 peduncle. It differs from *Raumahara* in having the gnathopod 1 subchelate-rectipalmate and from *Ptychotelson* in having no mandibular palp.

Removal of this species from the (now monophyletic genus) *Raumahara* seems justified.

**Raukumara rongo** (Barnard) comb. nov.

*Figure 8*


*Type material.* Holotype. New Zealand, Kaikoura, NZOI 102 (female, 2.1 mm).

*Material examined.* Type locality. USNM 2304273 (3 ovigerous females, 1.8–2.0 mm; 2 juveniles in alcohol). USNM 230427 (1 female, 1.9 mm, on slide).

*Diagnosis.* Antenna 2 peduncular article 3 ovoid. Coxa 2 anterior margin more parallel to posterior one, less concave than in species of *Raumahara*. Gnathopod 2 propodochelate, dactylus more than one third (about 40%) propodus, proximally thickened; propodus gnathopod 1 less than half as long as that of gnathopod 2. Coxa 4 trapezoidal, anteriorly deeper than posteriorly. Urosomite 3 and uropod 3 peduncle with transparent “wing” dorsally. Uropod 3 ramus with spine-like article 2, about as long as article 1. Telson like a flat spoon.

Length 1.5–2.0 mm.

*Distribution.* New Zealand (Kaikoura, Gisborne, Whangaparaoa Peninsula, Leigh). Caulerpa brownii, 5–6 m; in crevices in Durvillaea-zone, barnacles encrusted with sponge.

*Biology.* Female ovigerous in January.

*Remarks.* The “missing seta on maxilla 1 IP” (Barnard 1972b: fig. 92e) is present as in other species. The telson is horizontally flat but not stenothoid-like, as it is dorsally excavated like a flat canoe or spoon, and — more importantly — proximally thickened and coalesced with urosomite 3. The “numerous setules” of Barnard’s description are totally lacking within his type series but are probably crystals derived during preservation.

**Pycnopyge** gen. nov.

*Type species.* Prothaumatelson carinatum Shoemaker, 1955.

*Diagnosis.* Antennae 1 and 2 ordinary; accessory flagellum of 1 rudimentary article. Mandibular palp lacking. Maxillal palp long, no articulation
Figure 8. *Raukumara rongo* (Barnard). Maxilla 1 (left), antenna 1, 2, gnathopod 1, pereopod 4 distally, urosome of 2 specimens, telson at scale $0 = 0.1$ mm; maxilla 1 (right) at scale $y = 0.1$ mm; mandible at scale $y = 0.05$ mm; gnathopod 1', gnathopod 2 at scale $x = 0.2$ mm.
concernable, thus of 1 article. Maxilla 2 ordinary. Maxilliped outer plate vanishing, inner plate fused. Gnathopod 1 subchelate. Gnathopod 2 propodochelate-forcipate. Pereonite 4 very large. Urosomites 2 and 3 coalesced so that uropod 3 lies over, not after, uropod 3. Uropod 3 ramus article 2 well developed. Telson flat, horizontal, not coalesced with urosomite 3, not spoon-like or dorsally excavated.

**Etymology.** The Greek word *pyge, pygaion* means rump, back, while *pyknos* (Greek) signifies a condensed, thickened area. Together they describe the special habitus, the dorsal fold on urosomite 1 not overlapping urosomite 2, and the fusion of urosomites 2 and 3 (neuter).

**Remarks.** Shoemaker (1955) described, inadequately, a species from Alaska as *Prothaumatelson carinatum*. Barnard (1972a) removed it from that genus, assigning it provisionally to *Raumahara*, although he lacked information about important details.

Characters shared with *Raumahara* are: urosomite 1 with a dorsal fold (but only protecting urosomite 1 and not vaulting over urosomite 2 as in *Raumahara*); propodochelate gnathopod 2.

Differences from *Raumahara*: antennae 1 and 2 peduncles ordinary, flagellae reduced, very short (versus article 1 nasiform or article 2 swollen to nasiform in *Raumahara*); maxilla 1 palp without discernable articulation, thus probably 1–articulate (v. 2 articles); maxilla 1 outer plate very broad and blunt, subquadrate (v. slim): maxilliped outer plate vanishing (v. present); gnathopod 1 propodus subchelate, without palmar corner (v. chelate-subchelate-rectipalmate), carpus and merus strongly lobate (v. ordinary); pereopods 3–7 dactyli ordinary, very long, longer than half propodus, smooth. Urosomite 1 dorsally thickened as a fold, not overlapping. Urosomites 2 and 3 coalesced. Uropod 1 peduncle exceeding rami. Uropod 3 ramus of 2 articles, well developed. Uropod 3 exceeding uropod 2 peduncle. Telson flat, horizontal, not coalesced with urosomite 3.

Length 1.8–3.0 mm.

**Diagnosis.** Antennae 1 and 2 ordinary, both with very short flagellum; accessory flagellum rudimentary article. Mandibular palp lacking. Gnathopod 1 subchelate, no palmar corner; carpus strongly and merus weakly lobed. Gnathopod 2 propodochelate, dactylus about 40% of propodus length. Pereopods 3–7 dactyli very long, longer than half propodus, smooth. Urosomite 1 dorsally thickened as a fold, not overlapping. Urosomites 2 and 3 coalesced. Uropod 1 peduncle exceeding rami. Uropod 3 ramus of 2 articles, well developed. Uropod 3 exceeding uropod 2 peduncle. Telson flat, horizontal, not coalesced with urosomite 3.

Removal from (the exclusively Australian) *Raumahara* is necessary and a separate genus justified.

**Pycnopyge carinatum** (Shoemaker) comb. nov.

Figures 9, 10


**Material examined.** Type specimens. Off Point Barrow, Alaska, USNM 181883 (1 slide). USNM 195166 (4 specimens in alcohol).

**Diagnosis.** Antennae 1 and 2 ordinary, both with very short flagellum; accessory flagellum rudimentary article. Mandibular palp lacking. Gnathopod 1 subchelate, no palmar corner; carpus strongly and merus weakly lobed. Gnathopod 2 propodochelate, dactylus about 40% of propodus length. Pereopods 3–7 dactyli very long, longer than half propodus, smooth. Urosomite 1 dorsally thickened as a fold, not overlapping. Urosomites 2 and 3 coalesced. Uropod 1 peduncle exceeding rami. Uropod 3 ramus of 2 articles, well developed. Uropod 3 exceeding uropod 2 peduncle. Telson flat, horizontal, not coalesced with urosomite 3.

Length 1.8–3.0 mm.

**Distribution.** Arctic Ocean, Alaska, off Point Barrow (USA). 217 ft (66 m), perforated rocks, stones.

**Remarks.** Though having chelate gnathopod 2, this species does not belong to the (southern Australian-Antarctic) thaumatelsonine stenothoids, as the telson is not fused with urosomite 3, nor spoon-like or dorsally excavated, and the palp of maxilla 1 has only one article. Fortification of the urosome is created in another way, and chelation of gnathopod 2 is probably a homoplasious development in Arctic regions.

**Ptychotelson** gen. nov.

**Type species.** *Raumahara viridurorum* Krapp-Schickel and Andres, 1998.

**Diagnosis.** Antenna 1 peduncular article 2 swollen. Mandibular palp of ordinary length, articulation doubtful, seemingly articles coalesced; maxilla 2 ordinary. Coxa 4 trapezeshaped, enlarged. Gnathopod 1 subchelate-rectipalmate, gnathopod 2 propodochelate-forcipate. Urosome segments free, urosomite 1 with dorsal fold vaulting over urosome, > urosomite 2 + 3; uropod 3 ramus 2 articles well developed. Telson spoon-like excavated dorsally, horizontally inserted, proximally coalesced with urosomite 3.
Figure 9. *Pycnopyge carinatum* (Shoemaker). Antennae 1, 2, gnathopods 1, 2 (detail) at scale = 0.1 mm; gnathopod 2' (complete) at scale = 0.2 mm.
Etymology. Greek *ptyx, -ychos* means fold, referring to the three-dimensional, boat- or spoon-shaped telson and process of urosomite 1 overlapping the urosome like a fold or pleat.

Remarks. Krapp-Schickel and Andres (1998) were doubtful of the generic placement of *Raumahara virdurorum* and recognised that a thorough revision was needed to understand its relationship to other species with subchelate-recipalmate gnathopod 1 or long mandibular palp. Now, after a detailed study of type material, it can be shown that the two species with similar gnathopod 1 are not closely related. *Prothaumatelson nasutum* has a vertical telson but very similar mandibular palp; *Raukumara rongo* has a less specialized urosome, a non-swollen ordinary antenna 1 peduncle and lacks a mandibular palp.

With the closely related species of *Raumahara, R. dertoo, R. noko, R. judithae* and *R. waroona*, the new taxon shares specialised characters of “swollen” antenna 1 peduncular article 2 (in *R. dertoo* only weakly), propodochelate gnathopod 2, a row of setae inside and outside dactyls of pereopods 3–7, special construction of the urosome with its combination of vaulting urosomite 1 and excavated telson. *Ptychotelson* is less specialised in the mandibular palp being of ordinary length (probably 1–articulate) and the gnathopod 1 subchelate-recipalmate.

This new genus differs from its nearest
relatives in the following main characters: from Raupukumara in antenna 1 peduncular article 3 swollen and produced (versus slender, ordinary); mandibular palp long (v. absent); urosomite 1 with a thick fold fortifying the urosome (v. urosomite 1 lengthened but not thickened or folded); and from Raumahara in long mandibular palp (v. reduced to a short stump or absent); and gnathopod 1 subchelate-rectipalmate (v. chelate).

_Ptychotelson virdurorum_
(Krapp-Schickel and Andres) comb. nov.

_Figures 11, 12_

*Raukumara virdurorum* Krapp-Schickel and Andres, 1998: 56–58, figs 1, 2.

_Material examined._ Holotype. South Australia. Strathford Bay, Port Lincoln, ZMH K38388 (ovigerous female, 1.6 mm, 1 slide). Type locality, ZMH K38389 (41 specimens in alcohol), Victoria. Point Lonsdale, female, 1.6 mm, 1 slide). Type locality, ZMH K38389 (41 specimens in alcohol), Victoria. Point Lonsdale, female, 1.6 mm, 1 slide).

**Diagnosis.** Antenna 1 peduncular article 2 dorso-laterally prolonged and swollen (sometimes article 1 also a little thickened). Antenna 2 peduncular article 3 subquadrate. Mandibular palp well developed, but no articulation visible. Gnathopod 1 subchelate-rectipalmate. Gnathopod 2 propodo-chelate-forcipate, dactylus c. one third propodus. Urosomite 1 with thick fold vaulting over urosome and insertion of telson. Uropod 3 ramus with 2 articles. Telson spoon-like, three-dimensional, proximally coalesced with urosomite 3, inserted horizontally, deeply excavated.

**Remarks.** Strong processes on antenna 1 also exist in Raumahara, but on article 2 and not, as here, on article 1. The maxilla 2 has riding plates as in Raumahara but on article 2 and not, as here, in antenna 1. The maxilla 2 has riding plates as in Raumahara and Raumahara waroona. Gnathopods 1 and 2 have propodi alike and with lengthened parallel margins as is found in Parathaumatelson. The characteristic comb on dactyls of pereopods 3–7, inside and outside, always present in Raumahara, is present in one species of Chuculliba and absent in the other. Uropodal rami are reduced to a different degree also in Raumahara. However, in the latter urosomites 2 and 3 are separated, though dorsally narrowed and ventrally much wider, thus giving a triangular shape in lateral view while in Chuculliba articulation between urosomites 2 and 3 is scarcely visible. *C. alla* is more specialised than *C. warea* in antenna 1, maxilla 1, nathopods, pereopodal dactyli (only one seta instead of a comb), length of uropods 1 and 2 inner ramus, and length of uropod 3.

**Diagnosis.** Antenna 1 peduncular article 4 is always shorter than article 5 in Raumahara, Pycnopyge, Raumahara and Chuculliba, whereas it is always longer in Yarra, Pseudothaumatelson and Thaumatelsonella. As the members of the first group live in shallow algae and the latter predominantly in deeper sands, this difference could be correlated with feeding behaviour.

**Chuculliba alla** Barnard

*Chuculliba* Barnard, 1974: 108.

_Type species._ Chuculliba alla Barnard, 1974 (original designation).

**Diagnosis.** Antenna 1 peduncular article 1 weakly swollen or with strong nasiform process; accessory flagellum of 1 very short article. Antenna 2 peduncular article 3 subrectangular or trapezoidal. Mandibular palp lacking, mandible body vestigial. Maxilla 1 palp biarticular. Maxilla 2 outer plate riding upon reduced inner one, plates partly coalesced. Maxilliped outer plate vanishing. Gnathopods 1 and 2 propodus very similar, subchelate, rectangularly lengthened, palm shorter than posterior margin which is parallel to anterior one. Pereopods 3–7 similar, basis rectilinear, ischium elongate, length much greater than twice breadth (cf. Raumahara); dactyli smooth or with comb of setae. Pereonite 4 elongate, longer than head + pereonites 1–3. Urosomites 2 and 3 coalesced basally. Uropods 1 and 2, dorsal margins of peduncle and rami pectinate, inner ramus shortened. Uropod 3 reduced to 1 short article (probably peduncle) plus long seta. Telson spoon-like, three-dimensional, proximally coalesced with urosomite 3, inserted horizontally, deeply excavated.

**Remarks.** Strong processes on antenna 1 also exist in Raumahara, but on article 2 and not, as here, on article 1. The maxilla 2 has riding plates as in Raumahara, but on article 2 and not, as here, in antenna 1. The maxilla 2 has riding plates as in Raumahara, whereas it is always more specialised than *C. warea* in antenna 1, maxilla 1, nathopods, pereopodal dactyli (only one seta instead of a comb), length of uropods 1 and 2 inner ramus, and length of uropod 3.

**Material examined.** Western Australia (USNM, 141159; 141160 (4 specimens in alcohol); AM P43271...
Figure 11. Ptychotelson virdurorum (Krapp-Schickel and Andres). a, habitus of adult female, 1.6 mm. b, middle of body of juvenile, 1.1 mm. c, sketch of mouthparts in situ. d, complete mandible and distal part seen from other side; other figures, 4 enlargements of different views of mandible at scale = 0.025 mm.
Figure 12. *Ptychotelson viridurorum* (Krapp-Schickel and Andres). Antennae 1, 2, gnathopods 1, 2, pereopod 3 or 4 distally, urosome at scale =0.1 mm; maxilla 1, 2, maxillipeds, antenna 1' at scale = 0.05 mm; maxilla 1 outer plate enlarged.

**Diagnosis.** Midcephalic keel weak. Antenna 1 peduncular article 1 strongly nasiform, largely to totally overlapping article 2. Maxilla 1 inner plate lacking seta. Maxilla 2 in riding position but separate lobi still distinguishable. Gnathopods 1 and 2 similar, rectangularly lengthened, with parallel margins, but gnathopod 1 palm oblique and gnathopod 2 palm nearly subchelate-reciprocate. Pereopods 3–7 dactyli smooth. Urosomite 1 with thick fold vaulting over urosome and insertion of telson. Uropod 3 consisting of 1 minute article and short, tiny seta.

Length 1.1–1.4 mm.

**Distribution.** Western Australia to Victoria. Intertidal, sandy rocks and coralline algae.

**Biology.** Female ovigerous at end of September.

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**Chuculla warea** Barnard

*Chucullba warea* Barnard, 1974: 110–112, figs. 67, 68.

**Type material.** Western Australia. Cape Naturaliste, intertidal, algae and rocks, WAM 135-71 (female, 1.19 mm).

**Material examined.** Type locality, USNM 230428, USNM 141161 (2 specimens in alcohol). Cape Naturaliste, ZMH K38214 (2). South Australia, Ceduna, ZMH K38223 (2).

**Diagnosis.** Antenna 1 peduncular article 1 and article 2 (weakly) swollen. Maxilla 1 inner plate with seta. Maxilla 2 in riding position, lobi fused. Gnathopods 1 and 2 subchelate, both palms oblique. Pereopods 3–7 dactyli with comb of short setae as in *Raumahara*. Urosomite 1 with thick fold vaulting over urosome and insertion of telson. Uropod 3 with 1 minute article (probably peduncle) and long seta apically.

Length 1.2 mm.

**Distribution.** Western Australia to Victoria; Ceduna, South Australia. Intertidal, algae and rocks.

**Biology.** Female ovigerous in September.

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**Pseudothaumatelson patagonicum** Schellenberg

*Pseudothaumatelson patagonicum* Schellenberg, 1931: 110–112, fig. 60. — Rauschert and Andres, 1991: 228, fig. 1.


**Material examined.** Syntypes of *Pseudothaumatelson patagonicum*. Falkland Is, NHRS 738 (slide), 3603 (1 ovigerous female in alcohol). Falkland Is, MNB 22802 (1 juvenile in alcohol, partly damaged).

**Other material.** Prince Edward Is, MVR Cr3389–Cr3397 (slides).

The two other specimens deposited by Bellan-Santini and Ledoyer (1986: 425) in SAM could unfortunately not be found in South Africa or in Marseille.

**Diagnosis.** Antenna 1 peduncular article 1 nasiform. Mandibular palp present, stout, without articulation, as long or longer than incisor. Maxilla 1 palp of 2 articles. Maxilla 2 ordinary. Gnathopods 1 and 2 subchelate, shape similar, size different. Pereopods 3–7 bases rectilinear, dactyli smooth. Pereonite 4 elongate. Urosomites 1–3 free; urosomite 1 with long process vaulting over urosomite 2 and most of telson. Telson medium, marginally sclerotized, horizontally inserted, excavated, margins thickened.

**Length** 1.8–2.5 mm.

**Redescription.** After Schellenberg (1931), Rauschert and Andres (1991), material of Bellan-Santini and Ledoyer (1986) and complemented from material examined [square brackets].

**Eyes large.** Antenna 1 peduncular article 1 nasiform, accessory flagellum of 1 article. Mandibular palp present, stout, without articulation, as long or longer than incisor. Maxilla 1 palp of 2 articles. Maxilla 2 ordinary. Gnathopods 1 and 2 subchelate, shape similar, size different. Pereopods 3–7 bases rectilinear, dactyli smooth. Pereonite 4 elongate. Urosomites 1–3 free; urosomite 1 with long process vaulting over urosomite 2 and most of telson. Telson medium, marginally sclerotized, horizontally inserted, excavated, margins thickened.

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**Pseudothaumatelson patagonicum** Schellenberg

*Pseudothaumatelson patagonicum* Schellenberg, 1931: 110–112, fig. 60. — Rauschert and Andres, 1991: 228, fig. 1.


**Material examined.** Syntypes of *Pseudothaumatelson patagonicum*. Falkland Is, NHRS 738 (slide), 3603 (1 ovigerous female in alcohol). Falkland Is, MNB 22802 (1 juvenile in alcohol, partly damaged).

**Other material.** Prince Edward Is, MVR Cr3389–Cr3397 (slides).

The two other specimens deposited by Bellan-Santini and Ledoyer (1986: 425) in SAM could unfortunately not be found in South Africa or in Marseille.

**Diagnosis.** Antenna 1 peduncular article 1 nasiform. Mandibular palp present, stout, without articulation, 2 apical and 1 subapical setae. Gnathopods 1 and 2 subchelate, propodi gnathopods 2 : 1 subequal; on both bases anteriorly few long setae. Gnathopod 1 palmar corner rounded, basis with few setae anteriorly. Gnathopod 2 palmar corner excavated, with distal hump and 2 strong spines. Urosomite 1 with vaulting process. Uropod 1 rami a little different, longer rami subequal to peduncle. Uropod 2 rami clearly different, both shorter than peduncle. Uropod 3 peduncle shorter than subequal rami. Telson dorsally shallow excavated, fused with urosomite 3.

Length 1.8–2.5 mm.

**Redescription.** After Schellenberg (1931), Rauschert and Andres (1991), material of Bellan-Santini and Ledoyer (1986) and complemented from material examined [square brackets].

**Eyes large.** Antenna 1 peduncular article 1 nasiform, accessory flagellum [of 1 article]. Mandibular palp as long as incisor, of 1 article, with 2 apical and 1 subapical setae. Gnathopod 1 subchelate, much smaller than gnathopod 2, palm oblique, about same length as posterior margin of
propodus, palmar corner rounded, with spines; basis with a few long setae anteriorly. Gnathopod 2 subchelate (rudimentarily carpochelate, as carpus acutely prolonged and propodus proximally narrowed), palm with “pearls” (Bellan-Santini and Ledoyer lacking), distally concave, defined by hump with 2 strong spines; anterior margin smooth or with 1 or 2 long setae; basis with few long setae on anterior margin. Pereonite 4 elongate, as long as pereonites 1–3. Pereopods 5–7 basis rectilinear, with about 12 short setae. Urosomites 1–3 free. Urosomite 1 with process vaulting over urosomites 2 and 3 and over-reaching most of telson. Uropod 1 with long, spinose peduncle, longer than barely unequal rami (Rauschert and Andres [fig. 1] show the rami much shorter than peduncle but this is misleading as rami in type material are broken); uropod 2 peduncle long, spinose, rami unequal, the longer shorter than peduncle. Uropod 3 peduncle robust, article 1 about twice as long as large, article 2 in type material broken [as long as article 1, pointed]. Telson medium, half length of urosomite 1 dorsally, marginally sclerotized, horizontally inserted, shallow excavated, coalesced with urosomite 3, with 2 setae.

**Distribution.** Falkland Islands; Prince Edward and Marion Islands, 95–197 m.

**Biology.** Female ovigerous in November.

**Remarks.** This species was first described from two individuals, reexamined by Rauschert and Andres (1991). Since the description of *Pseudothaumatelson cyprioides* by Nicholls (1938) it has always been doubtful that two species existed. Barnard and Karaman (1991: 697) stressed the “strong dissimilarity” in the sizes of gnathopods 1 and 2 (less obvious in shapes) but there are many other similarities between the two nominal species. However, their localities are not close: Schellenberg’s *P. patagonicum* comes from the Falkland Islands (subantarctic, 197 m), while Nicholls found his *P. cyprioides* in Adelie Bay, Antarctica (c. 50 m). Three additional specimens, discovered at more than 95 m depth from subantarctic Marion and Prince Edward Islands (Bellan-Santini and Ledoyer, 1986; Branch et al., 1991) were attributed to *P. cyprioides* without discussion. These probably refer to *Pseudothaumatelson patagonicum*.

Bellan-Santini and Ledoyer (1986) figured two different 1-articulate mandibular palps; one fits with the description of *P. patagonicum*, the other one is sitting under the mandible body but has a corresponding length. Their figure of maxilla 1 is misleading (Rauschert and Andres, 1991: 227) but reorientation of the slide (MVR CR3389) could confirm a normally shaped maxilla 1 with 2-articulate palp.

**Distribution.** Falkland Islands; Prince Edward and Marion Islands, 95–197 m.

**Thaumatelsonella** Rauschert and Andres


**Type species.** *Thaumatelsonella kingelepha* Rauschert and Andres, 1991 (original designation).

**Diagnosis.** Antenna 1 peduncular article 1 nasi-form, accessory flagellum of 1 article. Mandibular palp present, of 3 clearly articulated articles, article 3 slim. Maxilla 1 palp of 2 articles, Maxilla 2 ordinary. Gnathopods 1 and 2 subchelate, shapes similar, sizes different. Pereopods 3–7 bases rectilinear, dactyli smooth. Pereonite 4 elongate. Urosomites 1–3 free. Urosomite 1 with long process vaulting over urosomites 2 and most of telson. Telson medium, horizontally inserted, dorsally excavated.

**Thaumatelsonella kingelepha**


**Material examined.** Holotype. King George Island, Antarctica, sublittoral, sponges and bryozoans, 50 m, MNB 27271 (female 2.5 mm). Paratypes. Collected with holotype, MNB 4582–4586 (male 2.1 mm, 2 females 2.4 and 2.6 mm).

Additional material: Near Elephant Islands, Antarctica, fine sand, 260 m, ZMH K33480 (male, 1.9 mm), ZMH K33481 (male, 2.1 mm).

**Diagnosis.** Antenna 1 peduncular article 1 nasi-form. Mandibular palp of 3 articles. Gnathopods 1 and 2 subchelate, ratio of lengths of propodus gnathopod 2 : 1 less than 2; bases gnathopods 1 and 2 with long, dense setae. Gnathopod 1 palmar corner rounded, carpus distally widened. Gnathopod 2 palmar corner rounded (female) or with small hump and little excavation (male), with 1–2 setae on anterior margin; carpus with triangular process, densely beset with short setae. Urosomite 1 with process vaulting over urosomites 2 and 3 and two-thirds of telson. Uropod 1 rami scarcely different, shorter than peduncle. Uropod 2 peduncle spinose, rami scarcely different, little shorter than peduncle. Uropod 3 strong, peduncle as long
as each article of ramus, each about twice as long as wide. Telson folded, excavated, fused with urosomite 3.

Length 2.1–2.6 mm.

**Distribution.** King George Is and Elephant Is, sublittoral, on Porifera, Bryozoa, sandy bottom. 50–260 m.

**Biology.** Female ovigerous in February.

**Thaumatelsonella cyproides** (Nicholls) comb. nov.

Figures 13, 14


**Type material.** Syntypes. Commonwealth Bay, Antarctica, AM P18730 (1 male, 1 female, 2 mm).

**Material examined:** Cape Bird, AM P43242 (1 specimen, slide).

**Diagnosis.** Antenna 1 peduncular article 1 nasi-form. Mandibular palp of 3 articles. Gnathopods 1 and 2 subchelate, propodus of gnathopod 2 less than twice as long as gnathopod 1; basis of gnathopod 1 with many short setae; basis of gnathopod 2 with many long setae. Gnathopod 1 palmar corner angular. Gnathopod 2 palm subequal, shorter than peduncle. Gnathopod 2 rami subequal, shorter than peduncle. Uropod 1 rami subequal, shorter than peduncle. Uropod 2 rami subequal to peduncle. Uropod 3 strong, robust peduncle shorter than ramus article 1, shorter than article 2; peduncle less than twice as long as wide, ramus more than twice as long as wide, ramus article 2 more than 3 times as long as wide. Telson dorsally excavated, fused with urosomite 3.

Length: 2.0–2.1 mm.

**Redescription.** Body smooth. Head shorter than or equal to pereonites 1+2. Rostrum inconspicuous. Eyes of stenothoid shape, normal. Lateral cephalic lobes rounded. Pereonite 4 about as long as pereonites 1–3 together. Urosomites 1 and 2 free. Urosomite 3 broadly coalesced with telson. Urosomite 1 with large dorsal hump vaulting over urosomite 2 and most of telson.

Antenna 1 shorter than antenna 2, as long as head plus pereonites 1–3 (dorsal lengths together); peduncular articles 2 and 3 without process, article 1 elongate, nasi-form dorsomedially; ratio of lengths of articles 1 : 2 : 3 about 7 : 4 : 3 (visible margin dorsally, but article 1 strongly overlapping); accessory flagellum short, broad, uniarticulate, with 3 terminal setae; flagellum subequal to peduncle, of 7 articles, with many long aesthetasc. Antenna 2 with article 4 longer than article 5; flagellum subequal to peduncle, of 10 articles.

Mandibular incisors not different, narrow and weak; with 2 broad raker spines; small molar cusp with 2 robust spines; mandibular palp well developed, of 3 articles, distal one much narrower. Lower lip inner lobes coalesced, outer ones regularly rounded. Maxilla 1 inner plate subquadrangular, truncate, with 1 apical seta; outer plate with 4 serrate, robust spines, 1 stout simple spine and 1 thin, short and stiff spine; palp biarticulate, ratio of lengths of articles 2:5, extending much beyond outer plate, with spines apically and 1 seta sub-apically. Maxilla 2 ordinary, outer plate and inner plate with long setae apically. Maxilliped inner plate reaching two-thirds along ischium, with 1 seta and 1 spine apically; outer plate reaching half along merus (palp article 1); with 1 seta apically, 3 medially; palp of 4 articles; palp article 3 (propodus) narrower than article 2; propodus distal margin and dactylus inner margin setose.

Gnathopod 1 subchelate, much shorter than gnathopod 2. Coxa 1 reduced, subquadrateral, covered by coxa 2; basis anteriorly with many dense, short setae; merus setose, posterodistally rounded, about as long as triangular carpus, which is slightly produced between merus and propodus; propodus triangular, anterior margin slightly convex, with 2–3 setae; posterior margin shorter than palm, palmar corner pronounced, with 2 robust spines; ratio length : breadth about 3 : 2, palm armed with long distal and medial spines and setae; dactylus about half of propodus length.

Gnathopod 2 subchelate. Coxa 2 expanded, longer than basis, anterior margin convex with slight corner, posterior margin straight, ventrally rounded; posteroroventral margin with single, short spine; basis anteriorly densely beset with many long setae; ischium much shorter than merus, which is posterodistally pointed; carpus subtriangular, posterodistal corner reaching proximal third of propodus, moderately pointed, with dense, short setae, distoapically some longer ones; propodus widened, hind margin regularly rounded, with 3 long setae, palm defined by 2 strong spines and a palmar corner of >150°, no defining hump or excavation; propodus on anterior margin 1 long seta; ratio of lengths of dactylus : propodus = 33–40%, dactylus on inner margin with many setae.
Figure 13. *Thaumotelsonella* Nicholls. Habitus ovigerous female, 2.1 mm; antenna 1' at scale $x = 0.1$ mm; maxillae 1, 2, lower lip, mandible, maxillipeds at scale $y = 0.1$ mm; antennae 1, 2, epimeral plates 1, 2 at scale $y = 0.05$ mm.
Figure 14. *Thaumotelsonella cyproides* Nicholls. Gnathopods 1, 2 (left), urosome at scale $x = 0.2$ mm; gnathopods 1', 2' at scale $x = 0.1$ mm; pereopods 3, 4, 5, 7 at scale $x = 0.4$ mm.
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Pereopods 3 and 4 slender, subequal, bases anteriorly with dense, short setae, dactyli about half propodus length. Coxa 3 ratio of length to width 3. Coxa 4 dominant, wider than long, front margin straight, ventral margin slightly convex, posterior margin rounded, anteriorly not deeper than posteriorly. Pereopods 5–7 slender, ratio of corresponding articles only slightly different, on all bases anteriorly and posteriorly many short setae.

Uropod 2 extending less posteriorly than uropod 1. Uropod 3 extending as far as uropod 1. Uropod 1 peduncle longer than subequal rami, with many spines; rami lacking spines or setae. Uropod 2 peduncle shorter than subequal rami, without spination or pectination on rami, similar to uropods 1 and 3. Uropod 3 peduncle sub-cuboid, with 1 apical spine, ramus clearly of 2 articles, robust; article 1 with 2 apical spines, slender, about twice as long as broad; article 2 narrow, sharply pointed, smooth. Urosomite 1 vertical, very long, with large hump vaulting over urosomite 2 and most of telson. Urosomite 2 reduced, articulation not oblique as in P. patagonicum, but vertical to dorsal prolongation of urosomite 1. Urosomite 3 rectangular, sub-cuboid, fused with broad basis of telson.

Telson spoon-like, shorter than uropod 1 rami, about two-thirds length of urosomite 1 hump, horizontally inserted, excavated; insertion of telson three-dimensionally thickened and fused with urosomite 3 but not urosomite 2.

Colour. Red eyes, orange back.

Distribution. Cape Bird, Ross Sea (77°S) and Commonwealth Bay, Terre Adelie Coast (67°S), Antarctica, 46 m (25 fm) –130 m.

Biology. Female ovigerous in November.

Remarks. Nicholls described this species from two specimens. His figures and text are poor and the mouthparts unknown. The species was mentioned again by Bellan-Santini and Ledoyer (1986) and Branch et al. (1991) both referring to the same material. The validity of this species was often doubted (cf. P. patagonicum) but important details were missing.

At the Australian Museum I was lucky to find another specimen of this species with material of Metopoides from Cape Bird, Antarctica. This specimen and its geographical locality correspond with Nicholls' description of P. cyprioides. Its mandibular palp corresponds with that of Thaumatelsonella and its generic position is changed accordingly.

The differences between Pseudothauatemelson and Thaumatelsonella is in the structure of the mandibular palp. Jerry Barnard discussed “several examples of species with obvious gnathopodal relationships now separated from each other generically on the basis of metameric differences in mandibular and maxillary palps . . .” (see Introduction). The small size of mandibular palp article 3 in Thaumatelsonella suggests only small steps from a 3–articulate palp to a palp with length of article 1 + article 2, but vanishing articulation between them. Having both these conditions in one genus would be analogous to having a rudimentary and absent palp as is seen in Raumahara.

In this complex the condition of mandibular palp of “1 article” includes species with a short stump and other with a palp of nearly full length but without articulation. Future descriptions should indicate length of the palp relative to the incisor. In Raumahara (and in the Stenothe monoculoides–species complex) the arrangement of maxilla 2 plates varies from in tandem to a riding position, probably in response to different feeding strategies. But in Raumahara and Stenothe more species are known from greater numbers of specimens. The division of Pseudothauatemelson and Thaumatelsonella is retained until a more detailed analysis of more species reveals the significance of a robust, long mandibular palp with coalesced articles versus the ordinary, 3-articulate palp or a short stump of one article.

Yarra gen. nov.

Type species. Yarra unguiserra sp. nov.

Diagnosis. Antennae 1 and 2 geniculate. Antenna 1 peduncular article 2 a nasiform process; accessory flagellum lacking. Mandibular palp lacking. Maxilla 1 palp of 2 articles. Maxilla 2 plates aberrant, in riding position. Maxilliped inner plate with apical knob, outer plate absent. Gnathopods
1 and 2 subchelate, different in size, similar in shape. Urosomite 1 with dorsal fold, vaulting over urosomites 2 and 3 and part of telson. Uropods 1 and 2 smooth, rami unequal. Uropod 3 robust, ramus of 2 articles. Urosomites free. Telson horizontally inserted, spoon-like, dorsally excavated, marginally scleritic.

**Etymology.** Following Jerry Barnard’s habit of using local names, the genus is named for the scenic Yarra River which meanders behind the Abbotsford Annex, Museum Victoria, in whose collections this exciting animal was found.

Yarra unguiserra sp. nov.

**Figures 15–18**

**Material examined.** Holotype. Australia, eastern Bass Strait, 15.5 km from Point Ricardo, 37°53.18’S, 148°28.96’E, 45 m, sand-shell, 26 Sep 1990, Smith-McIntyre grab (stn MSL-EG 44), NMV J45739 (sex?, 2 mm, slide).

Paratype. Australia, eastern Bass Strait, 7.3 km SSW of Cape Conran, 37°52.67’S, 148°42.06’E, 48 m, sand-shell, 28 Sep 1990, Smith-McIntyre grab (stn MSL-EG 60), NMV J22638 (1 specimen in alcohol, 1.2 mm).

Additional material. Type locality, NMV J45737 (1 in alcohol). Eastern Bass Strait, 24 km NNE of Eddystone Point, 40°43.9’S, 140°32.5’E, 56 m, muddy sand, 14 Nov 1981, epibenthic sled, RV Tangaroa, NMV J3767 (1 specimen, 1.2 mm, slide). Eastern Bass Strait, 15.5 km SW of Point Ricardo, 37°53.14’S, 148°28.94’E, 45 m, medium sand, 4 Jun 1991, Smith-McIntyre grab (stn MSL-EG 81), NMV J45738 (1 specimen in alcohol, sex?, 1.2 mm).

**Diagnosis.** Antenna 1 peduncle forming a knee in article 2, thus forcing article 3 to insert subrectangularly. Antenna 2 knee between peduncular articles 4 and 5. Maxilla 2 plates riding, each with 1 apical spine. Gnathopods 1 and 2 palmar corner well defined, palm longer than posterior margin, slightly concave, serrated; dactyli characteristically serrated inside. Gnathopod 1 dactylius with 3 huge sharp teeth, in the gaps a deep incision and a long seta inserted. Uropods 1 and 2 smooth, peduncle strong, rami unequal, dorsally pectinate. Uropod 3 robust, of 2 articles. Urosomites 1–3 free, covered with external “skin”, linking the dorsal fold of urosomite 1 with uropod 1 insertion. Telson horizontally inserted, spoon-like, dorsally excavated, margins scleritic.

Length 1–2 mm.

**Etymology** The specific name (unguis (L.), nail, + serra (L.), saw) describes the morphology of the palm and dactylus of the gnathopods (noun in apposition).
Figure 15. Yarra unguiserra gen. and sp. nov. Habitus of 1.2 mm specimen; mouthparts at scale = 0.1 mm, except middle sketch of mandible in free scale.
Figure 16. *Yarra unguiserra* gen. sp. nov., Antennae 1, 2, gnathopods 1, 2, pereopod 3 at scale = 0.1 mm.
Figure 17. *Yarra unguiserra* gen. nov., sp. nov. Coxae 3, 4, pereopods 4, 5, 6, 7 at scale $x = 0.05$; urosome complete and epimeral plate 3 at scale $y = 0.1$ mm, telson + urosomite 3 + uropod 3 detail at scale $y = 0.05$ mm.
long seta distoposteriorly; propodus length of palm twice hind margin; palm strongly serrate, with 10–12 teeth, deeply incised; palmar corner beset with 2 setae; propodus anterior margin smooth, anterodistally with 2 short setae; dactylus with "triple tip", created by strong and expanded dactylus, twice deeply incised on inner margin, having one long seta in each notch.

Pereopods 3 and 4 strikingly smooth and simple, only scarce and very short setae on distal end of some articles; basis, like gnathopod, posteriorly with 2 setae. Pereopod 3 (in juvenile) articles similar to pereopod 4; in adult (see figures of habitus or detail) carpus swollen, while articles of pereopod 4 are similarly slender. Pereopods 5–7 slender, ratios of corresponding articles similar; length diminishing from 5 to 7.

Uropods 1–3 extending less posteriorly in succession. Uropod 1 totally unarmed; peduncle subequal to longer ramus, ratio of lengths of rami 2 : 3; both rami dorsodistally finely pectinate. Uropod 2 similar in shape to uropod 1 but shorter and stouter. Uropod 3 robust, with smooth peduncle, articles of ramus much shorter and narrower, of subequal length, article 2 dorsally pectinate.

Telson spoon-like, horizontally inserted, dorsally excavated, with 1–2 plumose setae on distal third; more than half length fused with urosomite 3.

**Distribution.** Bass Strait, Australia, 45–48 m depth, medium sand or shell-sand.

**Remarks.** In Barnard and Karaman’s (1991: 684) key to genera of Stenothoidae this species keys out to *Pseudothaumatelson* in spite of having the antenna 1 article 2 strongly nasiform (instead of article 1) and, with article 3, geniculate. However, the mandibular palp is totally lacking and maxilla 2 is riding, both supposedly apomorph character states shared only with *Chucullba*. The most striking differentiating characters are the much more specialized urosome in *Chucullba*, antenna 1 article 2 thickened (like *Raumahara, Raukumara, Ptychotelson*) instead of article 1 (*Chucullba*) and the very aberrant, deeply serrate dactylus in gnathopods 1 and 2 of *Yarra* (instead of smooth margin in all other genera of this group). This surprising species, placed here in a separate genus, may use a pair of long setae on the bases of gnathopods 1 and 2 and pereopods 3 and 4 as or in addition to
Conclusions

Having studied these — until now all called thau-
matelsonine — genera, I feel certain that Gur-
janova’s idea of separating classical stenothoid
genera from those ones with a “wonderful telson”
is still valid. In spite of Barnard’s fears (1972a:
318) there are no problems in defining a vertically
inserted, hugely elevated, rudder-like telson such
as in Antatelson, Ausatelson and Thaumatelson.
This clade (which will be treated in Part 2 of this
series) is highly aberrant, all living in the south of
Australia (Bass Strait) and Antarctica, and all are
reported to have a similar ecology.

Less striking are those genera which Barnard
saw as bridging stenothoids and thaumatelsonids
and which are better known now. Their common
character is a telson with sclerified margins, basi-
cally coalesced with urosomite 3. This telson can
be adjacent to the urosome (see R. rongo Barnard,
1972b: fig. 92; R. noko Barnard, 1974: fig. 71,
and figures herein). It may also be separate from
the urosome or upright (see Raumahara judithae
Moore, 1981: fig. 14; Pseudothaumatelson cyproides
Nicholls, 1938: fig. 28, and figures herein), thus appearing variously boat-, shovel- or
spoon-like. In the habitus drawings of Pseu-
dothaumatelson cyproides (Nicholls, 1938) and
Thaumatelsonella kinglephela (Rauschert and
Andres, 1991), or in figures given in this
paper, the vaulted prolongation of urosomite 1 is
shown to fit in the excavation of the telson, thus
strengthening the unity of the urosome.

While the bulge on urosomite 1 is differently
developed, the three-dimensionally inserted,
proximally thickened, folded, marginally stiff-
ened and partly coalesced telson is always
present, thus offering a well defined synapo-
morphy. This paper illustrates different types of
telson within stenothoid genera:
1. a flat, horizontally inserted, 2–dimensional,
free telson (basic Stenothoidae);
2. a proximally thickened, three-dimensionally
inserted, basically coalesced, marginally stiffened
and dorsally excavate telson, which is described
by different authors as boat- or spoon-like (treated
here); and
3. a vertically , 2–dimensionally inserted,
hugely enlarged telson (treated in Part 2 of thaumatelsonine species).

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