Littorid Caprellidae (Crustacea: Amphipoda) from Indonesia, with the
description of a new species

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ABSTRACT
The Caprellidae fauna of shallow waters of Indonesia is investigated. Samples of algae, seagrasses, and hydroids were collected from the rocky-shore beaches of Bali, Lombok, and Java. Seven caprellid species were found: Pseudocapsulina capsuliformis Sars, 1897, Caprella cf. penantui Leach, 1814, Homacantha minuta Mayer, 1900, Metanepthia simulans Leach, 1896, Panacaprella sp., Penageloca sp., and the new species Pseudocaprella inae n.sp., which is fully described and illustrated in the present paper. Lateral view figures of the seven species, together with a key to species level for all Indonesian caprellids reported so far are also provided.

Key words: Amphipoda, Caprellidae, taxonomy, new species, Pseudocaprella inae n. sp., key, Indonesia.

RASSUNTO

Parole chiave: Amphipodi, Caprellidae, taxonomiche, nuova specie, Pseudocaprella inae n. sp., chiave, Indonesia.

INTRODUCTION
The Caprellidae amphipods of Indonesian waters have been poorly studied. In general, there is a lack of studies dealing with the caprellid fauna of the Indo-Pacific region (McCain, Steinberg, 1978). As pointed out by Lautz (1991), Mayer (1903) Siboga Expedition monographs give the best overview of the region, and contain descriptions of many species of this area. So far, our knowledge, only 10 species have been reported for Indonesian waters, including the Bandai Sea and Aratuna Sea: Metanepthia simulans Mayer, 1896, Monacaprella agilis Mayer, 1903, Orthogoniellus asellus (Hassall, 1880), Proprodelia varians Mayer, 1903, Pseudocaprella hispidula Mayer, 1903, Panacaprella quinaria Mayer, 1903, Protogenia inflata Mayer, 1903, Penageloca enigmatica Mayer, 1903 and Prodelphias fasciata Mayer, 1903 (see Mayer, 1903; McCain, Steinberg, 1976; Lautz, 1991).

Lautz (1991) studied the caprellids from the Western Pacific based on specimens collected during French Oceanographic Expeditions at New Caledonia, Indonesia and Philippines. However, these samples came from deep stations (most of them more than 400 m deep) and no littoral species were investigated. After Lautz (1991), further attempts to improve the knowledge of the Indo-Pacific caprellids have been conducted and several collections of littoral caprellids from Philippines, Papua New Guinea and Australia have been studied (Guerra-García, 2002a, 2003a, 2004).

During September 1987 and July 1993, the first author (TR-S) collected Indonesian amphipods from algae, seagrasses and hydroids from the rocky-shore beaches of Bali, Lombok and Java. The collections contained seven species: Caprella cf. penantui Leach, 1814, Homacantha minuta Mayer, 1900, Metanepthia simulans, Panacaprella sp., Pseudocapsulina capsuliformis Sars, 1897, Panacaprella sp. and Penageloca sp. Mayer, 1903 (see Mayer, 1903; McCain, Steinberg, 1976; Lautz, 1991).

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described as a new species in the present study.

**Material and methods**

All the examined material for the present study is deposited at the Museo Civico di Storia Naturale di Verona.

The symbols used in places are (in alphabetical order):

A1, 2 = Antenna 1, 2
Ah = Abdomen
G1, 2 = Gastralopod 1, 2
L1 = Lower lip, labium
LMd = Left mandible
M1, 2 = Maxilla 1, 2
Msp = Maxillipeds
P3-7 = Peripods 3-7
PMd = Right mandible
UL = Upper lip, labium

The samples were fixed in ethanol 70%. Selected specimens were dissected under a Leica dissecting microscope. All dissected appendages were mounted in polyvinyl lactophenol. The figures were drawn using a Leica compound microscope equipped with a camera lucida (drawing-tube).

Specimens prepared for SEM were sonicated in order to remove mucous and debris from their surface. They were dehydrated in an acetonium series ranging from 70 to 100%, 10 minutes at each dehydration. Specimens were then dried in a critical point dryer, before being mounted on a stub and coated with gold.

Although the phylemy and higher classification of the capitellids is still under debate (see Labafrica, 1993; Takeda, 1993), Myers and Lorry (2003) have recently proposed a new phylogeny and classification for the suborder Capitellida Leach, 1814, which is divided into two infraorders, the Capitellida and the Caprellida, based on a hypothesis of the evolution of different feeding strategies. In their new classification, the superfamilies Caprellodea contains five families: Caprellidae, Caprosgommatidae, Cyamidae, Dutchiidae and Podocardidae. The Caprellidae are subdivided into three subfamilies: Caprellinae, Paracrossopinae and Phithicininae. In the present paper we have adopted this classification and have focused our study on members of the family Caprellidae.

**Station list:**

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>37/1</td>
<td>fine green algae, 1.5m, Pulau Opak, Bintan, 12 Sept. 1987</td>
<td></td>
</tr>
<tr>
<td>71/1</td>
<td>Pulau Opak Bintan (one of &quot;thousand Islands&quot;) N of Jakarta-Java (5°29'S, 106°50'E), Surabaya, 2m depth, 12. Sept. 1987</td>
<td></td>
</tr>
<tr>
<td>172/1</td>
<td>Bali, Samas beach, 3-2.5m depth, 22 Sept. 1988</td>
<td></td>
</tr>
<tr>
<td>193/1</td>
<td>Bali, Beach of Samas, mixed fine algae, 1-2m depth, 22 Sept. 1988</td>
<td></td>
</tr>
</tbody>
</table>

**Systematic account**

List of species collected during the present study:

*Family Caprellidae, Leach, 1814*

*Subfamily Phithicinae Vassilienko, 1968*

Pseudocaprellina pauciramentata Sundara Raj, 1927 (Fig. 1)

*Subfamily Caprellinae Leach, 1814*

Caprella of penaius Leach, 1814 (Fig. 2)

Hemiaspurna mirifica Mayer, 1890 (Fig. 5)

Metacaprella sandalerai Mayer, 1989 (Fig. 4)

Paracaprella sp. (Fig. 5)

Phithicella microsp. (Figs. 6-12)

Phithicella sp. (Fig. 15)

Complete synonyms of the species can be found in McCain, Steinberg (1970).

*Subfamily Phithicinae Vassilienko, 1968*
Pseudocrepidinae pambovanensis Sundara Raj, 1927

(Fig. 1)

Pseudocrepidinae pambovanensis Sundara Raj, 1927, p. 127; pl. 17; Sivaprakasam, 1977, p. 89-92; figs. 1-3; Guerra-García, 2000b, p. 221-223; figs. 1-4; Guerra-García, 2004, p. 13, 15, fig. 12.

Material examined
7 spec.
St. 1778: 1 male (used for lateral view figure); St. 18/1: 1 female; St. 3172: 1 female; St. 62/1: 1 male; St. 74/1: 1 female (used for lateral view figure), 1 male, 1 female. All stored in MVRCs in alcohol.

Remarks
The male of Pseudocrepidinae pambovanensis was described by Sundara Raj (1927) based on material from the Gulf of Mannar, India. The female was described later, by Sivaprakasam (1977), also based on specimens collected in the Gulf of Mannar. Guerra-García (2002b, 2004) figured specimens collected from Tanzania and Western Australia, respectively. The specimens collected from Indonesia are morphologically in agreement with those coming from India. Western Australia and Tanzania. The species is probably distributed throughout the whole Indian Ocean. On the other hand, as pointed out by Guerra-García (2004), the phylogenetic relations among the species of the close genera Caprella, Pseudocrepidinae, Hirtella and Liostrephus are not clear yet and this group of genera should be further investigated in detail to explore constant morphological differences among species to clarify the delimitation and diagnosis of valid genera and species.

Habitat
The species was known previously from corals between corals (Guerra-García, 2002b) and bottom with Pseudodentalia australis (Hooker, 1858) (Guerra-García).
2004). The specimens of the present study have also been collected from mixed algae, among Posidonia.

**Distribution**
Type locality: Gulf of Mannar, India (McCain, Stetcberg, 1970). Other records: Tanzanian coasts (Guerra-Garcia, 2002b), Western Australia (Guerra-Garcia, 2004). New record for Indonesia.

**Subfamily** Caprellinaceae. 1814 (see Myers and Lowry, 2003)

**Caprella sp.** nov. Caprella, 1814 (Fig. 2)

**Caprella sp. nov.** Caprella, 1814, p. 404.

**Material examined**
9 spec.
St. 91/1: 1 male (used for lateral view figure), 1 female (used for lateral view figure), 4 males, 5 females. All stored in MVRC in alcohol.

**Remarks**
The specimens of Caprella collected from Indonesian waters (9 specimens) are closest to *Caprella sp. nov.* At the moment, we considered this specimen as *Caprella sp. nov.* since we have not been able to find constant morphological differences between the Indonesian specimens and the Mediterranean and Atlantic *Caprella sp. nov.* (Krapp-Schickel, 1993; Guerra-Garcia, Takeuchi, 2002). *Caprella sp. nov.* has been recorded under several species or subspecies names from the temperate regions of the world and there is need of further studies to determine its nomenclatural status at each locality (McCain, 1968; Lubbe, 1972; Takeuchi, Hirano, 1995).

**Habitat**
The species has been found living on red and brown algae, *Posidonia*, hydroids, *Ancylostria*, *Zoantharia*, Bryozoa, sponges, *Arachia* (Echinoderms) and *Loboria* (Decapoda) (Krapp-Schickel, 1993). Guerra- Garcia (2001) found the species in intertidal exposed areas and in infratidal areas of high hydrodynamics, clinging onto different species of algae (Algiopogon armatus Harvey, 1855; Chondracanthus spongiosus Lyngbye, 1819; Cymorina tamariensis (Hudson) Papenfuss, 1950; Cellidotomus squamipalpis (Clemence) Bornet and Haurin, 1876, Heliohypnum spinigerum (L.) N. L. Rouve, 1897; Lessonia penicillata (Gmelin) Lamouroux, 1813, Leptoria flave (Clemence) Agardh and hydroids (Gymnogongrus montagui) (Billard, 1912) and Serripetella gayi gayi (Lamouroux, 1823). This species has been also found in sponges, ascidians, spongiroids, poroponecromidae and *Guadiera* beds (Guerra-Garcia, 2004). In the present study, it was found in rocks with much water movement, boulder and spawdes.

**Distribution**

**Hemisparisina mirana** Mayer, 1890

**Hemisparisina mirana** Mayer, 1890, p. 40, pl. 1, figs. 25-27, pl. 3, figs. 32-35, pl. 5, figs. 52-53, pl. 11, figs. 13-15, pl. 7, fig. 4; McCain, 1968, p. 51-64, figs. 29-30; McCain and Steinberg, 1970, p. 51; Gable and Lazo-Wasm, 1987, p. 637; Miller, 1990, p. 836; Serio, 1997, p. 559-632; Sp. 1; Guerra-Garcia, 2003a, p. 105-106, fig. 10; Guerra-Garcia, 2003b, p. 6-7; fig. 3; Guerra-Garcia, 2004, p. 39-40, fig. 32.

**Hemisparisina multidentata** Sandara Raj, 1927, p. 126-127, pl. 1b.

**Hemisparisina cornuta** Quitero, 1972, p. 165-168, pl. 1-2.

**Material examined**
1 spec.
St. 74/1: 1 premarture female (used for lateral view figure) (MVRC in alcohol).

**Remarks**
Although only a premature female has been collected during the present studies, this specimen could be identified as *Hemisparisina mirana* since this species shows very distinctive and clear diagnostic characteristics which facilitate the identification: third article of antennae 1 short; antenna 2 without swimming setae; gnathopod 1 propodi with a round projection proximally; gnathopod 2 base elongate and longer than pereonite 2, and propodi very large, with a pronatal grasping
spine and distal U-notch and projection: peronites 3 and 4 rounded, and very small gills elongate; abdomen provided with a very distinctive pair of two-articulate appendages.

Habits
Müller (1990) found H. minuta in relatively exposed reef locations. This species has been reported from Sargassum sp and plankton tows (McCain, 1968) and dead corals (Müller, 1990). Guerra-Garcia (2004) reported the species from green algae as Halimeda spp, brown algae, red algae, sponges, tunicates, Psammodias, dead corals encrusted with algal turf and under small boulders. The single specimen collected during the present study was found in algae from shallow waters.

Distribution
Type locality: Off Amoy, China, 15-46 m, deep (McCain, 1968). Other records: West coast of United States, South Africa, Hawaii, Bora Bora, Japan, Papua New Guinea, Australia, India, South Arabian coast (McCain and Steinberg, 1970; Guerra-Garcia, 2003a, 2004). Hemimastigina minuta is widely distributed in tropical and temperate waters of the world oceans (McCain, 1968).

Metaplocella sandalensis Mayer, 1898
(Fig. 4)

Metaplocella sandalensis Mayer, 1898, p. 53-56, figs. 1-6; Mayer, 1903 (included E. rahohimas, ringersprenzel, delisecephala, giesense, ambience, typical), p. 40-52, pl. 1, figs.30-31, 34-56, pl. 6, figs. 56-63, pl. 9, figs. 10-17, 24, 60; Müller, 1990, p. 836-842, figs. 61-64; Guerra-Garcia, 2003a, p. 106, fig. 11; Guerra-Garcia, 2003b, p. 14-15, fig. 8; Guerra-Garcia, 2004, p. 39-41, fig. 3; Guerra-Garcia and Takeuchi, 2004, p. 1017-1018, fig. 37.

Material examined
123 spec.
St. 7/8: 1 male (used for lateral view figure), 3 males, 8 females. 1 premature female, 1 juvenile; st. 18/1: 1 female; st. 27/1: 2 males, 5 females, 2 premature females; st. 62/1: 1 female (used for lateral view figure), 1 female; st. 8/2: 1 female, 1 premature female; st. 9/2: 6 males, 7 females, 1 premature female, 11 juveniles; st. 12/2: 4 males, 6 females.
4 precocious females; st. 23/2: 1 female; st. 24/2: 1 male; st. 25/2: 1 male, 5 females, 4 juveniles; st. 26/2: 3 males, 5 females, 3 precocious females, 6 juveniles; st. 30/2: 5 males, 5 females, 1 precocious female, 1 juvenile; st. 31/2: 2 females; st. 32/2: 8 males, 4 females, 1 precocious female. All stored in MVBRc in alcohol.

Remarks
This species has recently been redescribed in detail by Müller (1990) based on material collected from Bora Bora and Moorea, Society Islands. Metapenaeola sandalis is very common in shallow waters of the tropical Indo-Pacific Ocean (Müller, 1990) and it is, together with Pseudopteropus irradians n. sp., the most common and abundant species in the stations of the present study. Although Müller (1990) pointed out the existence of considerable intraspecific variation for *M. sandalis*, we can not discard the existence of a complex of different species (Guerra-García, 2004). The Indonesian species are in agreement with the diagnosis of *Metapenaeola sandalis*, mainly on the basis of the non-marked suture between head and pereonite 1. Nevertheless, specimens of *Metapenaeola sandalis*, collected recently from Mauritius (see Guerra-García, 2003b) have a more marked suture, being closer to *Metapenaeola africana* Mayer, 1903. Consequently, further detailed morphological and genetic studies are necessary to decide if the variation among specimens is intra- or interspecific and to clarify definitely the status of the genus *Metapenaeola* throughout the world.

Habitat
Müller (1990) reported that the species probably prefer not very exposed locations. Recently, *Metapenaeola sandalis* from Mauritius has been proposed as a tool to be used as bioindicator of nutrient enrichment on coral reef ecosystems (Guerra-García, Koonjul, 2005). *Metapenaeola sandalis* is the most common inhabitant of the Great Barrier Reef, Australia, living on many different habitats and substrates (algae, seagrass, sponges, hydroids, gorgonians, soft corals, encrusted dead corals, bryozoans, ascidians, coral rubble, cowries and fine sediments and mangroves) (Guerra-García in litt.), and is also very common in Northern Territory and Western Australia (Guerra-García, 2004).

Distribution

Material examined
5 spec.
St.6/2: 2 females; st. 24/2: 1 female (used for lateral view figure); st. 31/2: 1 female; st. 32/2: 1 male (used for lateral view figure). All stored in MVBRc in alcohol.

Remarks
Our specimens have been identified as *Pancorapella* mainly on the basis of the presence of precopors 3 and 4 reduced to 2 articles, antennula 2 without swimming spines, abdomen of male with a pair of appendages and midventral pap absent. The species recorded in previous studies for the Indian Ocean is *Pancorapella purpurea*; nevertheless, the present specimens are closer to *Pancorapella tenella* than to *Pancorapella purpurea*, based mainly on the small triangular projection on the antero-lateral margin of pereonite 2 and on the non-expanded basis and lack of a proximal knob on gnathopod 2. Recently, Guerra-García (2003b) also found a *Pancorapella* species from Mauritius difficult to assign to one of the described species of *Pancorapella*. In addition, specimens identified as *Pancorapella tenella*, collected from Tanzania (see Guerra-García, 2003a) could also belong to an undescribed species.
Consequently, taking into account that the material from Indonesia is scarce and that the genus Peneauscula is still in need of a further taxonomic revision, we prefer to identify these specimens as Peneauscula sp. at the moment instead of assigning them to Peneauscula venosa.

Peneauscula sp. n. sp.
(Fig. 6-12)

Locus typicus: Indonesia. Bali (Desa Antiga), rocks with much water movement, breakers and spindrifts, 0-0.5m depth, 22 September 1987

Material examined:
553 spec.

Type material: sx. 197/1: Holotype male (dissected, 3 slides; MVRC: 4548-50); allotype female (non-dissected; MVRC: 4550); paratypes: 3 males and 3 females (dissected, 6 slides; MVRC: 4551-56), 10 males and 10 females (non-dissected), 5 males and 5 females (put apart for SEM figures, provided in Figs. 10-12).

Additional material: sx. 18/1: 6 females, 2 juveniles; sx. 19/1: 405 specimens; sx. 7/4/3: 1 male, 5 females, 1 juvenile; sx. 21/1: 1 female, 6 juveniles. All stored at MVCR in alcohol.

Description
Holoeryte male

Body length 4.7 mm

Lateral view (Fig. 6-10). Head with a dorsal acute projection; suture between head and peronite 1 present but non-marked; peronite 2 with a ventral hump at the insertion of gnathopod 2; peronites 3 and 4 with a lateral projection near the insertion of the gills.

Gills (Fig. 6). Present on peronites 3 and 4, oval, length 2 times width.

Mouthparts (Fig. 7). Upper lip symmetrical bilobed, with small setal tufts distally. Mandibles with mandibular molar reduced to a small protuberance; left mandible with incisor five-toothed, lacina mobilis five-toothed followed by four plates minutely serrate; right mandible with incisor five-toothed, lacina mobilis transformed into a plate, followed by another plate; molar flake absent; palp three-articulate, second articule with a single seta, distal articule with a distal knob and a setal formula 1×1:1 being x=6. Lower lip without setules; inner lobes bilobed. Maxilla 1 outer lobe carrying six robust setae; distal articule of the palp with four setae. Maxilla 2 inner lobe triangular, outer lobe rectangular; about 1.5 times as long as inner lobe; inner and outer lobe with five setae apically. Maxilliped inner plate small and rounded with two setae; outer plate elongate, three times as long as the inner plate, with six setae; palp four-articulate, dactylus with rows of setules.

Antennae (Fig. 8). Antenna 1 about the half of body length; flagellum 13-articulate. Antenna 2 without swimming setae but provided with abundant short setae; flagellum two-articulate.

Gnathopods (Fig. 8). Gnathopod 1 basis as long as the combination of ischiu, merus and carpus (Fig. 6); palm of propodus non-serrate, provided with two grasping spines; dactylus margin smooth. Gnathopod 2 inserted on the middle of peronite 2 (Fig. 6); basis as long as peronite 2 with a projection distally; ischiu rectangular; merus rounded; carpus triangular; propodus rounded, twice as long as wide; provided with a grasping spine proximally and three triangular projections medially and distally respectively; dactylus with minute setae on the margin.

Pereopods (Fig. 9). Pereopods 3 and 4 minuscule (less than 0.05 mm) non-articulate, triangular, provided with a distal seta. Pereopods 5, 6 and 7 similar in feature but increasing in size respectively; palm of propodus with a group of grasping spines proximally.

Penes (Fig. 9) large, length about 4 times width.

Abdomen (Fig. 9) without appendages, with a pair of lateral lobes and a single dorsal lobe; lateral lobes provided with two humps with setae at the top, two bunches of setae medially and two single setae below; dorsal lobe provided with a pair of plumose setae.
Allotype female

Body length 4 mm. Pteronotum 1 shorter than in male (Fig. 6). Lateral projections in pteronites 3 and 4 absent. Antenna 1 flagellum 12-articulate (Fig. 6). Gnathopod 2 inserted on the anterior part of the pteronotum 2. Genital openings very distinctive, and provided with setae. Abdomen lateral lobes provided only with a pair of single setae.

**Intraspecific variation**

The number of articles in the flagellum of antenna 1 varies between 13-16 in adult males and 9-11 in adult females. Besides the holotype, 3 males and 3 females have been dissected for comparison of the mouthparts, and the setal formula of the mandibular palp is always 1-1-1, but 1 varies between 4 and 6. The mandibulated is rather constant, the inner plate carrying 3 setae and the outer plate with 6 setae in all the specimens examined. The inner lobes of the lower lip are bilobed in all the material dissected and the number of robust on maxilla 1 is always six.

In some adult males the joint between pteronites 2, 3, 4 and 5 is characterised by the presence of a triangular projection (see SEM picture Fig. 12).
Etimology

This species is dedicated to Ina Klemke for her help in careful sorting of the material.

Remarks

The genus Pseudozearina is presently composed of nine species: P. antiqua Barzard, 1952 from Antigua, P. bis-rays (McCain, 1968) from Florida, P. cambellensis Guerra-Garcia, 2003 from Subantarctica, P. nanus n. sp. from Indonesia, P. monochomata Quiette, 1971 from Bora Bora, P. polynesica (Müller, 1990) from Bora Bora and Moorea, Society Islands, P. sarnipustil Laubitz, 1995 from St Paul and Antemar Islands, P. tristansense (Sperling, 1888) from Tristan da Cunha and P. vander Mejia-Garcia, 2004 from the Indian Ocean, Laubitz, 1995, after examination of specimens of Pseudozearina tristansense from the Southern Indian Ocean, considered, the genus Allotirriella synonymous with Pseudozearina based mainly on the presence of minute pseudopods 3 and 4 also in Pseudozearina. Consequently, the species P. bis-rays, P. monochomata and P. polynesica, previously belonging to the genus Allotirriella, were transferred to the genus Pseudozearina. As pointed out by Laubitz (1995), the idea that Allotirriella is synonymous with
Pseudagninella had been previously suggested by several authors (McCauley, 1968; Laubitz, 1993). Because of the lack of available Pseudagninella specimens and the lack of the type material for *P. tristis*, the genus *Pseudagninella* had been maintained as a valid genus. Laubitz (1995), however, redescribed *Pseudagninella* based on material newly collected from the Indian Ocean, and established *Pseudagninella* as a junior synonym of *Pseudagninella*. Species of *Pseudagninella* are compared in Laubitz (1995).

The closest species to *Pseudagninella inae* n.sp. is *Pseudagninella vaderi*, recently described by Guerra-García (2004) and distributed in the Indian Ocean. Both species can be distinguished by the following distinct and constant differences: 1) the suture between head and peronite 1 is marked in *P. vaderi* and not marked in *P. inae*; 2) the body is more robust in *P. inae* and peronites 3 and 4 are provided with a pair of lateral projections, which are absent in *P. vaderi*. 3) the proximal article of antenna 2 has a projection in *P.
Fig. 10 - *Pseudogoniulus* n. sp. SEM pictures of male and female paratypes. Above: lateral view of male. - (Left to right: detail of Maxillule, head; Mxp. - Below: lateral view of female.
Fig. 11 - *Pseudoglaucus* mor. (a), SEM photos of male and female paratypes. Left, up-to-down: Gn2 of female; detail of projection of Gn2; detail of gnathopod spine in propodia palm of P7 of female. — Right, up-to-down: ventral view of female; detail of dactylus of Gn2 of female; propodus of P7 of female.
Fig. 12 – *Pseudopilulae* n.sp. SEM pictures of male and female paratypes.
Upper half: above; peroxone 3 and 4 of male showing the lateral projections. Left below; lateral projection of peroxone 3 of male showing the tiny P 3. Right below; detail of the joint between peroxone 3 and 4 of male.
Lower half: left above; genital openings of female. Right above; detail of peroxone 4 of male showing the tiny P 4. Left below; Ab of male. Right below; Ab of female.
suderii and lacks this projection in *P. inae*; 4) the basis of male gnathopod 2 is longer than podonite 2 in *P. suderii* whereas it is of the same length in *P. inae*; 5) the shape and features of gnathopod 2 propodus differ significantly between the two species; 6) podonites 3 and 4 have two setae in *P. suderii* and only one seta in *P. inae*; 7) the propodus of pereopods 5-7 has a single grasping spine in *P. suderii*, and a group of grasping spines in *P. inae*.

**Pseudagrinella** sp.  
(Fig. 13)

**Material examined**

1 spec.  
St.5/1: 1 female (used for lateral view figure) (stored in MVRO)

**Remarks**

Only one female of this species has been collected during the present study. It has been assigned to the genus *Pseudagrinella* mainly on the basis of the following characters: absence of a well developed mandibular molar, presence of minute pereonites 3 and 4, mandibular palp 3-articulate and antenna 2 without swimming setae. The specimen is characterised by the presence of acute projections on head and pereonites 1 and 2, and small tubercles (or bumps) on podonites 3 and 4, differing from *Pseudagrinella inae*. The female examined is very close to *Pseudagrinella bicarinensis*, but taking into account that there are no males available and that the taxonomical status of *P. bicarinensis* throughout the world needs revision, we prefer to identify the specimen as *Pseudagrinella* sp. at the moment instead of assigning it to *P. bicarinensis* or to a new species of *Pseudagrinella*. (See also remarks about the genus *Pseudagrinella* under the remarks section of the previous species, *P. inae* n.sp.).

**Updated list of species recorded in Indonesian waters**

(Banda Sea and Arafura Sea are included):

**Subfamily Physocerinae Vamkelen**, 1968

*Paederastium mirum* Mayer, 1903 (see Mayer, 1903; McCain, Steinberg, 1970; Laubitz, 1991)  
*Paederastium inaequalis* Mayer, 1903 (see McCain, Steinberg, 1970)  
*Paederastium inae* Mayer, 1903 (see McCain, Steinberg, 1970)  
*Paederastium sulcata* Mayer, 1903 (see McCain, Steinberg, 1970)

**Subfamily Caprellinae Leach, 1814**

*Caprella cf. penantae* Leach, 1914 (new record, present study)  
*Hermagaster minuta* Mayer, 1890 (new record, present study)  
*Megagrinella sandalensis* Mayer, 1898 (see Laubitz, 1991, present study)  
*Mejadorus agilis* Mayer, 1903 (see McCain, Steinberg, 1970; Laubitz, 1991)  
*Orthogrinella ausralis* (Haswell, 1880) (see McCain, Steinberg, 1970)  
*Ponagrinella* sp. (new record, present study)  
*Propodiplodora imbellis* Mayer, 1903 (see McCain, Steinberg, 1970; Laubitz, 1991)  
*Procella similis* Mayer, 1903 (see McCain, Steinberg, 1970)
Pseudonithidinae inae n.sp. (new species, present study)
Pseudonithidinae sp. (new record, present study)

Key for Indonesian Caprellids

1. Gills on peronites 2, 3 and 4
   - Gills on peronites 3 and 4
2. Peronopod 6 six-articulate.... Pseudonithidinae Mayre, 1903 (distributed in Arafura Sea; see McCain, Stearn, 1970 and Guerra-Garcia, 2002c)
   - Peronopod 4 absent
3. Peronopod 3 present, reduced to one article
   - Peronopod 3 absent
   - Peronopod 3 present, reduced to one article
4. Peronopod 4 and 6 six-articulate... Pseudonithidinae sp. (Fig. 1)
   - Peronopod 3 and 4 absent or reduced to one or two articles
5. Peronites 6 and 7 fused
   - Peronites 6 and 7 not fused
6. Peronopod 3 absent.
   - Head with rostrum
   - Head and/or peronites with dorsal projections
7. Head and peronites dorsally smooth
   - Head and/or peronites with dorsal projections
8. Peronopod 4 absent... Propodopithidinae violaceus
   - Peronopod 4 present, one or two-articulate
9. Peronopod 3 and 4 two-articulate
   - Peronopod 3 and 4 one-articulate... Pentapithidinae sp. (Fig. 5)
10. Antenna 1 shorter than half of the body length...
    - Monopithidinae agilis
    - Antenna 1 longer than half of the body
11. Antenna 1 shorter than the body length
    - Antenna 1 at long or longer than the body length

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The authors want to dedicate this paper to Sandro Raffo in occasion of his 90th birthday.

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