Monograph

urn:lsid:zoobank.org:pub:265EDD08-7AA8-4835-B7F6-353E7992633E

Solomon’s Gold Mine: Description or redescription of 24 species of Caridina (Crustacea: Decapoda: Atyidae) freshwater shrimps from the Solomon Islands, including 11 new species

Valentin de MAZANCOURT 1,*, David BOSETO 2, Gerard MARQUET 3 & Philippe KEITH 4

1,3,4 Unité Biologie des organismes et écosystèmes aquatiques (BOREA), Muséum national d’Histoire naturelle, Sorbonne Université, Université de Caen Normandie, Université des Antilles, CNRS, IRD, CP26, 57 rue Cuvier 75005 Paris, France.
1 Museum für Naturkunde, Leibniz Institute for Evolution and Biodiversity Science, Invalidenstraße 43, 10115 Berlin, Germany.
2 Ecological Solutions in Solomon Islands, Western province, Gizo, Solomon Islands.

* Corresponding author: valentin.demazancourt@laposte.net
2 Email: dboseto@ecologicalessolutions-si.com
3 Email: gmarquet@neuf.fr
4 Email: keith@mnhn.fr

Abstract. Following recent (2014–2017) collections made in the Solomon Islands by the MNHN and the NGO ESSI, we provide a checklist of the species of amphidromous freshwater shrimps of the genus Caridina H. Milne Edwards, 1837 from this region. Using morphological as well as molecular data in an integrative taxonomic perspective, we found a total of 24 species, including 11 new for science, that are described or re-described, illustrated and discussed in relation to their habitat and distribution. Newly described species are Caridina barakoma sp. nov., C. choiseul sp. nov., C. intermedia sp. nov., C. maeana sp. nov., C. nana sp. nov., C. piokerai sp. nov., C. pisuku sp. nov., C. paratypus sp. nov., C. poarae sp. nov., C. sikipozo sp. nov. and C. turipi sp. nov. Caridina gueryi Marquet, Keith & Kalfatak, 2009 is re-validated as a species distinct from C. buehleri Roux, 1934. Lectotypes are designated for C. mertoni Roux, 1911 and C. papuana Nobili, 1905. Diagnoses for 6 informative species groups are provided: C. brevicarpalis group, C. gracilirostris group, C. nilotica group, C. typus group, C. serratirostris group and C. weberi group. A map of the species distribution in the Solomon Islands, as well as the phylogenetic relationships between the species and their relatives, are provided.

Keywords. Amphidromous shrimp, Pacific Ocean, integrative taxonomy, morphology, 16S.
Introduction

The freshwater shrimp genus *Caridina* H. Milne-Edwards, 1837, comprising 311 species (WoRMS database: [http://www.marinespecies.org/aphia.php?p=taxdetails&id=240672](http://www.marinespecies.org/aphia.php?p=taxdetails&id=240672) as of March 2020) and mostly present in the Indo-Pacific region, is the most diversified genus of the family Atyidae (De Grave et al. 2015) and an important ecological component in the tropical streams (Covich et al. 1999; Pringle et al. 1993). Their high diversity combined with the lack of informative morphological characters have led to a confused taxonomy (Richard & Clark 2009). Indeed, until recently, their taxonomy was mainly based on morphological characters. Some have been proven highly variable within a species (e.g., rostrum shape and indentation (de Mazancourt et al. 2017b) or coloration) and so taxonomically non-informative, making it difficult to establish good species delimitations (von Rintelen & Cai 2009). There is thus a need for an integrative and standardized approach to improve the taxonomy of the group, focusing on informative morphological features and using molecular characters (Page et al. 2005; Page & Hughes 2011; de Mazancourt et al. 2017b). In Indo-Pacific islands, amphidromous shrimps have been grouped into six main complexes: (1) *C. nilotica* complex (Johnson 1963; Holthuis 1978; Jalihal et al. 1984; Choy 1991; Richard & Clark 2005; Karge & Klotz 2007), (2) *C. weberi* complex (Richard & Chandran 1994; Cai & Shokita 2006a), (3) *C. gracilirostris* complex (Cai & Ng 2007), (4) *C. typus* complex (Karge & Klotz 2007; Bernardes et al. 2017), (5) *C. serratirostris* complex (Cai & Shokita 2006b), (6) *C. brevicarpalis* complex (Short 2009). Little work has been done to differentiate among the species clustered within these complexes, possibly due to the difficulty and costs associated with genetic analyses and the highly similar morphology of shrimps from different populations.

To illustrate this problem, species of the genus *Caridina* from the Solomon Islands were studied. Before this study, the neighboring islands belonging to the Bismarck and Admiralty archipelagoes in Papua New Guinea (Roux 1934) or those of the Vanuatu archipelago (Keith et al. 2010; de Mazancourt et al. 2017a) were inventoried, but none of the Solomon Islands were surveyed for freshwater shrimps. In order to fill this gap, in the context of the CEPF “Melanesia Hotspot”, an inventory of freshwater fauna was done in the Solomon Islands between 2014 and 2017, supported by the French Ichthyological Society. This archipelago, consisting of six major islands and over 900 smaller islands lies in Oceania to the east of Papua New Guinea and northwest of Vanuatu and covers a land area of 28 400 km². Six islands (Fig. 1) were prospected: Choiseul in October 2014, Malaita in June 2015, Kolombangara in November 2015, Vella Lavella and Ranongga in October 2016 and Isabel in October 2019. We examined all the specimens collected by combining morphological data with a 16S mtDNA analysis.

Material and methods

Collection of specimens

Specimens from the Solomon Islands were collected by electrofishing (portable Dekka 3000 electric device, Germany) (Lamarque et al. 1975). All material was preserved in 75–95% ethanol and has been deposited in the collections of the Muséum national d’histoire naturelle of Paris (MNHN).

Morphological comparison

The rostrum, the general cephalon, the pereiopods 1–3 and 5 and the abdomen were observed using a stereoscopic microscope. The proportions of the various joints of the appendages were measured using microphotographs and the AnalySIS Works software (Olympus). Drawings were made using the “Digital Inking” method (Coleman 2003, 2006) by tracing vectoral paths on high-resolution photographs using Adobe Illustrator.
DNA extraction, amplification and sequencing

DNA was extracted from abdominal tissues using the semi-automatic Eppendorf ep-Motion 5075 robot. Fragments of the mitochondrial 16S rRNA (~ 520 bp) were amplified using newly designed primers, adapted from Palumbi (1996) to our taxa: 16Sar-Lmod (TACTTCTGCTGTATTATCAAAAA) and 16Sbmod (GGTCTGAACTCAATCTATGAAA). DNA amplification was performed in 20 µl PCR reactions, containing approximately 3 ng of template DNA, 2.5 mM MgCl₂, 0.26 mM of each nucleotide, 0.3 µM of each primer, 5% DMSO, 1 ng of BSA and 1.5 units of QBIOTAQ polymerase (MPBiomedicals). Amplification products were generated by an initial denaturation step of 4 min at 94°C followed by 35 cycles of denaturation at 94°C for 30 s, annealing at 52°C for 40 s, extension at 72°C for 60 s and a final extension step at 72°C for 7 min.

PCR products were sequenced using the same primers and in both directions to ensure the accuracy of base calls. Chromatograms were edited using Geneious ver.8 software (http://www.geneious.com; Kearse et al. 2012). All sequences were deposited in GenBank (numbers MT303883 to MT303942).

Molecular analyses

DNA sequences were aligned using MEGA7 software (Kumar et al. 2016) with the Muscle algorithm (Edgar 2004). Using the Bayesian information criterion in jModelTest (Darriba et al. 2012; Guindon & Gascuel 2003) we retained the GTR + G + I model. Best-scoring ML trees were estimated by RAxML HPC2 ver. 8.2.10 (Stamatakis 2014) and best-scoring Bayesian Inference (BI) trees were estimated using MrBayes ver. 3.2.6 (Ronquist & Huelsenbeck 2003), both methods implemented in CIPRES with the previously determined model, running for 10000000 generations, a sampling frequency of 2000 and a burn in of 10%. Support for nodes was determined using posterior probabilities calculated by

![Distribution of the species studied in the Solomon Islands](image_url)

**Fig. 1.** Distribution of the species studied in the Solomon Islands. Symbols are colored according to the different species complexes (see Fig. 2): brown for *C. brevicarpalis* complex, blue for *C. nilotica* complex, red for *C. weberi* complex, grey for *C. typus* complex, green for *C. gracilirostris* complex and yellow for *C. serratirostris* complex.
MrBayes implemented in the Cyber Infrastructure for Phylogenetic Research (CIPRES) portal v.3.1. (Miller et al. 2010; https://www.phylo.org/). One hundred independent searches, each starting from distinct random trees, were conducted. Robustness of the nodes was assessed using non-parametric bootstrapping (Felsenstein 1985) with 1000 bootstrap replicates. We considered a group to be ‘moderately supported’ if it had a bootstrap support value (B) between 75 and 89%, and Bayesian posterior probabilities (PP) between 0.8 and 0.95, and ‘highly supported’ when B ≥ 90% and PP ≥ 0.95. For the analysis, we included 49 specimens collected during the authors’ field trips to the Solomon Islands to which were added 18 specimens of species occuring in the Solomon Islands collected by the authors from other Indo-Pacific localities. Five sequences were also retrieved from GenBank (Table 1). Two species of Paratya Miers, 1882 were used as outgroups. Three different species delimitation methods were tested on the dataset. First, ABGD (Puillandre et al. 2012) was implemented on the web server https://bioinfo.mnhn.fr/abi/public/abgd/abgdweb.html, for which a pairwise distances matrix was built from the sequence’s alignment using the JC69 Jukes-Cantor model. We used Pmin = 0.001 and Pmax = 0.1 with 10 steps and X = 1.0. A graphical representation of the distribution of the distances showed a barcoding gap between 0.04 and 0.05 divergence. Second, we ran a bPTP analysis (Zhang et al. 2013) from the web server http://species.h-its.org/ptp/ using the ML tree as input. Other parameters were left as default. Finally, we used the GMYC method (Pons et al. 2006) implemented in the web server https://species.h-its.org/gmyc/ using only the single threshold method (phylogeny composed of several species with one coalescent time value), as species studied are phylogenetically close to each other. To run this analysis, an ultrametric tree is required, which was constructed using BEAST ver. 1.10.4 (Suchard et al. 2018). We used a relaxed lognormal clock with a coalescent tree prior, as these have been identified as best prior parameters for GMYC analyses (Esselstyn et al. 2012; Monaghan et al. 2009). Monte Carlo Markov chains (MCMC) ran for 10000000 generations, sampling every 2000 generations. Chain convergence was assessed using Tracer ver. 1.6 (Rambaut et al. 2014). The consensus tree (maximum clade credibility tree; 10% burn in; tree not presented) was constructed with TreeAnnotator ver. 1.10.4 (Drummond & Rambaut 2007).

Institutional abbreviations

HNHM  =  Hungarian Natural History Museum, Budapest
MNHN  =  Muséum national d’histoire naturelle, Paris
MZB  =  Museum Zoologicum Bogoriense, Bogor, Indonesia
NHM  =  Natural History Museum, London
NMB  =  Naturhistorisches Museum Basel, Basel
RMNH  =  Rijksmuseum van Natuurlijke Historie (now in the Naturalis Biodiversity Center, Leiden)
ZMA  =  Zoological Museum Amsterdam (now in the Naturalis Biodiversity Center, Leiden)
ZMB  =  Museum für Naturkunde, Berlin
ZRC  =  Zoological Research Collection, National University of Singapore, Singapore

Abbreviations for morphological analyses

The following abbreviations are used in the present text:

cl  =  carapace length (mm): measured from the post-orbital margin to the posterior margin of the carapace
ovig.  =  ovigerous
P1  =  first pereiopod
P2  =  second pereiopod
P3  =  third pereiopod
P5  =  fifth pereiopod
Pl1  =  first pleopod
Pl2  =  second pleopod
Table 1 (continued on next page). List of sequenced specimens.

<table>
<thead>
<tr>
<th>Species</th>
<th>Locality</th>
<th>DNA voucher</th>
<th>Registration nº</th>
<th>Type status</th>
<th>GenBank nº</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C. appendiculata</strong></td>
<td>Kolombangara</td>
<td>CA1494</td>
<td>MNHN-IU-2018-135</td>
<td></td>
<td>MH497525</td>
<td>de Mazancourt et al. 2018</td>
</tr>
<tr>
<td></td>
<td>Kolombangara</td>
<td>CA1493</td>
<td>MNHN-IU-2018-133</td>
<td></td>
<td>MH497524</td>
<td>de Mazancourt et al. 2018</td>
</tr>
<tr>
<td><strong>C. barakoma</strong> sp. nov.</td>
<td>Choiseul</td>
<td>CA1364</td>
<td>MNHN-IU-2014-20807</td>
<td>Paratype</td>
<td>MT303885</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Kolombangara</td>
<td>CA1521</td>
<td>MNHN-IU-2014-20809</td>
<td>Paratype</td>
<td>MT303884</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vella Lavella</td>
<td>CA1942</td>
<td>MNHN-IU-2014-20810</td>
<td>Paratype</td>
<td>MT303883</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Guadalcanal</td>
<td>GUC881</td>
<td></td>
<td></td>
<td>DQ478485</td>
<td>Page et al., 2007</td>
</tr>
<tr>
<td><strong>C. brevidactyla</strong></td>
<td>Kolombangara</td>
<td>CA1500</td>
<td></td>
<td></td>
<td>MT303892</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA1345</td>
<td>MNHN-IU-2018-172</td>
<td></td>
<td>MH497518</td>
<td>de Mazancourt et al., 2018</td>
</tr>
<tr>
<td></td>
<td>Vella Lavella</td>
<td>CA1940</td>
<td>MNHN-IU-2018-185</td>
<td></td>
<td>MH497558</td>
<td>de Mazancourt et al., 2018</td>
</tr>
<tr>
<td><strong>C. buchleri</strong></td>
<td>Vella Lavella</td>
<td>CA1997</td>
<td>MNHN-IU-2018-2846</td>
<td>Paratype</td>
<td>MT303913</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Kolombangara</td>
<td>CA1520</td>
<td>MNHN-IU-2015-20</td>
<td>Paratype</td>
<td>MT303912</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Papua New Guinea</td>
<td>CA2252</td>
<td>MNHN-IU-2018-2849</td>
<td>Holotype</td>
<td>MT303915</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>CA1014</td>
<td>MNHN-IU-2015-23</td>
<td>Paratype</td>
<td>MT303914</td>
<td>This study</td>
</tr>
<tr>
<td><strong>C. celebensis</strong></td>
<td>Kolombangara</td>
<td>CA1518</td>
<td>MNHN-IU-2018-2943</td>
<td>Paratype</td>
<td>MT303941</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>CA1381</td>
<td>MNHN-IU-2018-2946</td>
<td>Paratype</td>
<td>MT303942</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Indonesia</td>
<td>ZMB-DNA-652</td>
<td></td>
<td></td>
<td>FN995356</td>
<td>von Rintelen et al., 2012</td>
</tr>
<tr>
<td><strong>C. choisul</strong> sp. nov.</td>
<td>Choiseul</td>
<td>CA1277</td>
<td>MNHN-IU-2014-20827</td>
<td>Paratype</td>
<td>MT303894</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA1285</td>
<td>MNHN-IU-2014-20830</td>
<td>Paratype</td>
<td>MT303893</td>
<td>This study</td>
</tr>
<tr>
<td><strong>C. gracilirostris</strong></td>
<td>Kolombangara</td>
<td>CA1497</td>
<td>MNHN-IU-2018-2804</td>
<td>Paratype</td>
<td>MT303886</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>CA1677</td>
<td>MNHN-IU-2018-2805</td>
<td>Paratype</td>
<td>MT303887</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>CA1681</td>
<td>MNHN-IU-2018-2807</td>
<td>Paratype</td>
<td>MT303888</td>
<td>This study</td>
</tr>
<tr>
<td><strong>C. gueryi</strong></td>
<td>Kolombangara</td>
<td>CA1519</td>
<td>MNHN-IU-2015-19</td>
<td></td>
<td>KY350244</td>
<td>de Mazancourt et al., 2017</td>
</tr>
<tr>
<td></td>
<td>Indonesia</td>
<td>CA1161</td>
<td>ZMB 29002</td>
<td></td>
<td>KY350241</td>
<td>de Mazancourt et al., 2017</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>CA2428</td>
<td>MNHN-IU-2015-1769</td>
<td>Paratype</td>
<td>MT303916</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>CA1016</td>
<td>MNHN-IU-2015-23</td>
<td>Paratype</td>
<td>KY350239</td>
<td>de Mazancourt et al., 2017</td>
</tr>
<tr>
<td><strong>C. intermedia</strong> sp. nov.</td>
<td>Choiseul</td>
<td>CA1326</td>
<td>MNHN-IU-2014-20844</td>
<td>Paratype</td>
<td>MT303895</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Kolombangara</td>
<td>CA1499</td>
<td>MNHN-IU-2014-20847</td>
<td>Paratype</td>
<td>MT303896</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vella Lavella</td>
<td>CA1939</td>
<td></td>
<td>Paratype</td>
<td>MT303897</td>
<td>This study</td>
</tr>
<tr>
<td><strong>C. maeana</strong> sp. nov.</td>
<td>Malaita</td>
<td>CA1509</td>
<td>MNHN-IU-2018-2888</td>
<td>Holotype</td>
<td>MT303925</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>CA1417</td>
<td>MNHN-IU-2018-2895</td>
<td>Paratype</td>
<td>MT303926</td>
<td>This study</td>
</tr>
<tr>
<td><strong>C. mertoni</strong></td>
<td>Malaita</td>
<td>CA2000</td>
<td>MNHN-IU-2018-2818</td>
<td></td>
<td>MT303898</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Kolombangara</td>
<td>CA1505</td>
<td>MNHN-IU-2017-2109</td>
<td></td>
<td>MG707141</td>
<td>de Mazancourt et al., 2019a</td>
</tr>
<tr>
<td></td>
<td>Indonesia</td>
<td>CA056</td>
<td>NMB.693a</td>
<td>Lectotype</td>
<td>MG707139</td>
<td>de Mazancourt et al., 2017</td>
</tr>
<tr>
<td><strong>C. nana</strong> sp. nov.</td>
<td>Vella Lavella</td>
<td>CA1903</td>
<td>MNHN-IU-2018-2912</td>
<td>Holotype</td>
<td>MT303931</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vella Lavella</td>
<td>CA1902</td>
<td>MNHN-IU-2018-2913</td>
<td>Paratype</td>
<td>MT303930</td>
<td>This study</td>
</tr>
<tr>
<td><strong>C. neglecta</strong></td>
<td>Choiseul</td>
<td>CA1310</td>
<td>MNHN-IU-2018-2808</td>
<td>Paratype</td>
<td>MT303891</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vella Lavella</td>
<td>CA1703</td>
<td>MNHN-IU-2018-2813</td>
<td>Paratype</td>
<td>MT303889</td>
<td>This study</td>
</tr>
<tr>
<td><strong>C. papuama</strong></td>
<td>Choiseul</td>
<td>CA1361</td>
<td>MNHN-IU-2018-2856</td>
<td></td>
<td>MT303917</td>
<td>This study</td>
</tr>
</tbody>
</table>
Table 1. (continued) List of sequenced specimens.

<table>
<thead>
<tr>
<th>Species</th>
<th>Locality</th>
<th>DNA voucher</th>
<th>Museum n°</th>
<th>Type status</th>
<th>GenBank n°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>C. paratypus</em> sp. nov.</td>
<td>Choiseul</td>
<td>CA1286</td>
<td>MNHN-IU-2018-2862</td>
<td></td>
<td>MT303918</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Malaita</td>
<td>CA1999</td>
<td>MNHN-IU-2018-2925</td>
<td>Holotype</td>
<td>MT303934</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>CA1371</td>
<td>MNHN-IU-2018-2926</td>
<td>Paratype</td>
<td>MT303935</td>
<td>This study</td>
</tr>
<tr>
<td><em>C. pisukua</em> sp. nov.</td>
<td>Kolombangara</td>
<td>CA1909</td>
<td>MNHN-IU-2018-2896</td>
<td>Holotype</td>
<td>MT303927</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA1930</td>
<td>MNHN-IU-2018-2904</td>
<td>Paratype</td>
<td>MT303928</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Vella Lavella</td>
<td>CA1981</td>
<td>MNHN-IU-2018-2911</td>
<td>Paratype</td>
<td>MT303929</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA1282</td>
<td>MNHN-IU-2014-20864</td>
<td>Paratype</td>
<td>MT303899</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA1347</td>
<td>MNHN-IU-2014-20865</td>
<td>Paratype</td>
<td>MT303900</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>CA1685</td>
<td>MNHN-IU-2014-20874</td>
<td>Paratype</td>
<td>MT303901</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>CA1699</td>
<td>MNHN-IU-2014-20875</td>
<td>Paratype</td>
<td>MT303902</td>
<td>This study</td>
</tr>
<tr>
<td><em>C. pourae</em> sp. nov.</td>
<td>Ranongga</td>
<td>CA2350</td>
<td>MNHN-IU-2018-2920</td>
<td>Holotype</td>
<td>MT303938</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Ranongga</td>
<td>CA2348</td>
<td>MNHN-IU-2018-2921</td>
<td>Paratype</td>
<td>MT303936</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Ranongga</td>
<td>CA2349</td>
<td>MNHN-IU-2018-2922</td>
<td>Paratype</td>
<td>MT303937</td>
<td>This study</td>
</tr>
<tr>
<td><em>C. serraticornis</em></td>
<td>Choiseul</td>
<td>CA1351</td>
<td>MNHN-IU-2018-2927</td>
<td></td>
<td>MT303939</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Kolombangara</td>
<td>CA1523</td>
<td>MNHN-IU-2018-2931</td>
<td></td>
<td>MT303940</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>GUCCS1</td>
<td></td>
<td></td>
<td>DQ478515</td>
<td>Page et al. 2007</td>
</tr>
<tr>
<td><em>C. sikipace</em> sp. nov.</td>
<td>Choiseul</td>
<td>CA1928</td>
<td>MNHN-IU-2018-2914</td>
<td>Holotype</td>
<td>MT303932</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA2310</td>
<td>MNHN-IU-2018-2915</td>
<td>Paratype</td>
<td>MT303933</td>
<td>This study</td>
</tr>
<tr>
<td><em>C. tapaia</em></td>
<td>Choiseul</td>
<td>CA1927</td>
<td>MNHN-IU-2018-2882</td>
<td></td>
<td>MT303924</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Malaita</td>
<td>CA1508</td>
<td>MNHN-IU-2018-2886</td>
<td></td>
<td>MT303923</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>French Polynesia</td>
<td>CA2058</td>
<td>MNHN-IU-2018-260</td>
<td>Holotype</td>
<td>MK204717</td>
<td>de Mazancourt et al. 2019b</td>
</tr>
<tr>
<td><em>C. turipi</em> sp. nov.</td>
<td>Choiseul</td>
<td>CA1359</td>
<td>MNHN-IU-2014-20876</td>
<td>Holotype</td>
<td>MT303911</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA1349</td>
<td>MNHN-IU-2014-20883</td>
<td>Holotype</td>
<td>MT303910</td>
<td>This study</td>
</tr>
<tr>
<td><em>C. typus</em></td>
<td>Choiseul</td>
<td>CA1355</td>
<td>MNHN-IU-2018-2824</td>
<td></td>
<td>MT303903</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Choiseul</td>
<td>CA1356</td>
<td>MNHN-IU-2018-2825</td>
<td></td>
<td>MT303904</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>CA1917</td>
<td>MNHN-IU-2018-2828</td>
<td></td>
<td>MT303908</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Madagascar</td>
<td>CA1038</td>
<td>MNHN-IU-2018-2829</td>
<td></td>
<td>MT303907</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Papua New Guinea</td>
<td>CA2278</td>
<td>MNHN-IU-2018-2836</td>
<td></td>
<td>MT303905</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>South Africa</td>
<td>CA2090</td>
<td>MNHN-IU-2018-2844</td>
<td></td>
<td>MT303906</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>New Caledonia</td>
<td>CA1568</td>
<td></td>
<td></td>
<td>MT303909</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Sri Lanka</td>
<td>2311SL</td>
<td></td>
<td></td>
<td>AV708118</td>
<td>Bossuyt et al. 2004</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>GUCC721</td>
<td></td>
<td></td>
<td>DQ478563</td>
<td>Page et al. 2007</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>GUCCY1</td>
<td></td>
<td></td>
<td>DQ478562</td>
<td>Page et al. 2007</td>
</tr>
<tr>
<td><em>C. weberi</em></td>
<td>Kolombangara</td>
<td>CA1516</td>
<td>MNHN-IU-2018-2867</td>
<td></td>
<td>MT303920</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Malaita</td>
<td>CA1511</td>
<td>MNHN-IU-2018-2868</td>
<td></td>
<td>MT303919</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Papua New Guinea</td>
<td>CA2254</td>
<td>MNHN-IU-2018-2874</td>
<td></td>
<td>MT303922</td>
<td>This study</td>
</tr>
<tr>
<td></td>
<td>Papua New Guinea</td>
<td>CA2244</td>
<td>MNHN-IU-2018-2876</td>
<td></td>
<td>MT303921</td>
<td>This study</td>
</tr>
<tr>
<td><em>P. caledonica</em></td>
<td>New Caledonia</td>
<td>CA1800</td>
<td></td>
<td></td>
<td>MK189918</td>
<td>de Mazancourt et al. 2019a</td>
</tr>
<tr>
<td><em>P. compressa</em></td>
<td>Japan</td>
<td>Pcomp_366</td>
<td></td>
<td></td>
<td>AY661483</td>
<td>Page et al. 2005</td>
</tr>
</tbody>
</table>
Results

Molecular analyses

The species delimitation methods each yielded a different result: 23 species were recognised by ABGD, 29 by GMYC and 33 by bPTP (Fig. 2). Following an integrative taxonomy, we considered that 24 species could be characterised by both molecular and morphological data.

All of these are highly supported both in ML and BI analyses (PP > 0.99). Species belonging to the *C. serratirostris* complex do not form a monophyletic group, as clade B seems to be a sister group to all the others, excluding clade A. This cluster is, however, poorly supported in the ML analysis (B = 59.8%). Likewise, the *C. typus* complex (clades C and D) does not appear as a monophyletic group due to an unresolved polytomy. However, all the other complexes seem monophyletic, with strong supports.

Fig. 2. Bayesian inference phylogenetic tree of the species studied. Numbers above branches are Bayesian posterior probabilities, numbers under branches are Maximum Likelihood bootstrap values. Results of the three species delimitation methods are indicated by the black bars on the right of the tree. Each bar represents a species recognized by the analysis.
in the BI analysis (PP ranging from 0.96 for the *C. nilotica* complex to 1 for all the others) and low to strong supports in the ML analysis (B ranging from 56% for the *C. weberi* complex to 100% for the *C. brevicarpalis* complex). It is interesting to note that the *C. gracilirostris* complex, *C. brevicarpalis* complex and *C. nilotica* complex are clustered in a moderately to highly supported clade (PP = 1; B = 82.5%).

**Morphological analyses**

Measures and observations made on the specimens allowed us to confirm the molecular results in recognising the clades as 24 different species, including 11 new for science (see hereafter).

**Taxonomy**

Class Malacostraca Latreille, 1802  
Order Decapoda Latreille, 1802  
Family Atyidae De Haan, 1849  
Genus *Caridina* H. Milne Edwards, 1837

**Diagnosis**

Moderately robust morphology, with a long rostrum (passing end of antennular peduncle), always armed on the dorsal margin, without apical teeth, antennal spine below the suborbital angle, a long antennular peduncle (more than 0.70 times as long as carapace), pterygostomian margin subrectangular, stout legs, the carpus of the first pereiopod often deeply excavated, sixth abdominal somite about half of carapace length, high pre-anal carina bearing a spine, few spinules on the uropodal diaeresis (around 10), few, medium to short and smooth terminal setae on the telson; a subtriangular endopod of the first male pleopod with an appendix on the subdistal outer margin which reaches beyond the distal end of the endopod with most of its length.

**Caridina brevicarpalis** species group

*Caridina barakoma* sp. nov.  
urn:lsid:zoobank.org:act:E0FB6A6C-EDA8-4667-81F4-695A9632658D  
Figs 2G, 3


**Etymology**

This new species in named after the village near the type locality. The name is used as an apposition.

**Material examined**

**Holotype**  
SOLOMON ISLANDS • ♂, cl 3.7 mm; Vella Lavella Island, Vala Kadju River; 07°49.860´ S, 156°42.644´ E; 18 m a.s.l.; 28 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2014-20805.

**Paratypes**  
SOLOMON ISLANDS – Vella Lavella Island • 1 ♂, cl 2.7 mm; same collection data as for holotype; DNA voucher: CA1942; MNHN-IU-2014-20810. – *Choiseul Island* • 1 ♀ ovig., cl 5.6 mm; Turipi River; 07°00.661´ S, 156°49.075´ E; 50 m a.s.l.; 15 Sep. 2014; P. Keith, G. Marquet and M. Mennesson leg.; MNHN-IU-2014-20806 • 1 ♀ ovig., cl 5.6 mm; Lopakare River downstream; 07°01.834´ S, 156°45.789´ E; 14 m a.s.l.; 21 Sep. 2014; P. Gerbeaux, P. Keith and G. Marquet leg; DNA voucher:
CA1364; MNHN-IU-2014-20807 • 1 ♀ ovig., cl 5.8 mm; same collection data as for preceding; MNHN-IU-2014-20808. – Kolombangara Island • 1 ♀, cl 3.6 mm; Vágé River; 08°05.112´ S, 156°59.867´ E; 10 Nov. 2015; 21 m a.s.l.; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1521; MNHN-IU-2014-20809. – Isabel Island • 1 specimen; Suavanoa, Rakata River; 15 m a.s.l.; 07.64456° S, 158.71918° E; 27 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2511; MNHN • 1 specimen; same collection data as for preceding; DNA voucher: CA2512; MNHN • 1 specimen; same collection data as for preceding; DNA voucher: CA2515; MNHN • 1 specimen; same collection data as for preceding; DNA voucher: CA2516; MNHN.

INDONESIA • 1 ♀ ovig., cl 7.0 mm; West Papua, Kayumera, found in a fish’s gut content; 03°53.525´ S, 134°28.621´ E; 22 Oct. 2010; P. Keith leg.; MNHN-IU-2014-20820.

PAPUA NEW GUINEA – New Britain Island • 1 ♀ ovig., cl 5.1 mm; Wara Creek; 05°38.843´ S, 150°39.012´ E; 29 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20811 • 1 ♀ ovig., cl 6.6mm; same collection data as for preceding; MNHN-IU-2014-20812 • 1 ♀, cl 6.1 mm; same collection data as for preceding; MNHN-IU-2014-20813 • 1 ♀ ovig., cl 5.4 mm; Walindi Creek; 05°21.187´ S, 150°02.693´ E; 30 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20814 • 1 ♀ ovig., cl 5.6mm; same collection data as for preceding; MNHN-IU-2014-20815 • 1 ♀ ovig., cl 5.3 mm; Vaavu River; 05°22.584´ S, 150°03.724´ E; 30 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20816 • 1 ♀ ovig., cl 5.9 mm; same collection data as for preceding; MNHN-IU-2014-20817 • 1 ♀ ovig., cl 6.2 mm; Crusher; 05°38.603´ S, 150°10.957´ E; 31 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20818 • 1 ♀ ovig., cl 6.5 mm; same collection data as for preceding; MNHN-IU-2014-20819.

Description

Cephalothorax. Antennal spine below suborbital angle. Pterygostomian margin sub rectangular. Rostrum (Fig. 3m) long, 0.9–1.2 of cl, passing end of scaphocerite, armed with 12–16 teeth on dorsal margin, without apical teeth, 0–1 of them situated on carapace behind orbital margin, ventral margin with 5–10 teeth. Eyes well developed, anterior end reaching to 0.50–0.60 length of basal segment of antennular peduncle. Antennular peduncle 0.72 (♀) or 0.88 (♂) times as long as carapace. Anterolateral angle reaching 0.20 length of second segment, basal segment of antennular peduncle longer than sum of second and third segment lengths, second segment distinctly longer than third segment. Stylocerite reaching 0.75–0.78 of length of basal segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 3a): chela about 1.9–2.1 times as long as wide, movable finger 2.3–2.9 times as long as wide, 0.7–1.0 times length of palm; carpus 1.1–1.6 times as long as wide. P2 (Fig. 3b) more slender and longer than first pereiopod, with chela 1.8–2.1 times as long as wide: movable finger 3.1–3.8 times as long as wide, 1.2–1.3 times length of palm; carpus stout 2.8–3.7 times as long as wide. P3 (Fig. 3c): stout, very short dactylus (Fig. 3e) 2.1–2.8 times as long as wide (terminal spiniform seta included) with 5–6 spiniform setae on flexor margin including terminal one; short propodus 2.1–2.8 times as long as wide, 4.3–5.4 times as long as dactylus. P5 (Fig. 3d): dactylus (Fig. 3f) very short, 2.0–2.5 as long as wide with 6–17 spiniform setae on flexor margin; propodus 2.0–2.5 times as long as wide, 5.1–9.0 times as long as dactylus.

Abdomen. Third abdominal somite with moderarely convex dorsal profile. Sixth abdominal somite 0.58 times cl, 1.6 times as long as fifth somite, shorter than telson.

Telson (Fig. 3h). 3.2–3.4 times as long as wide, with four to six pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with a median process, it is rounded with 4 intermediate setae shorter than lateral ones.
Fig. 3. *Caridina barakoma* sp. nov. **a.** First pereiopod. **b.** Second pereiopod. **c.** Third pereiopod. **d.** Fifth pereiopod. **e.** Dactylus of third pereiopod. **f.** Dactylus of fifth pereiopod. **g.** Pre-anal carina. **h.** Uropodal diaeresis. **i.** Telson. **j.** First male pleopod. **k.** Second male pleopod. **l.** Eggs. **m.** Cephalothorax. MNHN-IU-2014-20807 (a–i, l–m) and MNHN-IU-2014-20805 (j–k).
Male pleopods. Pl1 (Fig. 3j): endopod subtriangular, 2.3 times as long as wide, reaching 0.29–0.41 length of exopod, with an appendix on subdistal outer margin which reaches beyond distal end of endopod with most of its length. Pl2 (Fig. 3k): appendix masculina reaching 0.54–0.56 times length of endopod; appendix interna reaching 0.77 of appendix masculina.

Pre-anal carina (Fig. 3g). High, armed with a spine.

Uropodal diaeresis (Fig. 3h). With 8–10 spinules.

Eggs (Fig. 3l). Size: 0.21–0.25 × 0.37–0.40 mm.

Habitat
In the vegetation at the edge of the rivers in flowing water in the lower course of rivers.

Colour pattern
Unknown.

Distribution
Only collected in the Solomon Islands (Choiseul, Kolombangara, Vella Lavella, Isabel and Guadalcanal).

Remarks
This new species looks like the type specimens of *C. brevicarpalis* and *C. endehensis* both described by De Man (1892), with their very long rostrum, passing the end of the scaphocerite, without apical tooth and its P1 carpus deeply excavated. It can, however, easily be distinguished from *C. brevicarpalis* by its rostrum armed with more teeth on the dorsal margin, 12–16 (vs 11–14 for *C. brevicarpalis*) and on the ventral margin 5–10 teeth (vs 4–7), by its P3 propodus 4.3–5.4 times as long as dactylus (vs 4), by its P5 dactylus with fewer spiniform setae on flexor margin 6–17 (vs 20) and by its P5 propodus 5.1–9.0 times as long as dactylus (vs 5). Egg sizes are smaller, 0.21–0.25 × 0.37–0.40 (vs 0.33 × 0.53 according to Bouvier 1925). From *C. endehensis*, it can easily be separated by its rostrum slightly overreaching the antennal peduncle (vs far overreaching antennal scale for *C. endehensis*), dorsal margin nearly horizontal (vs ascendant in anterior ½), armed with 12–16 teeth on posterior ½ (vs 9–23 in posterior ½), armed ventrally with 5–10 teeth (vs 4–24).

In the litterature on *C. brevicarpalis*, we only find 3 drawings: in De Man (1892), Bouvier (1925) and Edmondson (1935). The latter studied specimens from Viti Levu (Fiji) which seem different from our species by their rostrum armed with 18 teeth on the dorsal margin and 7 on the ventral margin (vs respectively 12–16 and 5–10 in *C. barakoma* sp. nov. and 11–14 and 4–7 in the type specimens of *C. brevicarpalis*). By their uropodal diaeresis, 10–13, it also seems different from our new species (8–10) and the type specimens (8–9 according Bouvier 1925). Fiji is the easternmost limit of the *C. brevicarpalis* complex in the Pacific, as no species of this group occur in Futuna, Samoa or French Polynesia (Keith *et al.* 2013). In this paper we postulate that the *C. brevicarpalis* group includes several different species allied to *C. brevicarpalis* like *C. barakoma* sp. nov., *C. endehensis* and the Fijian species.

**Caridina gracilirostris** species group

**Diagnosis**
Slender morphology with a very long and upcurved rostrum (twice the carapace length), armed with few dorsal teeth (fewer than 10), apical teeth present, the antennal spine ventral to the inferior orbital angle, a long antennular peduncle (more than 0.70 times as long as carapace), pterygostomian margin rounded, segments of walking legs slender, a typical dorsal hump over the third abdominal somite, a long sixth
abdominal somite (always more than half of carapace length), a small pre-anal carina bearing or not an acute spine, few spinules on the uropodal diaeresis (>10), very few short terminal setae on the telson, endopod of the first male pleopod subtriangular mostly without an appendix, but when it is present, on the subdistal outer margin, reaches beyond distal end of endopod by a short length.

*Caridina gracilirostris* De Man, 1892

Figs 2E, 4, 25A

*Caridina gracilirostris* De Man, 1892: 399, pl. 25: figs 31a–d (type locality: several localities, Sulawesi (Celebes) Indonesia).


**Material examined**

**Paralectotypes** (lectotype designated by Cai & Ng 2007)

INDONESIA • 2 ♂♂, cl 3.5–3.7 mm, 1 ♀ ovig., cl 5.1 mm; Sulawesi, Balangnipa; Oct.–Nov. 1888; M. Weber leg.; MNHN-IU-2015-1737.

**Other material**

SOLOMON ISLANDS – *Kolombangara Island* • 1 ♂, cl 3.0 mm; Jack Harbour River; 08°03.085´ S, 157°10.945´ E; 11 m a.s.l.; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1497; MNHN-IU-2018-2804. – *Isabel Island* • 1 specimen; Kolopakissa, Zari River; 07°36.314´ S, 158°40.103´ E; ca 0–5 m a.s.l.; 26 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2506; MNHN.

AUSTRALIA • 1 ♂, cl 4.2 mm; Queensland, Johnstone River; 17°30.456´ S, 145°59.525´ E; 7 m a.s.l; 11 Jun. 2016; B. Mos leg.; DNA: CA1677; MNHN-IU-2018-2805 • 1 ♀ ovig., cl 5.6 mm; Queensland, Mulgrave River; 17°08.841´ S, 145°52.786´ E; 10 m a.s.l.; 7 Jun. 2016; B. Mos leg.; DNA voucher: CA1681; MNHN-IU-2018-2806 • 1 ♂, cl 4.2 mm; same collection data as for preceding; MNHN-IU-2018-2807.

**Description**

**Cephalothorax.** Antennal spine short, situated below inferior orbital angle. Pterygostomian margin sub-rectangular. Rostrum (Fig. 4m): strongly upturned, very long, 1.3–2.6 of cl, reaching far beyond distal end of scaphocerite, armed with 5–9 teeth on dorsal margin, with 1–2 apical teeth, 0–1 of them situated on carapace behind orbital margin, ventral margin with 21–35 teeth. Eyes well developed, anterior end reaching to 0.54–0.87 length of basal segment of antennular peduncle. Antennal peduncle 0.70 (♀) – 0.93 (♂) times as long as carapace. Anterolateral angle pointed, reaching to 0.40 length of second segment, second segment distinctly longer than third segment. Stylocerite reaching to 0.72–0.80 length of basal segment of antennular peduncle.

**Pereiopods.** Epipods on first four pereiopods. P1 (Fig. 4a): chela about 1.9–2.9 times as long as wide, movable finger 2.8–4.0 times as long as wide, 0.7–1.3 times length of palm; carpus 1.5–1.9 times as long as wide. P2 (Fig. 4b) more slender and longer than first pereiopod, with chela 2.0–2.5 times as long as wide: movable finger 3.3–4.2 times as long as wide, 1.1–1.8 times length of palm; carpus slender, 3.2–5.1 times as long as wide. P3 (Fig. 4c): dactylus stout (Fig. 4e), 3.3–3.8 times as long as wide (terminal spiniform seta included), with 7–10 spiniform setae on flexor margin in addition to terminal one; propodus 11.7–14.0 times as long as wide, 3.6–4.5 times as long as dactylus. P5 (Fig. 4d): dactylus
Fig. 4. *Caridina gracilirostris* (De Man, 1892). **a.** First pereiopod. **b.** Second pereiopod. **c.** Third pereiopod. **d.** Fifth pereiopod. **e.** Dactylus of third pereiopod. **f.** Dactylus of fifth pereiopod. **g.** Pre-anal carina. **h.** Uropodal diaeresis. **i.** Telson. **j.** First male pleopod. **k.** Second male pleopod. **l.** Eggs. **m.** Cephalothorax. MNHN-IU-2018-2804 (a–b, d, f–k), MNHN-IU-2018-2805 (c,e,m) and MNHN-IU-2018-2807 (l).
(Fig. 4f) 4.0–4.4 as long as wide, with 26–33 spiniform setae on flexor margin; propodus 14.9–22.4 times as long as wide, 3.8–4.4 times as long as dactylus.

**Abdomen.** Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.8 times as long as carapace, 2.0 times as long as fifth somite, as long as telson.

**Telson** (Fig. 4i). Very slender, 4.5 times as long as wide, with four pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin without a median process; distal setae very stout, lateral pair distinctly longer than intermediate setae (mostly one pair).

**Male pleopods.** Pl1 (Fig. 4j): endopod subtriangular, 2.1 times as long as wide, 0.21 times as long as exopod, without appendix interna. Pl2 (Fig. 4k): appendix masculina reaching 0.50 times length of endopod; appendix interna reaching 0.50 of appendix masculina.

**Pre-anal carina** (Fig. 4g). With spine.

**Uropodal diaeresis** (Fig. 4h). With 6–10 spinules.

**Eggs** (Fig. 4l). Size: 0.34–0.43 × 0.19–0.26 mm.

**Habitat**
In the lower course of streams under marine influence, very often in brackish water.

**Colour pattern** (Fig. 25A)
Totally translucent body with a rostrum alternating black and red areas.

**Distribution**
Widely distributed in the tropical and subtropical Indo-Pacific region: Indonesia, the Philippines, India, Australia and the Solomon Islands.

**Remarks**
Our specimens fit well with the description given by Cai & Ng (2007): rostrum very long, reaching far beyond distal end of scaphocerite, strongly upturned, with presence of 0–1 postorbital teeth (vs 0 in Cai & Ng (2007)); 5–9 dorsal teeth (vs 3–9) and 21–35 ventral teeth (vs 28–36); P1 carpus 1.5–1.9 times as long as wide (vs 1.7); P2 carpus 3.2–5.1 times as long as wide (vs 4). P3 dactylus with 7–10 spiniform setae (vs 8), propodus 3.6–4.5 times as long as dactylus (vs 4.0); P5 dactylus with about 26–33 spiniform setae (vs 37) and propodus 3.8–4.4 times as long as dactylus (vs 3.8); uropodal diaeresis 6–10 (vs 5–11); small eggs 0.32–0.43 × 0.19–0.26 mm (vs 0.40 × 0.25 mm); no appendix interna on the endopod of the male first pleopod.

*Caridina neglecta* Cai & Ng, 2007
Figs 2F, 5, 25B

*Caridina neglecta* Cai & Ng, 2007: 1595, figs 4–5 (type locality: Sungai Batang, 13 km on road from Palopo to Wotu, Sulawesi, Indonesia).

**Material examined**

**Holotype**
INDONESIA • ♂, cl 4.3 mm; Sulawesi, Sungai Batang, 13 km on road from Palopo to Wotu; Mar. 1989; M. Kottelat and A. Werner leg.; MZB Cru 1570.
Paratype
INDONESIA • 1 ♀, cl 4.4 mm; same collection data as for holotype; ZRC 2007.0096.

Other material
SOLOMON ISLANDS – Choiseul Island • 1 ♂, cl 4.5 mm; Lokasereke River; 06°58.024´ S, 156°47.861´ E; 45 m a.s.l.; 13 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1310; MNHN-IU-2018-2808. – Kolombangara Island • 1 ♀ ovig., cl 4.2 mm; Liva River; 08°03.863´ S, 157°10.633´ E; 18 m a.s.l.; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2019-106 • 1 ♂, cl 3.1 mm; same collection data as for preceding; MNHN-IU-2019-105 • 1 ♀ ovig., cl 5.0 mm; Jack Harbour River; 08°03.085´ S, 157°10.945´ E; 11 m a.s.l.; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2811 • 1 ♀ ovig., cl 4.7 mm; Vanga 2 River; 07°54.825´ S, 156°57.762´ E; 17 m a.s.l.; 18 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2812.
– Vella Lavella Island • 1 ♀ ovig., cl 4.9 mm; Vala Kadju River; 07°49.860´ S, 156°42.644´ E; 17 m a.s.l.; 28 Oct. 2016; P. Keith and C. Lord leg.; DNA voucher: CA1703; MNHN-IU-2018-2813 • 1 ♀, cl 4.1 mm; Joroveto River; 07°49.918´ S, 156°42.887´ E; 18 m a.s.l.; 28 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2814.

VANUATU – Santo Island • 1 ♀ ovig., cl 5.6 mm; Sarataka River; 15°30.078´ S, 167°09.261´ E; 25 Jul. 2003; D. Kalfatak, P. Keith and G. Marquet leg.; MNHN-IU-2015-1767. – Isabel Island • 1 specimen; Kolopakissa, Fufuna River; 07.64456° S, 158.71918° E; 15 m a.s.l.; 25 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2504; MNHN • 1 specimen; same collection data as preceding; DNA voucher: CA2505; MNHN • 1 specimen; Rakata River confluence; 07.64190° S, 158.71504° E; 27 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2513; MNHN.

Description
Cephalothorax. Antennal spine short, situated below inferior orbital angle. Pterygostomian margin rectangular round. Rostrum (Fig. 5m): strongly upturned, very long, 1.6–2.2 of cl, reaching far beyond distal end of scaphocerite, armed with 5–9 teeth on dorsal margin, with 1–2 apical teeth, non of them situated on carapace behind orbital margin, ventral margin with 21–27 teeth. Eyes well developed, anterior end reaching to 0.7 times length of basal segment of antennular peduncle. Antennular peduncle 0.69 (♀) – 0.88 (♂) times as long as carapace. Anterolateral angle reaching 0.32 length of second segment, second segment distinctly longer than third segment. Stylocerite reaching to 0.86 length of basal segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 5a): chela about 2.2–2.5 times as long as wide, movable finger 3.2–4.2 times as long as wide, 1.1–1.5 times length of palm; carpus 2.3–3.1 times as long as wide. P2 (Fig. 5b) more slender and longer than first pereiopod, with chela 2.5–3.1 times as long as wide; movable finger 3.7–4.9 times as long as wide, 1.2–1.6 times length of palm; carpus slender, 5.2–6.4 times as long as wide. P3 (Fig. 5c): stout, dactylus (Fig. 5e) 3.3–4.7 times as long as wide (terminal spiniform seta included), with 5–7 spiniform setae on flexor margin in addition to the terminal one; propodus 11.8–17.3 times as long as wide, 4.1–5.4 times as long as dactylus. P5 (Fig. 5d): dactylus (Fig. 5f) 4.0–5.3 as long as wide, with 31–53 spiniform setae on flexor margin; propodus 12.9–21.1 times as long as wide, 3.7–4.5 times as long as dactylus.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.80 as long as carapace, 1.76 times as long as fifth somite, slightly shorter than telson.
**C. neglecta** species group

**Diagnosis**

Slender morphology, with a mostly long rostrum (longer than the antennular peduncle) but variable, the antennal spine ventral to the inferior orbital angle, a long antennular peduncle (subequal to carapace length), segments of walking legs slender, a typical dorsal hump over the third abdominal somite, a long sixth abdominal somite (always more than half of carapace length), a small pre-anal carina sometimes bearing an acute spine, a moderate number of spinules on the uropodal diaeresis (<15), fewer, medium to short and terminal setae on the telson and a subtriangular endopod of the first male pleopod with or without an appendix on the subdistal outer margin or even placed at the distal end. An oblique red band on the cephalothorax is very characteristic.
Caridina appendiculata Jalihal & Shenoy, 1998

Figs 2H, 25C


Material examined

SOLOMON ISLANDS – Kolombangara Island • 1 ♂, cl 3.5 mm; Zamba River; 08°05.934´ S, 157°00.830´ E; 0 m a.s.l.; 9 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-133 • 1 ♂, cl 3.6 mm; same collection data as for preceding; MNHN-IU-2018-134 • 1 ♀ ovig., cl 4.0 mm; Vanga 2 River; 07°54.825´ S, 156°57.762´ E; 5 m a.s.l.; 18 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1494; MNHN-IU-2018-135 • 1 ♀ ovig., cl 4.1 mm; same collection data as for preceding; DNA voucher: CA1495; MNHN-IU-2018-136 • 1 ♂, cl 3.3 mm; same collection data as for preceding; MNHN-IU-2018-137. – Isabel Island • 1 specimen; Kia, Hobolito River; 07.62419° S, 158.54004° E; 0–9 m a.s.l.; 24 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2502; MNHN.

Remarks
de Mazancourt et al. (2018c) recently redescribed C. appendiculata in detail. This species is known from Australia, Indonesia (Flores, Obira and Sulawesi), Solomon Islands (Kolombangara, Isabel), Micronesia (Pohnpei), Palau and Vanuatu (Aneityum, Efate, Epi and Santo). This species lives in a typical brackish water environment (brackish water pool or lower part of rivers, near the estuary).

Caridina brevidactyla Roux, 1919

Figs 2K, 25D


Caridina brevidactyla – Cai & Ng 2001: 671, fig. 5.— de Mazancourt et al. 2018c: 1435–1438, fig. 5; 2019a: 166, 169–170.

Not Caridina nilotica var. brachydactyla form peninsularis Edmondson, 1935: 5, fig. 1g–k.

Material examined

SOLOMON ISLANDS – Choiseul Island • 1 ♀, cl 5.3 mm; Gu’ma River; 07°01.764´ S, 156°49.899´ E; 50 m a.s.l.; 17 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-168 • 1 ♀ ovig., cl 5.0 mm; Lokasereke River; 06°58.024´ S, 156°47.861´ E; 13 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-169 • 1 ♀ ovig., cl 5.1 mm; same collection data as for preceding; MNHN-IU-2018-170 • 1 ♀ ovig., cl 5.7 mm; same collection data as for preceding; MNHN-IU-2018-171 • 1 ♀ ovig., cl 5.8 mm; same collection data as for preceding; DNA voucher: CA1345; MNHN-IU-2018-172 • 1 ♂, cl 4.4 mm; Lopakare River; 07°01.834´ S, 156°45.789´ E; 21 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-173 • 1 ♂, cl 3.3 mm; same collection data as for preceding; MNHN-IU-2018-174 • 1 ♀ ovig., cl 5.0 mm; Vorama River; 06°58.687´ S, 156°46.746´ E; 15 m a.s.l.; 11 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-175 • 1 ♀ ovig., cl 5.3 mm; same collection data as for preceding; MNHN-IU-2018-176 • 1 ♀ ovig., cl 3.1 mm; same collection data as for preceding; MNHN-IU-2018-177. – Kolombangara Island • 1 ♂, cl 4.2 mm; Lodumoe River; 07°50.961´ S, 157°04.320´ E; 16 Nov. 2015; 0 m a.s.l.; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-178 • 1 ♀ ovig., cl 4.9 mm; same collection data as for preceding; DNA voucher:
de MAZANCOURT V. et al., List of Caridina freshwater shrimp species from the Solomon Islands

CA1500; MNHN-IU-2018-179 • 1 ♀ ovig., cl 3.7 mm; Vanga River; 07°54.825´ S, 156°57.762´ E; 18 Nov. 2015; 5 m a.s.l.; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-180 • 1 ♀ ovig., cl 3.9 mm; same collection data as for preceding; MNHN-IU-2018-181 • 1 ♂, cl 3.8 mm; same collection data as for preceding; MNHN-IU-2018-182. – **Vella Lavella Island** • 1 ♀ ovig., cl 4.6 mm; Maravari River; 07°51.703´ S, 156°41.748´ E; 31 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-183 • 1 ♀; same collection data as for preceding; MNHN-IU-2018-184 • 1 ♀ ovig., cl 4.0 mm; Wariassi River; 29 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-186 • 1 ♂, cl 4.2 mm; same collection data as for preceding; MNHN-IU-2018-187. – **Isabel Island** • 1 specimen; Kupikolo, Rapa River; 07°28.527´S 158°17.105´ E; 0–7 m a.s.l.; 23 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2500; MNHN • 1 specimen; same collection data as for preceding; DNA voucher: CA2501; MNHN • 1 specimen; Kolopakissa River; 07°35.377´ S, 158°39.854´ E; 40 m a.s.l.; 26 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2507; MNHN • 1 specimen; same collection data as for preceding; DNA voucher: CA2508; MNHN • 1 specimen; Rakata River confluence; 07.64190° S, 158.71504° E; 27 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2514; MNHN.

**Remarks**

de Mazancourt et al. (2018c) recently designated a lectotype for *C. brevidactyla* Roux, 1919 and redescribed it in detail. This species is now known from Indonesia (Aru Island, Halmahera), Papua New Guinea (New Britain), Solomon Islands (Choiseul, Kolombangara, Vella Lavella, Isabel), Vanuatu (Efate, Epi, Malekula and Santo), New Caledonia and Fiji. This species is encountered in the lower part of rivers, sometimes in brackish conditions near the estuary.

**Caridina choiseul** sp. nov.

*urn:lsid:zoobank.org:act:4C3B5DD9-C268-4876-AE84-5FF7CDD01DAE*

Figs 2J, 6, 25E


**Etymology**

Named after the island of Choiseul, where this new species occurs. The name is used as a noun in apposition.

**Material examined**

**Holotype**

SOLOMON ISLANDS • ♂, cl 3.9 mm; Choiseul Island, Creek 2; 06°59.027´ S, 156°47.913´ E; 93 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20821.

**Paratypes**

SOLOMON ISLANDS – **Choiseul Island** • 1 ♀, cl 4.5 mm; same collection data as for holotype; MNHN-IU-2014-20822 • 1 ♂, cl 3.8 mm; Lopakare River; 07°01.613´ S, 156°46.567´ E; 20 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20823 • 1 ♂, cl 4.0 mm; same collection data as for preceding; MNHN-IU-2014-20824 • 1 ♀ ovig., cl 4.5 mm; same collection data as for preceding; MNHN-IU-2014-20825 • 1 ♀ ovig., cl 4.7 mm; same collection data as for preceding; MNHN-IU-2014-20826 • 1 ♀, cl 4.6 mm; same collection data as for preceding; DNA voucher: CA1277; MNHN-IU-2014-20827 • 1 ♀, cl 4.8 mm; same collection data as for preceding; MNHN-IU-2014-20828 • 1 ♂, cl 4.0 mm; Pisuku River, sector 1; 06°58.951´ S, 156°46.582´ E; 15 m a.s.l.; 10 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20829 • 1 ♂, cl 4.1 mm; same collection data as for preceding; DNA voucher: CA1285; MNHN-IU-2014-20830 • 1 ♀, cl 4.7 mm; same collection data as for preceding; MNHN-IU-2014-20831 • 1 ♀ ovig., cl 5.1 mm; same collection data
as for preceding; MNHN-IU-2014-20832 • 1 ♂ ovig., cl 5.5 mm; same collection data as for preceding; MNHN-IU-2014-20833 • 1 ♂, cl 4.2 mm; Pisuku River, sector 2; 06°58.900’ S, 156°46.685’ E; 66 m a.s.l.; 10 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20834 • 1 ♀, cl 5.4 mm; same collection data as for preceding; MNHN-IU-2014-20835 • 1 ♂, 4.2 mm; Pisuku River, upstream; 06°58.965’ S, 156°46.718’ E; 12 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20836 • 1 ♀, cl 4.5 mm; same collection data as for preceding; MNHN-IU-2014-20837 • 1 ♀, cl 4.1 mm; same collection data as for preceding; MNHN-IU-2014-20838 • 1 ♀, cl 5.1 mm; same collection data as for preceding; MNHN-IU-2014-20839.

Comparative material

*Caridina variabilirostris* (de Mazancourt, Marquet & Keith, 2018)
See de Mazancourt *et al.* (2018a)

*Caridina brachydactyla* (De Man, 1908)
INDONESIA • lectotype (designated by Richard & Clark 2010), ♀ ovig., cl 4.8 mm; Flores Island, river near Reo; Nov. 1888; M. Weber leg.; RMNH Crust D. 977 • 2 paralecotypes, ♀♀ ovig., cl 5.3–5.4 mm; Flores Island, river in Mbawa; Jan. 1889; M. Weber leg.; RMNH 2552 • 1 ♀, cl 5.8 mm; Bali Island; NMB 1054a • 2 ♂♂, cl 2.7–3.7 mm, 1 ♀ ovig., cl 4.3 mm, 1 ♀, cl 4.8 mm; Sulawesi, Palopo, Macaui (locality code: 63.10); W. Klotz leg.; ZMB • 1 ♀ ovig., cl 4.0 mm; Sulawesi, Palopo, Tojo (locality code: 64.10); W. Klotz leg.; ZMB.

*Caridina elongapoda* (Liang & Yan, 1977)
CHINA • 3 ♂♂, cl 2.8–3.5 mm, 1 ♀, cl 4.2 mm; Hong Kong, Pak Tam Chung and Kai Sai Chau (locality codes 14.11 and 22.09); W. Klotz leg.; ZMB.

MALAYSIA • 1 ♂, cl 4.2 mm, 1 ♀, cl 4.3 mm, 1 ♀ ovig., cl 4.3 mm; Pulau Tioman, Sungai Asah; 24 Jun. 1997; Ng et al. leg.; ZRC 1998.0865.

*Caridina peninsularis* (Kemp, 1918)
MALAYSIA • lectotype (designated by Cai *et al.* 2007), ♂, cl 3.2 mm; Penang Island, Botanical Garden; Feb. 1916; N. Anandale leg.; MNHN-IU-2015-1749 • 1 paralotype, ♀ ovig., cl 5.4 mm; same collection data as for lectotype; MNHN-IU-2015-1750 • 1 paralotype, ♂, cl 3.4 mm, 1 paralotype, ♀ ovig., cl 5.2 mm, 1 paralotype, ♂, cl 3.9 mm; same collection data as for lectotype; NHM 1919.11.1.12-21 (1761124).

SINGAPORE • 1 ♀ ovig., cl 5.1 mm, 1 ♂, cl 4.2 mm; Tanglin [incorrectly spelt Tangtum in NHM register and on label, see Richard & Clark 2014]; 1958; Bedford and Lanchester leg.; NHM 1958.8.7.14–17 (1749569).

*Caridina variabilis* (de Mazancourt, Rogers & Keith, 2018)
See de Mazancourt *et al.* (2018b).

*Caridina sundanella* (Holthuis, 1978)
INDONESIA • 1 syntype ♂, cl 3.6 mm, 1 syntype, ♀, cl 5.2 mm; Sumba Island, West Sumba, 4 km N of Waimangura, Waikamburu Brook, Station 450; 250 m a.s.l.; 19 Aug. 1949; E. Sutter and A. Bühler leg.; NMB 989a.
de MAZANCOURT V. et al., List of *Caridina* freshwater shrimp species from the Solomon Islands

**Description**

**Cephalothorax.** Carapace (Fig. 6m) smooth, glabrous, with sharp antennal spine placed at lower orbital angle. Pterygostomial margin subrectangular. Variable length rostrum, 0.5–1.2 of cl, 16–28 dorsal teeth closely set, leaving 0.0–0.35 unarmed distally, 1–4 post-orbital teeth present. 7–12 teeth present on ventral margin extending from proximal end either to tip or with short distal part unarmed. Number of dorsal teeth on rostrum before first ventral tooth 13–19. Eyes well developed, anterior end reaching to 0.72 times length of basal segment of antennular peduncle. Antennular peduncle 0.75 (♀) – 0.88 (♂) times as long as carapace. Anterolateral angle reaching 0.30 length of second segment, second segment distinctly longer than third segment. Stylocerite reaching to 0.83 length of basal segment of antennular peduncle.

**Pereiopods.** Slender P1 (Fig. 6a): chela about 1.8–2.3 times as long as wide, dactylus 3.3–4.8 times as long as wide, 1.3–1.8 length of palm; carpus 1.9–2.4 times as long as wide with shallow excavation on anterior margin. P2 (Fig. 6b) more slender and longer than first pereiopod: chela 2.0–27 times as long as wide, dactylus 3.8–6.3 times as long as wide, 1.3–1.8 times length of palm; carpus 4.6–7.7 times as long as wide. P3 (Fig. 6c): dactylus (Fig. 6e) 2.7–3.8 times as long as wide (terminal spiniform setae included) with 5–6 spiniform setae on flexor margin in addition to terminal one; propodus 13.0–19.6 times as long as wide, 5.0–6.8 times as long as dactylus. P5 (Fig. 6d): dactylus (Fig. 6f) 3.3–4.9 times as long as wide, with 28–41 spiniform setae on flexor margin; propodus 13.6–25.5 times as long as wide, 4.8–6.5 times as long as dactylus.

**Abdomen.** A typical dorsal hump over third abdominal somite. Sixth abdominal somite 0.7 as long as carapace, 1.9 times as long as fifth somite, slightly shorter than telson.

**Telson (Fig. 6i).** 2.9–3.2 times as long as wide, with four pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with a median process, distal setae short, lateral pair slightly longer than intermediate setae (4–7).

**Male pleopods.** Pl1 (Fig. 6j): endopod subtriangular, 2.1 times as long as wide, 0.15 times as long as exopod, with an appendix interna placed at distal end. Pl2 (Fig. 6k): appendix masculina reaching 0.56 times length of endopod; appendix interna reaching 0.70 of appendix masculina.

**Pre-anal Carina (Fig. 6g).** With a spine or not.

**Uropodal diaeresis (Fig. 6h).** With 9–14 spinules.

**Eggs (Fig. 6l).** Size: 0.40–0.45 × 0.24–0.28 mm.

**Habitat**

This species prefers fresh and well-oxygenated waters. It is found from the lower to the higher course. It is more abundant in the areas situated above waterfalls, where predators are less numerous.

**Colour pattern (Fig. 25E)**

The colour of the body is hyaline with many red dots.

**Distribution**

As far as we know, this species is known only from Choiseul Island.
Fig. 6. *Caridina choiseul* sp. nov. a. First pereiopod. b. Second pereiopod. c. Third pereiopod. d. Fifth pereiopod. e. Dactylus of third pereiopod. f. Dactylus of fifth pereiopod. g. Pre-anal carina. h. Uropodal diaeresis. i. Telson. j. First male pleopod. k. Second male pleopod. l. Eggs. m–n. Rostrum variations. o. Cephalothorax. MNHN-IU-2014-20833 (a–g (top, with spine), h, l), MNHN-IU-2014-20836 (g (botom, without spine)), MNHN-IU-2014-20831 (i), MNHN-IU-2014-20829 (j–k), MNHN-IU-2014-20827 (m), MNHN-IU-2014-20837 (n) and MNHN-IU-2014-20826 (o).
Remarks

In this new species, rostrum length is variable (cl 0.5–1.2), being longer in the lower course and shorter in the upper course, as recently found by de Mazancourt et al. (2017b) who highlighted the “Pinocchio-shrimp effect” on *C. variabilirostris* de Mazancourt, Marquet & Keith, 2018 from Pohnpei. When the rostrum is short, the general appearance resembles that of *C. mertoni* Roux, 1911, whereas when the rostrum is long, the general appearance is similar to that of *C. brachydactyla* De Man, 1908. Similarly, *C. variabilis* de Mazancourt, Rogers & Keith, 2018 from Guam and Palau shows a longer or a shorter rostrum depending on the altitude.

*Caridina choiseul* sp. nov. looks like *C. variabilis* and *C. variabilirostris* from Micronesia by the number of teeth and their placement on the rostrum, the proportions between the joints of pereiopods and egg size. However, it can be differentiated by the pre-anal carina that sometimes has a spine (vs always unarmed in *C. variabilis* and *C. variabilirostris*) and the P5 dactylus that has more spiniform setae on the flexor margin: 28–41 (vs 13–30 and 18–29, respectively). *Caridina choiseul* sp. nov. is most similar to *C. brachydactyla* De Man, 1908 and *C. peninsularis* Kemp, 1918, but its P2 chela is stouter (2.0–2.7 times as long as wide vs 2.7–3.2 and 2.8–3.0, respectively) and the pre-anal carina which has a spine or not (vs always armed). *Caridina choiseul* sp. nov. looks like *Caridina elongapoda* Liang & Yan, 1977, but the pre-anal carina has a spine or not (vs always unarmed) and its P3 dactylus with 5–6 spiniform setae on the flexor margin in addition to the terminal one (vs 6–7). *Caridina choiseul* sp. nov. looks like *C. mertoni* Roux, 1911 and *C. sundanella* Holthuis, 1978, but the pre-anal carina has a spine or not (vs always unarmed) and its rostrum has 7–12 ventral teeth (vs 4–9 and 7–9, respectively).

*Caridina intermedia* sp. nov. looks like *C. mertoni* and *C. sundanella* from the Solomon Islands, by the number of teeth and their placement on the rostrum, the proportions between the joints of pereiopods and egg size. However, it can be differentiated by the pre-anal carina that sometimes has a spine (vs always unarmed in *C. mertoni* and *C. sundanella*) and the P5 dactylus that has more spiniform setae on the flexor margin: 28–41 (vs 13–30 and 18–29, respectively). *Caridina intermedia* sp. nov. was named for its intermediate morphometry between those of *C. brevidactyla* and *C. grandirostris*.

Material examined

**Holotype**

SOLOMON ISLANDS • ♀, cl 5.4 mm; Choiseul Island, Gu’ma River; 07°01.764´ S, 156°49.899´ E; 50 m a.s.l.; 17 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20840.

**Paratypes**

SOLOMON ISLANDS – **Choiseul Island** • 1 ♀ ovig., cl 5.4 mm; Lokasereke River; 06°58.024´ S, 156°47.861´ E; 13 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20841 • 1 ♀ ovig., cl 4.9 mm; same collection data as for preceding; MNHN-IU-2014-20842 • 1 ♂, cl 3.4 mm; same collection data as for preceding; MNHN-IU-2014-20843 • 1 ♂, cl 3.4 mm; Pisuku River, downstream; 06°58.848´ S, 156°46.582´ E; 12 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1326; MNHN-IU-2014-20844 • 1 ♂, cl 3.5 mm; same collection data as for preceding; MNHN-IU-2014-20845 • 1 ♂, cl 3.7 mm; same collection data as for preceding; MNHN-IU-2014-20846.

– **Kolombangara Island** • 1 ♂, cl 3.5 mm; Poitete River; 07°52.413´ S, 157°07.982´ E; 15 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1499; MNHN-IU-2014-20847. – **Vella Lavella Island** • 1 ♂, cl 3.1 mm; Vala Kadju River; 07°49.860´ S, 156°42.644´ E; 28 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2014-20848 • 1 ♀ ovig., cl 3.9 mm; same collection data as for preceding;
MNHN-IU-2014-20849 • 1 ♂, cl 2.8 mm; Joroveto River; 07°49.918´ S, 156°42.887´ E; 28 Oct. 2016, P. Keith and C. Lord leg.; MNHN-IU-2014-20850 • 1 ♀ ovig., cl 3.9 mm; same collection data as for preceding; MNHN-IU-2014-20851. – Isabel Island • 1 specimen; Rakata River; 15 m a.s.l.; 07.64456° S, 158.71918° E; 27 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2509; MNHN • 1 specimen; same collection data as for preceding; DNA voucher: CA2510; MNHN.

Other material
PAPUA NEW GUINEA – New Britain • 1 ♂, cl 4.1 mm; Ore River; 05°43.145´ S, 49°34.128´ E; 25 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20852 • 1 ♀ ovig., cl 5.7 mm; same collection data as for preceding; MNHN-IU-2014-20853 • 1 ♀ ovig., cl 6.3 mm; same collection data as for preceding; MNHN-IU-2014-20854 • 1 ♀ ovig., cl 5.7 mm; same collection data as for preceding; MNHN-IU-2014-20855 • 1 ♂, cl 4.3 mm; Garu road; 05°27.278´ S, 149°58.415´ E; 26 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20856 • 1 ♀, cl 4.5 mm; same collection data as for preceding; MNHN-IU-2014-20857 • 1 ♂, cl 4.2 mm; Galuku River; 05°45.187´ S, 150°35.001´ E; 20 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20858 • 1 ♀ ovig., cl 5.9 mm; same collection data as for preceding; MNHN-IU-2014-20859 • 1 ♀ ovig., cl 5.4 mm; Kokori River; 05°42.650´ S, 150°37.693´ E; 22 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20860 • 1 ♀ ovig., cl 5.7 mm; Rangihi swamp; 05°34.549´ S, 149°28.943´ E; 24 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2014-20861.

Comparative material
Caridina longirostris (H. Milne Edwards, 1837)
See de Mazancourt et al. 2018c.

Caridina appendiculata (Jalihal & Shenoy, 1998)
See de Mazancourt et al. 2018c.

Caridina brevidactyla (Roux, 1919)
See de Mazancourt et al. 2018c.

Caridina gracilipes (De Man, 1892)
See de Mazancourt et al. 2018c.

Description
Cephalothorax. Carapace (Fig. 7m) smooth, glabrous, with sharp antennal spine placed at lower orbital angle. Pterygostomial margin subrectangular. Long rostrum, 1.1–1.8 of cl, curved up distally, reaching well beyond scaphocerite. 16–26 dorsal teeth closely set, leaving 0.4–1.3 unarmed distally except for one or two subapical teeth, 1–3 post-orbital teeth present. 9–20 teeth present of ventral margin, extending from proximal end either to tip or with short distal part unarmed. Number of dorsal teeth on rostrum before first ventral tooth 11–16. Eyes well developed, anterior end reaching to 0.60–0.63 length of basal segment of antennular peduncle. Antennular peduncle 0.69 (♀) – 0.90 (♂) times as long as carapace. Anterolateral angle pointed reaching to 0.37 length of the second segment; second segment distinctly longer than third segment. Stylocerite reaching to 0.83–0.90 length of basal segment of antennular peduncle.

Pereiopods. Slender P1 (Fig. 7a): chela about 2.0–2.4 times as long as wide, dactylus 3.4–4.2 times as long as wide, 1.1–1.5 length of palm; carpus 2.4–3.1 times as long as wide, with shallow excavation on anterior margin. P2 (Fig. 7b) more slender and longer than first pereiopod: chela 2.3–2.9 times as long as wide, dactylus 4.1–5.4 times as long as wide, 1.1–1.6 times length of palm; carpus 5.8–6.7 times as long as wide. P3 (Fig. 7c): dactylus (Fig. 7e) 2.9–4.2 times as long as wide, with 6–7 spiniform setae on flexor margin in addition to terminal one; propodus 15.3–21.7 times as long as wide, 4.4–6.6 times
Fig. 7. *Caridina intermedia* sp. nov. a. First pereiopod. b. Second pereiopod. c. Third pereiopod. d. Fifth pereiopod. e. Dactylus of third pereiopod. f. Dactylus of fifth pereiopod. g. Pre-anal carina. h. Uropodal diaeresis. i. Telson. j. First male pleopod. k. Second male pleopod. l. Eggs. m. Cephalothorax. MNHN-IU-2014-20842 (a–h, l), MNHN-IU-2014-20843 (i), MNHN-IU-2014-20850 (j–k) and MNHN-IU-2014-20860 (m).
as long as dactylus. P5 (Fig. 7d): dactylus (Fig. 7f) 4.1–5.6 long as wide, with 31–59 spiniform setae on flexor margin; propodus 18.9–27.9 times as long as wide, 4.7–6.1 as long as dactylus.

**ABDOMEN.** Typical dorsal hump over third abdominal somite, sixth abdominal somite 0.74 as long as carapace, 1.9 times as long as fifth somite, 1.0 times as long as telson.

**TELSON** (Fig. 7i). 3.8 times as long as wide, with four pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with median process, distal setae short, lateral pair slightly longer than intermediate setae (4).

**MALE PLEOPODS.** P1 (Fig. 7j): endopod subtriangular, 2.2 times as long as wide, 0.22 times as long as exopod, with appendix interna placed on subdistal outer margin. P12 (Fig. 7k): appendix masculina reaching 0.55 times length of endopod; appendix interna reaching 0.90 of appendix masculina.

**PRE-ANAL CARINA** (Fig. 7g). With spine.

**UROPODAL DIAERESIS** (Fig. 7h). With 9–14 spinules.

**EGGS** (Fig. 7l). Size: 0.33–0.43 × 0.20–0.25 mm.

**Habitat**

All specimens were collected in a typical brackish water environment (brackish water pool or lower part of rivers, near the estuary). In rivers of Solomon Islands, *C. intermedia* sp. nov. is syntopic with *C. brevidactyla* and *C. appendiculata*.

**Colour pattern** (Fig. 25F)

The colour of the body is hyaline with many reds dots.

**Distribution**

*Caridina intermedia* sp. nov. is known from the Solomon Islands (Choiseul, Kolombangara, Vella Lavella and Isabel) and Papua New Guinea (New Britain).

**Remarks**

*Caridina intermedia* sp. nov. differs from *C. longirostris* by its longer P1 and P2 carpus, respectively 2.4–3.1 (vs 1.4–1.8 in *C. longirostris*) and 5.8–6.7 (vs 4.0–4.2) times as long as wide, a stouter P3 dactylus 2.9–4.2 (vs 4.0–4.8) times as long as wide, with propodus 4.4–6.6 (vs 3.4–4.1) times as long as dactylus, and a stouter P5 propodus, 4.1–5.6 (vs 3.2–3.5) times as long as dactylus. *C. intermedia* sp. nov. has an appendix interna on the endopod of the male first pleopod (vs none).

*Caridina intermedia* sp. nov. differs from *C. appendiculata* by its greater number of teeth on the proximal part of the dorsal margin of the rostrum, 16–26 closely set (vs 12–17 teeth somewhat irregular spaced in *C. appendiculata*), greater number of dorsal teeth before the first ventral teeth 11–16 (vs 8–12) and a slightly greater number of spiniform setae on the dactylus of the fifth pereiopod 31–59 (vs 33–44).

*Caridina intermedia* sp. nov. differs from *C. gracilipes* by its longer P2 carpus, 5.8–6.7 (vs 4.4–5.9 in *C. gracilipes*), by a lower number of spiniform setae on the dactylus of the third pereiopod, 6–7 (vs 9–10), with its more slender P3 propodus, 4.4–6.6 times as long as dactylus (vs 3.8–4.6), and its longer and more slender P5 propodus, 18.9–27.9 times as long as wide (vs 16.2–19.3).

*Caridina intermedia* sp. nov. is similar to *C. grandirostris* and *C. brevidactyla* by its rostrum with a similar number of dorsal teeth, 16–26 (vs 17–21 in *C. grandirostris* and 17–30 in *C. brevidactyla*).
However, even though *C. intermedia* sp. nov. like *C. grandirostris* always has a pre-anal carina with a spine, *C. brevidactyla* never has one. *C. intermedia* sp. nov. can be separated from *C. grandirostris* by its greater P3 dactylus, 2.9–4.2 (vs 2.3–2.9 in *C. grandirostris*), its longer P3 propodus, 15.3–21.7 times as long as wide (vs 13–15), and its longer P5 propodus, 18.9–27.9 times as long as wide (vs 13.4–16.1).

*Caridina mertoni* Roux, 1911

Figs 2L, 8, 25G

*Caridina mertoni* Roux, 1911: 84.

**Material examined**

**Lectotype** (here designated)  
INDONESIA • ♂, cl 3.8 mm; Kei Besar Island, Elat; 1908; H. Merton leg.; DNA voucher: CA056; NMB 693a.

**Paralectotypes**  
INDONESIA – Kei Besar Island • 1 ♂, cl 2.7 mm, 1 ♀, cl 4.1 mm; same collection data as for lectotype; NMB 693a • 1 ♂, cl 3.8 mm; same collection data as for lectotype; MNHN-IU-2018-1819 • 1 ♂, cl 3.4 mm; same collection data as for lectotype; MNHN-IU-2015-1820 • 1 ♂, cl 3.1 mm, 1 ♀ ovig., cl 4.8 mm; Warka; 1908; H. Merton leg.; NMB 693b • 1 ♀, cl 4.3 mm; Enralang; 1908; H. Merton leg.; NMB 693c.

**Other material**  
SOLOMON ISLANDS – Kolombangara Island • 1 ♂, cl 2.9 mm; Manolu River; 08°05.312´ S, 157°00.813´ E; 28 m a.s.l.; 10 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2017-2108 • 1 ♂, cl 3.8 mm; same collection data as for preceding; MNHN-IU-2017-2107 • 1 ♂, cl 3.7 mm; same collection data as for preceding; DNA voucher: CA1505; MNHN-IU-2017-2109 • 1 ♀ ovig., cl 3.9 mm; same collection data as for preceding; MNHN-IU-2018-2815 • 1 ♂, cl 4.0 mm; Sulumeni River; 08°02.253´ S, 157°09.257´ E; 148 m a.s.l.; 12 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2816 • 1 ♀, cl 6.2 mm; same collection data as for preceding; MNHN-IU-2018-2817.

– Malaita Island • 1 ♂, cl 4.5 mm; Tanana River; 09°17.383´ S, 167°07.012´ E; 276 m a.s.l.; 16 Jun. 2015; D. Boseto leg.; DNA voucher: CA2000; MNHN-IU-2018-2818 • 1 ♂, cl 4.6 mm; same collection data as for preceding; MNHN-IU-2018-2819 • 1 ♀, cl 5.6 mm; same collection data as for preceding; MNHN-IU-2018-2820 • 1 ♂, cl 4.4 mm; Wairahuta River; 09°16.967´ S, 161°07.285´ E; 258 m a.s.l.; 17 Jun. 2015; D. Boseto leg.; MNHN-IU-2018-2821 • 1 ♀, cl 5.5 mm; same collection data as for preceding; MNHN-IU-2018-2822 • 1 ♀, cl 5.6 mm; same collection data as for preceding; MNHN-IU-2018-2823.

**Description**

**Cephalothorax.** Carapace (Fig. 8m) smooth, glabrous, suborbital angle obscure, largely fused with antennal spine angle; pterygostomian margin rectangularly rounded. Rostrum (Fig. 8m–o) straight or slightly curved down, 0.6–1.1 of cl, sometimes slightly inclined distally, reaching as far as distal end of antennular peduncle. 17–24 dorsal teeth closely set, leaving 0.0–0.25 unarmed distally except for one or two subapical teeth, 2–5 post-orbital teeth present. 4–9 teeth present of ventral margin. Number of dorsal teeth on rostrum before first ventral tooth 12–19. Eyes well developed, anterior end reaching to 0.70–0.77 length of basal segment of antennular peduncle. Antennular peduncle 0.64 (♀) – 0.81 (♂) times as long as carapace. Anterolateral angle pointed, reaching to 0.40 length of second segment;
second segment distinctly longer than third segment. Stylocerite reaching to 0.77–0.80 length of basal segment of antennular peduncle.

**Pereiopods.** Slender P1 (Fig. 8a): chela about 1.8–2.1 times as long as wide, dactylus 2.9–4.5 times as long as wide, 1.1–2.0 length of palm; carpus 1.9–2.6 times as long as wide, with shallow excavation on anterior margin. P2 (Fig. 8b): more slender and longer than first pereiopod: chela 1.9–2.5 times as long as wide, dactylus 3.6–5.0 times as long as wide, 1.4–2.1 times length of palm; carpus 4.4–5.6 times as long as wide. P3 (Fig. 8c): dactylus (Fig. 8e) 2.8–3.4 times as long as wide (terminal spiniform setae included), with 5–6 spiniform setae on flexor margin in addition to terminal one; propodus 12.8–18.3 times as long as wide, 4.5–6.7 times as long as dactylus. P5 (Fig. 8d): dactylus (Fig. 8f) 2.6–4.5 times as long as wide, with 27–44 spiniform setae on flexor margin; propodus 15.6–25.1 times as long as wide, 4.8–9.0 times as long as dactylus.

**Abdomen.** Typical dorsal hump over third abdominal somite, sixth abdominal somite 0.71 times as long as carapace, 1.7 times as long as fifth somite, slightly shorter than telson.

**Telson** (Fig. 8i). 2.7 times as long as wide, with four pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with a median process, distal setae short, lateral pair slightly shorter or longer than intermediate setae (5–8).

**Male pleopods.** Pl1 (Fig. 8j): endopod subtriangular, 1.6 times as long as wide, 0.20 times as long as exopod, with appendix interna placed at distal end. Pl2 (Fig. 8k): appendix masculina reaching 0.54 times length of endopod; appendix interna reaching 0.87 of appendix masculina.

**Pre-anal carina** (Fig. 8g). Without spine.

**Uropodal diaeresis** (Fig. 8h). With 8–14 spinules.

**Eggs** (Fig. 8l). Size: 0.44–0.49 × 0.24–0.29 mm.

**Habitat**
This species prefers fresh and well-oxygenated waters. It is found from the middle to the higher course of rivers. They are more abundant in areas situated above waterfalls where predators are less numerous.

**Colour pattern** (Fig. 25G)
The colour of the body is hyaline with many red dots and oblique red bands.

**Distribution**
*Caridina mertoni* is known from Indonesia (Grand-Kei island and Waigeo (Roux 1928)) and the Solomon Islands (Kolombangara and Malaita).

**Remarks**
Our specimens from Solomon Islands look like the type specimens: rostrum with presence of 2–3 postorbital teeth (vs 2–5 in type specimens), 17–24 dorsal teeth (vs 20–23) and 4–9 ventral teeth (vs 4–7); P1 carpus 1.9–2.6 times as long as wide (vs. 2.0–2.5); P2 carpus 4.6–5.6 times as long as wide (vs 4.4–5.1), P3 dactylus with 5–6 spiniform setae (vs 5–6), propodus 4.8–6.7 times as long as dactylus (vs 4.5–5.9); P5 dactylus with about 27–39 spiniform setae (vs 36–44), propodus 18.2–25.1 times as long as width (vs 15.6–21.4) and dactylus 2.6–4.5 times as long as wide (vs 2.8–4.1); number of spinules on uropodal diaeresis 10–13 (vs 8–14); small eggs 0.44–0.49 × 0.28–0.29 (vs 0.44–0.46 × 0.24–0.26 mm).

Some values given by Bouvier (1925) are also similar: P3 dactylus with 5–6 spiniform setae (vs 5–6
according to Bouvier (1925), P5 dactylus with about 30–35 spiniform setae (vs 27–39), telson with 5 intermediate setae as long as or slightly longer than the lateral pair (vs 2–4 pairs of intermediate setae, lateral pair no longer than intermediate). The type specimens exhibit a shorter rostrum than those collected from Solomon Islands: 0.6–0.8 of cl (vs 0.9–1.1). However, the rostrum length widely used in Caridina taxonomy might not be as reliable as previously thought. It is highly plastic and varies with environmental parameters (de Mazancourt et al. 2017b).

Caridina pisuku sp. nov.
urn:lsid:zoobank.org:act:C2046392-256D-4485-8E85-8E94B9A37FF8
Figs 2M, 9


Etymology
Named after the river Pisuku, in Choiseul Island, the type locality where this new species occurs. The name is used as a noun in apposition.

Material examined

Holotype
SOLOMON ISLANDS – Choiseul Island • ♂, cl 3.7 mm; Choiseul Island, Pisuku River, sector 1; 06°58.951´ S, 156°46.582´ E; 15 m a.s.l.; 10 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20862.

Paratypes
SOLOMON ISLANDS • 1 ♂, cl 3.7 mm; same collection data as for holotype; MNHN-IU-2014-20863 • 1 ♀ ovig., cl 5.6 mm; same collection data as for holotype; DNA voucher: CA1282; MNHN-IU-2014-20864 • 1 ♀ ovig., cl 5.8 mm; same collection data as for holotype; DNA voucher: CA1347; MNHN-IU-2014-20865 • 1 ♀, cl 4.8 mm; same collection data as for holotype; MNHN-IU-2014-20866 • 1 ♀, cl 5.0 mm; same collection data as for holotype; MNHN-IU-2014-20867 • 1 ♀, cl 5.1 mm; same collection data as for holotype; MNHN-IU-2014-20868 • 1 ♀, cl 5.0 mm; Pisuku River, sector 2; 06°58.900´ S, 156°46.685´ E; 66 m a.s.l.; 10 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20869 • 1 ♀, cl 5.1 mm; same collection data as for preceding; MNHN-IU-2014-20870 • 1 ♂, juvenile, cl 2.2 mm; Pisuku River, downstream; 06°58.848´ S, 156°46.582´ E; 12 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20871.

Other material
AUSTRALIA – Queensland • 1 ♂, cl 4.4 mm; Christian Creek; 17°20.100´ S, 145°55.400´ E; 34 m a.s.l.; 6 Jun. 2016; B. Mos leg.; MNHN-IU-2014-20873 • 1 ♀ ovig., cl 6.7 mm; same collection data as for preceding; DNA voucher: CA1685; MNHN-IU-2014-20874 • 1 ♂, cl 4.6 mm; Gordons Creek; 16°57.967´ S, 145° 43.833´ E; 39 m a.s.l.; 3 Jun. 2016; B. Mos leg.; DNA voucher: CA1699; MNHN-IU-2014-20875.

INDONESIA • tissue only; West Papua, Kayumera; 03°53.286´ S, 134°28.658´ E; 22 Oct. 2010; P. Keith leg.; MNHN-IU-2014-20872.

Comparative material
Caridina variabilirostris (de Mazancourt, Marquet & Keith, 2018)
See de Mazancourt et al. (2018a).
Caridina brachydactyla (De Man, 1908)
INDONESIA • lectotype (designated by Richard & Clark 2010), ♂ ovig., cl 4.8 mm; Flores Island, river near Reo; Nov. 1888; M. Weber leg.; RMNH Crust D. 977 • 2 paralectotypes, ♀♀ ovig., cl 5.3–5.4 mm; Flores Island, river in Mbawa; Jan. 1889; M. Weber leg.; RMNH 2552 • 1 ♀, cl 5.8 mm; Bali Island; NMB 1054a • 2 ♂♂, cl 2.7–3.7 mm, 1 ♂ ovig., cl 4.3 mm, 1 ♀, cl 4.8 mm; Sulawesi, Palopo, Macau (locality code: 63.10); W. Klotz leg.; ZMB • 1 ♀ ovig., cl 4.0 mm; Sulawesi, Palopo, Tojo (locality code: 64.10); W. Klotz leg.; ZMB.

Caridina elongapoda (Liang & Yan, 1977)
CHINA • 3 ♂♂, cl 2.8–3.5 mm, 1 ♀, cl 4.2 mm; Hong Kong, Pak Tam Chung and Kai Sai Chau (locality codes 14.11 and 22.09); W. Klotz leg.; ZMB.

MALAYSIA • 1 ♂, cl 4.2 mm, 1 ♀, cl 4.3 mm, 1 ♀ ovig., cl 4.3 mm; Pulau Tioman, Sungai Asah; 24 Jun. 1997; Ng et al. leg.; ZRC 1998.0865.

Caridina peninsularis (Kemp, 1918)
MALAYSIA • lectotype (designated by Cai et al. 2007), ♂, cl 3.2 mm; Penang Island, Botanical Garden; Feb. 1916; N. Anandale leg.; MNHN-IU-2015-1749 • 1 paralectotype, ♀ ovig., cl 5.4 mm; same collection data as for lectotype; MNHN-IU-2015-1750 • 1 paralectotype, ♀, cl 3.4 mm, 1 paralectotype, ♀ ovig., cl 5.2 mm, 1 paralectotype, ♂, cl 3.9 mm; same collection data as for lectotype; NHM 1919.11.1.12-21 (1761124).

SINGAPORE • 1 ♀ ovig., cl 5.1 mm, 1 ♂, cl 4.2 mm; Tanglin [incorrectly spelt Tangtum in NHM register and on label, see Richard & Clark 2014]; 1958; Bedford and Lanchester leg.; NHM 1958.8.7.14–17 (1749569).

Caridina variabilis (de Mazancourt, Rogers & Keith, 2018)
See de Mazancourt et al. (2018b).

Caridina sundanella (Holthuis, 1978)
INDONESIA • 1 syntype, ♂, cl 3.6 mm, 1 syntype, ♀, cl 5.2 mm; Sumba Island, West Sumba, 4 km N of Wałamungura, Waikamburu Brook, Station 450; 250 m a.s.l.; 19 Aug. 1949; E. Sutter and A. Bühler leg.; NMB 989a.

Description
Cephalothorax. Carapace (Fig. 9m) smooth, glabrous, with sharp antennal spine placed at lower orbital angle. Pterygostomial margin rounded. Antennular peduncle 0.64 (♀) – 0.80 (♂) times as long as carapace. Long rostrum (Fig. 9m–o), 0.8–1.1 of cl, 17–28 dorsal teeth closely set, leaving 0.20–0.80 of length unarmed distally, 1–3 post-orbital teeth present. 6–18 teeth present of ventral margin extending from proximal end either to tip or with short distal part unarmed. Number of dorsal teeth on rostrum behind first ventral tooth 11–21.

Pereiopods. Slender P1 (Fig. 9a): chela about 1.7–2.2 times as long as wide, dactylus 2.6–3.9 times as long as wide, 1.1–1.7 length of palm; carpus 1.4–2.6 times as long as wide with shallow excavation on anterior margin. P2 (Fig. 9b) more slender and longer than first pereiopod: chela 2.2–2.6 times as long as wide, dactylus 3.9–5.2 times as long as wide, 1.2–2.1 times length of palm; carpus 4.8–5.7 times as long as wide. P3 (Fig. 9c): dactylus (Fig. 9e) 3.0–3.4 times as long as wide (terminal spiniform setae included), with 5–7 spiniform setae on flexor margin in addition to terminal one; propodus 10.6–17.9 times as long as wide, 4.1–6.2 times as long as dactylus. P5 (Fig. 9d): dactylus (Fig. 9f) 3.3–5.1 times as long as wide, with 22–46 spiniform setae on flexor margin; propodus 18.3–26.2 times as long as wide, 4.9–7.6 times as long as dactylus.
Fig. 9. *Caridina pisuku* sp. nov. a. First pereiopod. b. Second pereiopod. c. Third pereiopod. d. Fifth pereiopod. e. Dactylus of third pereiopod. f. Dactylus of fifth pereiopod. g. Pre-anal carina. h. Uropodal diaeresis. i. Telson. j. First male pleopod. k. Second male pleopod. l. Eggs. m. Cephalothorax. n–o. Rostrum variations. MNHN-IU-2014-20865 (a–f, l), MNHN-IU-2014-20873 (g–h, j–k), MNHN-IU-2014-20864 (m), MNHN-IU-2014-20868 (i, n) and MNHN-IU-2014-20862 (o).
**ABDOMEN.** Typical dorsal hump over third abdominal somite. Sixth abdominal somite 0.64 as long as carapace, 1.6 times as long as fifth somite, slightly shorter than telson.

**Telson** (Fig. 9i). 3.5 times as long as wide, four pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with median process, distal setae short, lateral pair slightly longer than intermediate setae (4–5).

**Male pleopods.** Pl1 (Fig. 9j): endopod subtriangular, 2.1 times as long as wide, 0.19 times as long as exopod, with appendix interna placed at distal end. Pl2 (Fig. 9k): appendix masculina reaching 0.60 times length of endopod; appendix interna reaching 0.66 of appendix masculina.

**Pre-anal carina** (Fig. 9g). With spine.

**Uropodal diaeresis** (Fig. 9h). With 10–16 spinules.

**Eggs** (Fig. 9l). Size: 0.36–0.47 × 0.28–0.29mm.

**Habitat**
This species prefers fresh and well-oxygenated waters. It is found only in the lower course of rivers.

**Colour pattern**
Unknown.

**Distribution**
This species was found on Choiseul Island (Solomon Islands), Indonesia (West Papua) and Australia (Queensland).

**Remarks**
*Caridina pisuku* sp. nov. looks like *C. variabilis* and *C. variabilirostris* from Micronesia by the number of teeth and their placement on the rostrum, the proportions between the joints of pereiopods and egg size. However, it can be distinguished by the presence of a spine on the pre-anal carina (vs the pre-anal carina always unarmed in *C. variabilis* and *C. variabilirostris*).

*Caridina pisuku* sp. nov. is most similar to *C. brachydactyla* De Man, 1908, *C. elongapoda* Liang & Yan, 1977, *C. mertoni* Roux, 1911, *C. peninsularis* Kemp, 1918 and *C. sundanella* Holthuis, 1978. In contrast to *C. elongapoda*, *C. mertoni* and *C. sundanella*, our new species has a spine on the pre-anal carina, like in *C. brachydactyla* and *C. peninsularis*, but its P2 chela is stouter 2.2–2.6 times as long as wide (vs 2.7–3.2 and 2.8–3.0, respectively).

*Caridina pisuku* sp. nov. looks like *C. choiseul* sp. nov. by the number of teeth and their placement on the rostrum, the proportions between the joints of pereiopods, and the size of the eggs. However, the pre-anal carina always has a spine (vs the pre-anal with a spine or not in *C. choiseul* sp. nov.) and the pterygostomial margin is rounded (vs subrectangular).

**Caridina typus** species group

**Diagnosis**
Robust morphology with a straight rostrum, armed or not on the dorsal margin, without apical teeth, antennal spine fused with inferior orbital angle, antennular peduncle equal or more than half of carapace in length, pterygostomian margin blunt to rather narrowly rounded, stout walking legs, carpus of first
pereiopod excavated, short sixth abdominal somite (less than half of carapace length), high pre-anal carina with no spine or a small one, a great number of spinules on the uropodal diaeresis (>15), plumose terminal setae on the telson subequal to lateral ones or slightly longer, and a long subrectangular endopod of the first male pleopod with a short appendix on the subdistal outer margin.

*Caridina typus* H. Milne Edwards, 1837

Figs 2D, 10


*Caridina exilirostris* Stimpson, 1860: 98 (type locality: Okinawa (Loo Choo) Island, Ryukyu Islands, Japan).


**Material examined**

**SOLOMON ISLANDS** – **Choiseul Island** • 1 ♀, cl 3.8 mm; Creek 1; 06°59.085´ S, 156°47.454´ E; 132 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1355; MNHN-IU-2018-2824 • 1 ♀, cl 4.0 mm; same collection data as for preceding; DNA voucher: CA1356; MNHN-IU-2018-2825. – **Kolombangara Island** • 1 ♂, cl 3.9 mm; Sulumuni River; 08°02.253´ S, 157°09.257´ E; 148 m a.s.l.; 12 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2826.

**FEDERATED STATES OF MICRONESIA** • 1 ♀, cl 3.6 mm; Pohnpei Island, Nanpil River, estuary; 06°56.683´ N, 158°12.550´ E; 5 m a.s.l.; 13 Mar. 2012; M. Castelin, P. Gerbeaux, P. Keith, G. Marquet and L. Taillebois leg.; MNHN-IU-2018-2837 • 1 ♀ ovig., cl 3.9 mm; same collection data as for preceding; MNHN-IU-2018-2838.

**JAPAN** • 1 ♀, cl 6.3 mm; Shikoku, Mugi, irrigation canal; 33°40.796´ N, 134°26.024´ E; 317 m a.s.l.; 16 Jun. 2017; M. Saito leg.; MNHN-IU-2018-2827 • 1 ♀, cl 6.7 mm; same collection data as for preceding; DNA voucher: CA1917; MNHN-IU-2018-2828.

**MADAGASCAR** • 1 ♀, cl 4.5 mm; Antsatoko River; 13°36.660´ S, 50°00.341´ E; 29 m a.s.l.; 6 Jul. 2008; C. Ellien, E. Feunteun, N. Mary and T. Robinet leg.; DNA voucher: CA1038; MNHN-IU-2018-2829 • 1 ♀ ovig., cl 6.9 mm; same collection data as for preceding; MNHN-IU-2018-2830 • 1 ♀ ovig., cl 7.1 mm; same collection data as for preceding; MNHN-IU-2018-2831.

**MALAYSIA** • 3 ♀♂, cl 8.0–8.5 mm; Pulau Langkavi, Sungai datai; 15 Mar. 2008; Schubart, Klaus and Koiler leg.; ZMB 28490.

**NEW CALEDONIA** • 1 ♀ ovig., cl 6.8 mm; Pirogues River; 22°11.208´ S, 166°43.292´ E; 102 m a.s.l.; 10 Nov. 2016; G. Marquet, P. Tiberghien and V. de Mazancourt leg.; MNHN-IU-2018-2832 • 1 ♀, cl 4.9 mm; Natoré River; 22°03.597´ S, 166°53.983´ E; 12 Nov. 2016; 5 m a.s.l.; G. Marquet, P. Tiberghien and V. de Mazancourt leg.; MNHN-IU-2018-2833.

**PALAU** • 1 ♀, cl 4.7 mm; Babeldaob Island, Ngerchokl River; 07°36.527´ N, 134°36.958´ E; 36 m a.s.l.; 27 Feb. 2011; M. Castelin, P. Gerbeaux, P. Keith, G. Marquet and L. Taillebois leg.; MNHN-
IU-2018-2839 • 1 ♀ ovig., cl 4.4 mm; same collection data as for preceding; MNHN-IU-2018-2840 • 1 ♀ ovig., cl 4.6 mm; same collection data as for preceding; MNHN-IU-2018-2841.

PAPUA NEW GUINEA – New Britain • 1 ♀ ovig., cl 8.7 mm; Walindi River; 05°21.187’ S, 150°02.699’ E; 30 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2018-2834 • 1 ♀ ovig., cl 5.8 mm; Ranghi swamp; 05°34.549’ S, 149°28.943’ E; 24 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2018-2835 • 1 ♀ ovig., cl 6.4 mm; same collection data as for preceding; DNA voucher: CA2278; MNHN-IU-2018-2836.

SEYCHELLES • 1 ♀, cl 9.2 mm; Praslin Island, Nouvelle Découverte River; 04°19.200´ S, 55°42.333´ E; 16 m a.s.l.; 8 Oct. 2003; P. Bosc, H. Grondin, P. Keith and P. Valade leg.; MNHN-IU-2014-577.


Description

Cephalothorax.

Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin subrectangular. Rostrum (Fig. 10m): short, 0.3–0.6 of cl, reaching from end of basal segment to end of third segment of antennular peduncle, unarmed dorsally, ventral margin with 0–4 teeth. Eyes well developed. Prominent antennular keel. Antennular peduncle slender, 0.42 (♀) – 0.54 (♂) times as long as carapace. Basal segment 0.50–0.54 times as long as length of the antennular peduncle, second segment 1.42–1.50 times as long.

Pereiopods.

Epipods on first four pereiopods. P1 (Fig. 10a): chela about 1.9–2.7 times as long as wide, movable finger 1.9–3.9 times as long as wide, 0.6–1.3 times length of palm; carpus 1.0–2.2 times as long as wide. P2 (Fig. 10b) more slender and longer than first pereiopod, with chela 2.4–3.3 times as long as wide: movable finger 3.8–5.4 times as long as wide, 1.3–1.8 times length of palm; carpus slender, 5.0–6.5 times as long as wide. P3 (Fig. 10c): stout, dactylus (Fig. 10e) 2.5–3.4 times as long as wide (terminal spiniform seta included), with 5–7 spiniform setae on flexor margin in addition to terminal one; propodus 7.9–10.0 times as long as wide, 3.6–4.6 times as long as dactylus. P5 (Fig. 10d): dactylus (Fig. 10f) 3.2–5.1 as long as wide, with 33–81 spiniform setae on flexor margin; propodus 10.4–16.9 times as long as wide, 3.2–5.7 times as long as dactylus.

Abdomen.

Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.43–0.48 times as long as carapace, 1.4 times as long as fifth somite, shorter than telson.

Telson (Fig. 10i). 2.8 times as long as wide, with four to six pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with median process, rounded with 5–9 plumose intermediate setae subequa to lateral ones or slightly longer.

Male pleopods. P11 (Fig. 10j): endopod subrectangular, 3.6 times as long as wide, 0.44 times as long as exopod, with appendix interna, on subdistal outer margin, which reaches beyond distal end of endopod on a short length. P12 (Fig. 10k): appendix masculina elongated, reaching 0.59–0.76 times length of endopod; appendix interna reaching about 0.46–0.65 times appendix masculina length.
de MAZANCOURT V. et al., List of Caridina freshwater shrimp species from the Solomon Islands

Pre-anal carina (Fig. 10g). High, unarmed.

Uropodal diaeresis (Fig. 10h). With 15–22 spinules.

Eggs (Fig. 10i). Size: 0.38–0.54 × 0.23–0.32 mm.

Habitat
This species is found from the lower to higher course of rivers (5–317 m). It can be found in areas where the current speed is low, rich in vegetation debris, as well as in zones where the current is strong.

Colour pattern
The colour of the body can vary from pink-orange to blackish brown, sometimes with a brown to white stripe on the back.

Distribution
Caridina typus, the type species of the genus, has a very wide distribution in the Indo-West Pacific area, ranging from South Africa, Madagascar and the Seychelles to Japan, Malaysia, Philippines, Australia, Micronesia (Pohnpei), Papua New Guinea, Solomon Islands, New Caledonia, Vanuatu and Fiji. In contrast to what Holthuis (1965) and Chace (1997) stated, C. typus does not occur in Polynesia, but a species allied to C. jeani Cai, 2010 (see below).

Remarks
According to Chace (1997) and Cai et al. (2006) the type locality of C. typus is unknown. Bouvier (1925) ensures that type specimens have been caught on Mauritius Island but were lost following a move in 1918 caused by bombardments of Paris.

Our specimens fit well with the descriptions of this species occurring in Japan by Cai et al. (2006) by its short rostrum reaching near the end to the third segment of the antennular peduncle (vs to end of second segment of antennular peduncle according to Cai et al. (2006)), unarmed dorsally and armed ventrally, with 0–4 teeth (vs 1–4). P1 carpus 1.0–2.2 (vs. 1.6); P2 carpus 5.0–6.5 (vs 5.0–6.2). P3 dactylus with 5–7 spiniform setae (vs 5–7), propodus 3.6–4.6 as long as dactylus (vs 3.7–4.4); P5 dactylus with about 33–81 spiniform setae (vs 60–77), propodus 10.4–16.9 times long as width (vs 11–14) and propodus 3.2–5.7 times as long as dactylus (vs 3.3–3.7); P11 endopod elongate, with distinct appendix interna near distal end of endopod; pre-anal carina lacking spine; telson terminating in posterior median projection, lateral pair subequal (vs subequal). Uropodal diaeresis 15–22 (vs 19–24). Egg sizes 0.38–0.54 × 0.23–0.32 (vs 0.45–0.48 × 0.23–0.26).

Caridina turipi sp. nov.
urn:lsid:zoobank.org:act:9DB3C416-1B20-4CF4-A3D2-CDC36AA8309C
Figs 2C, 11


Etymology
Named after the river Turipi, in Choiseul Island, the type locality where this new species occurs. The name is used as a noun in apposition.

Material examined
Holotype
SOLOMON ISLANDS • ♀, cl 5.9 mm; Choiseul Island, Turipi River; 07°00.661´ S, 156°49.075´ E; 51 m a.s.l.; 15 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1359; MNHN-IU-2014-20876.
Paratypes

SOLOMON ISLANDS – Choiseul Island • 1 ♀ ovig., cl 4.9 mm; same collection data as for holotype; MNHN-IU-2014-20877 • 1 ♀ ovig., cl 5.2 mm; same collection data as for holotype; MNHN-IU-2014-20878 • 1 ♀ ovig., cl 5.4 mm; same collection data as for holotype; MNHN-IU-2014-20879 • 1 ♀ ovig., cl 5.6 mm; same collection data as for holotype; MNHN-IU-2014-20880 • 1 ♀ ovig., cl 5.7 mm; same collection data as for holotype; MNHN-IU-2014-20881 • 1 ♀ ovig., cl 4.6 mm; Vorama River; MNHN-IU-2014-20882 • 1 ♀ ovig., cl 5.3 mm; 06°58.687´ S, 156°46.745´ E; 15 m a.s.l.; 11 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1349; MNHN-IU-2014-20883 • 1 ♀ ovig., cl 6.3 mm; Creek 2; 06°59.027´ S, 156°47.913´ E; 132 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2014-20884.

Comparative material

Caridina sumatrensis (De Man, 1892)

INDONESIA • 1 syntype, ♀, cl 4.9 mm; Sumatra, Batak land, near Deli; Dec. 1890; C. Moesch leg.; MNHN-IU-2015-1758 • 1 ♀ ovig., cl 5.1 mm; Java; NMB 6.II.b.

THAILAND • 1 ♀ ovig., cl 4.8 mm; "Siam"; 1884; Harmand leg.; MNHN-IU-2015-1759.

VIETNAM • 1 ♀, cl 4.0 mm, 1 ♀ ovig., cl 4.0 mm; Conchinchina, forest ponds; Jul. 1884; Harmand leg.; MNHN-IU-2015-1760.

Description

Cephalothorax. Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin rounded. Rostrum (Fig. 11k): straight, short, 0.4–0.5 of cl, reaching to end of second segment of antennular peduncle, armed with 11–15 teeth on dorsal margin, 2–4 of them situated on carapace behind orbital margin, ventral margin with 2–4 teeth. Eyes well developed, anterior end reaching to 0.76 length of basal segment of antennular peduncle. Antennular peduncle 0.37–0.50 times as long as carapace. Anterolateral angle reaching 0.36 length of second segment, second segment longer than third segment. Stylocerite reaching to 0.86 length of basal segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 11a): chela about 1.9–2.1 times as long as wide, movable finger 2.6–3.0 times as long as wide, 0.9–1.0 times length of palm; carpus 1.5–1.8 times as long as wide. P2 (Fig. 11b) more slender and longer than first pereiopod, with chela 2.6–3.1 times as long as wide: movable finger 4.6–4.9 times as long as wide, 1.5–2.1 times length of palm; carpus slender, 5.5–6.6 times as long as wide. P3 (Fig. 11c): stout, dactylus (Fig. 11e) 3.0–3.3 times as long as wide (terminal spiniform seta included) with 5–6 spiniform setae on flexor margin in addition to terminal one; propodus 8.8–10.5 times as long as wide, 4.1–4.7 times as long as dactylus. P5 (Fig. 11d): dactylus (Fig. 11f) 3.3–4.5 as long as wide, with 37–46 spiniform setae on flexor margin; propodus 13.5–15.3 times as long as wide, 4.1–5.2 times as long as dactylus.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.43 times as long as carapace, 1.3 times as long as fifth somite, slightly shorter than telson.

Telson (Fig. 11i). 2.3 times as long as wide, with four or five pairs of dorsal spinules and pair of dorsolateral spinules; posterior margin without median process, rounded, with 4–7 long intermediate setae longer than lateral ones.

Male pleopods. No males.

Pre-anal carina (Fig. 11g). High, unarmed.
Fig. 11. *Caridina turipi* sp. nov. a. First pereiopod. b. Second pereiopod. c. Third pereiopod. d. Fifth pereiopod. e. Dactylus of third pereiopod. f. Dactylus of fifth pereiopod. g. Pre-anal carina. h. Uropodal diaeresis. i. Telson. j. Eggs. k. Cephalothorax. MNHN-IU-2014-20883 (a–f, h, j–k), MNHN-IU-2014-20882 (g) and MNHN-IU-2014-20878 (i).
Uropodal diaeresis (Fig. 11h). With 17–21 spinules.

EGGS (Fig. 11j). Size: 0.35–0.44 × 0.21–0.25 mm.

Habitat
This species is largely rheophile and prefers fresh and well-oxygenated waters from the lower to the higher course of rivers.

Colour pattern
Unknown.

Distribution
As far as we know, this species occurs only in Choiseul Island.

Remarks
This new species looks like *C. sumatrensis* De Man, 1892 by its number of dorsal teeth on the rostrum situated on carapace behind orbital margin 2–4 (vs 2–6 in *C. sumatrensis*) and the proportions between the joints of pereiopods like P1 carpus 1.5–1.8 as long as wide (vs 1.6–2.0), P2 carpus 5.5–6.6 as long as wide (vs 5.2–6.4), P3 dactylus 3.0–3.3 as long as wide (vs 2.7–3.7), P5 dactylus 3.3–4.5 times as long as wide (vs 3.2–4.3). However, it differs by its rostrum that has fewer teeth the on dorsal margin, 11–15 (vs 15–22), as well as on its on the ventral margin, 2–4 (vs 2–7), its P1 chela is shorter, 1.9–2.1 times as long as wide (vs 2.0–2.4) and its P5 dactylus has more spiniform setae on the flexor margin, 37–46 (vs 36).

In contrast to previous definitions (Karge & Klotz, 2007), we consider that the *C. typus* group is not characterized by the absence of dorsal teeth on the rostrum. Bouvier (1925) includes many species with an armed rostrum in his “groupe du *C. typus*”; however, we consider some of them to be part of the *C. weberi* species group (see below).

According to our study, the length of setae on the telson (namely plumose terminal setae on the telson subequal to lateral ones or slightly longer) is a better criteria to characterize this group that agree with our molecular results (see de Mazancourt et al. 2019a where it appears as a monophyletic group). We thus consider some species like *C. turip* or *C. sumatrensis* that have numerous dorsal teeth to be part of the *C. typus* group.

*Caridina weberi* species group

Diagnosis
Robust morphology with a straight or bent rostrum, armed or not on the dorsal margin, without apical teeth, the antennal spine fused with the inferior orbital angle, antennular peduncle equal to or more than half of carapace in length, pterygostomian margin rounded, stout walking leg segments, the carpus of the first pereiopod often deeply excavated, a short sixth abdominal somite (around half of carapace length), a high pre-anal carina with no spine or a small one, a great number of spinules on the uropodal diaeresis (>15), long and plumose terminal setae on the telson clearly longer than lateral ones, and a long subrectangular endopod of the first male pleopod with a short appendix on the subdistal outer margin.

*Caridina buehleri* Roux, 1934
Figs 2W, 12, 26A


Material examined

Holotype
PAPUA NEW GUINEA • ♀, cl 7 mm; New Ireland, Bimoun; F. Speiser, H. Hediger and A. Bühler leg.; NMB 822.

Other material

SOLOMON ISLANDS – Kolombangara Island • 1 ♀ ovig., cl 3.8 mm; Liva River; 08°03.863´ S, 157°10.633´ E; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2015-18 • 1 ♀ ovig., cl 4.1 mm; Pipiro River; 07°53.083´ S, 157°08.195´ E; 13 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1520; MNHN-IU-2015-20 • 1 ♀ ovig., cl 4.3 mm; Vanga 2 River; 07°54.825´ S, 156°57.762´ E; 18 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2015-22 • 1 ♀ ovig., cl 2.8 mm; same collection data as for preceding; MNHN-IU-2016-5725 • 1 ♀ ovig., cl 4.5 mm; Vanga 1 River; 07°55.088´ S, 156°57.624´ E; 18 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2016-5726 • 1 ♀ ovig., cl 4.1 mm; Liva River; 08°03.863´ S, 157°10.633´ E; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2016-5727 • 1 ♀ ovig., cl 3.2 mm; Vala Kadju River; 07°49.860´ S, 156°42.644´ E; 17 m a.s.l.; 28 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2845 • 1 ♀ ovig., cl 3.9 mm; Vagé River; 08°5.112´ S, 156°59.867´ E; 10 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2846. – Vella Lavella Island • 1 ♀ ovig., cl 3.2 mm; Vala Kadju River; 07°49.860´ S, 156°42.644´ E; 17 m a.s.l.; 28 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2847 • 1 ♀ ovig., cl 4.0 mm; same collection data as for preceding; MNHN-IU-2018-2848 • 1 ♀ ovig., cl 4.2 mm; Walindi River; 05°21.187´ S, 50°02.693´ E; 30 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; DNA voucher: CA2252; MNHN-IU-2018-2849.


Description

Cephalothorax. Antennal spine below suborbital angle. Pterygostomian margin sub rectangular. Rostrum (Fig. 12f): 0.4–0.7 of cl, reaching to distal end of antennular peduncle, armed with 13–16 teeth on dorsal margin, 2–5 of them situated on carapace behind orbital margin, ventral margin with 2–5 teeth. Eyes well developed, anterior end reaching to 0.66 length of basal segment of antennular peduncle. Antennular peduncle 0.50–0.55 (♀) times as long as carapace. Anterolateral angle reaching to 0.30 length of second segment, basal segment of antennular peduncle longer than sum of second and third segment lengths, second segment distinctly longer than third segment. Stylocerite sharp, long, reaching to about half of second segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 12a): chela about 2.2–2.3 times as long as wide, movable finger 2.1–2.8 times as long as wide, 0.5–0.8 times length of palm; carpus 1.5–1.7 times as long as wide. P2 (Fig. 12b) more slender and longer than first pereiopod, with chela 2.6–3.1 times as long as wide: movable finger 4.0–4.5 times as long as wide, 1.3–1.7 times length of palm; carpus slender, 5.5–6.2 times as long as wide. P3 (Fig. 12c): dactylus (Fig. 12e) 3.0–3.5 times as long as wide (terminal spiniform seta included) with 5–6 spiniform setae on flexor margin in addition to terminal one; propodus 9.0–10.2 times as long as wide, 3.6–4.4 times as long as dactylus. P5 (Fig. 12d): dactylus (Fig. 12f) 3.7–4.7 times as long as wide, with 27–33 spiniform setae on flexor margin; propodus 11.5–14.4 times as long as wide, 3.8–4.1 times as long as dactylus.
ABDOMEN. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.47 times as long as carapace, 1.6 times as long as fifth somite, shorter than telson.

TELSON (Fig. 12i). 2.4 times as long as wide, with four pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with median process, broadly convex with 7–9 plumose intermediate setae much longer than lateral ones.

MALE PLEOPODS. No males.

PRE-ANAL CARINA (Fig. 12j). High, unarmed.

UROPODAL DIAERESIS (Fig. 12h). With 17–21 spinules.

EGGS (Fig. 12k). Size: 0.20–0.27 × 0.33–0.43.

Habitat
This species lives in a typical brackish water environment (brackishwater pools or lower part of rivers, near the estuary). The species is rarely found over the superior limit of the tide-influenced zone, and was not found in the true freshwater zone.

Colour pattern (Fig. 26A)
Body usually dark red to black, with a lighter dorsal band from the rostrum to the telson and sometimes white stripes on each abdominal somite.

Distribution
This species occurs in Solomon Islands (Kolombangara, Vella Lavella), in the Vanuatu archipelago (Malekula and Santo islands) and in Papua New Guinea (New Britain).

Remarks
de Mazancourt et al. (2017a) redescribed *C. buehleri* in detail, but their description actually represented two species: *C. buehleri* described by Roux *sensu stricto* and another species, *C. gueryi*, described by Marquet et al. 2009 and redescribed below. Indeed, our specimens fit well with the holotype from New Ireland (PNG) by its P5 dactylus 3.7–4.7 as long as wide (vs 3.6) with 27–33 spiniform setae on flexor margin (vs 30), propodus 11.5–14.4 times as long as wide (vs 9.4), 3.8–4.1 times as long as dactylus (vs 3.8).

*Caridina gueryi* Marquet, Keith & Kalfatak, 2009
Figs 2X, 13, 26B


Material examined

Holotype
VANUATU • ♀ ovig., cl 6.8 mm; Santo Island, unnamed river; 15°17´45.30″ S; 167°9´35.98″ E; 22 Jul. 2003; P. Keith and G. Marquet leg.; MNHN-IU-2015-1768.

Paratypes
VANUATU • 1 ♂, cl 3.6 mm; same collection data as for holotype; DNA voucher: CA2428; MNHN-IU-2015-1769 • 1 ♀ ovig., cl 6.0 mm; same collection data as for holotype; MNHN-IU-2015-1771 • 1 ♀ ovig., cl 5.5 mm; same collection data as for holotype; MNHN-IU-2015-1775.
Other material

SOLOMON ISLANDS – Kolombangara Island • 1 ♀ ovig., cl 4.3 mm; Jack Harbour River; 08°03.085’ S, 157°10.945’ E; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1519; MNHN-IU-2015-19 • 1 ♀ ovig., cl 3.9 mm; Vagé River; 08°5.112´ S, 156°59.867´ E; 10 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2015-17 • 1 ♀ ovig., cl 4.5 mm; Vanga 1 River; 07°55.088´ S, 156°57.624´ E; 18 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2015-21.

INDONESIA • 1 ♀ ovig., cl 6.4 mm; Sulawesi, Luwuk Peninsula, W of Ampana, freshwater spring in Mallontong, brackish water pool (field code 70–05); 00°53.125´ S, 121°31.371´ E; 27 May 2005; M. Glaubrecht, T. von Rintelen and K. Zitzler leg.; ZMB 29000.


Description

Cephalothorax. Antennal spine below suborbital angle. Pterygostomian margin sub rectangular. Rostrum (Fig. 13k): 0.5–1.4 of cl, reaching to or overreaching distal end of scaphocerite, armed with 9–17 teeth on dorsal margin, 3–5 of them situated on carapace behind orbital margin, ventral margin with 2–7 teeth. Eyes well developed, anterior end reaching to 0.63 length of basal segment of antennular peduncle. Antennular peduncle 0.56–0.57 (♀) times as long as carapace. Anterolateral angle reaching 0.33 length of second segment, basal segment of antennular peduncle longer than sum of second and third segment lengths, second segment distinctly longer than third segment. Stylocerite sharp, long, reaching to about half of second segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 13a–b): chela about 1.9–2.4 times as long as wide, movable finger 2.1–2.7 times as long as wide, 0.4–0.8 times length of palm; carpus 1.2–1.7 times as long as wide. P2 (Fig. 13c) more slender and longer than first pereiopod, with chela 2.2–3.0 times as long as wide: movable finger 3.0–4.8 times as long as wide, 1.0–1.7 times length of palm; carpus slender, 4.2–6.7 times as long as wide. P3 (Fig. 13d): dactylus (Fig. 13f) 2.9–4.0 times as long as wide (terminal spiniform seta included), with 6–7 spiniform setae on flexor margin in addition to terminal one; propodus 8.1–14.0 times as long as wide, 3.5–5.3 times as long as dactylus. P5 (Fig. 13e): dactylus (Fig. 13g) 3.3–4.4 times as long as wide as with 26–31 spiniform setae on flexor margin; propodus 12.3–20.5 times as long as wide, 4.4–6.2 times as long as dactylus.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.48 as long as carapace, 1.5 times as long as fifth somite, shorter than telson.

Telson (Fig. 13j). 2.5 times as long as wide, with 5–6 pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with a median process, broadly convex with 7–12 plumose intermediate setae much longer than lateral.

Male pleopods. Pl1: endopod subtriangular, 2.9 times as long as wide, reaching 0.37 times length of endopod, with an appendix on subdistal outer margin which reaches beyond distal end of endopod with most of its length. Pl2: appendix masculina reaching 0.57 times length of endopod; appendix interna reaching 0.60 of appendix masculina.

Pre-anal carina (Fig. 13h). High, unarmed.

Uropodal diaeresis (Fig. 13i). With 17–19 spinules.

Eggs. Size: 0.21–0.33 × 0.33–0.49.
Habitat
This species lives in a typical brackish water environment (brackishwater pools or lower part of rivers, near the estuary). The species is rarely found over the superior limit of the tide-influenced zone, and was not found in the true freshwater zone.

Colour pattern (Fig. 26B)
Body usually dark red to black, with a lighter dorsal band from the rostrum to the telson and sometimes white stripes on each abdominal somite.

Distribution
This species occurs in the Solomon Islands (Kolombangara), in the Vanuatu archipelago (Malekula and Santo Islands) and in Indonesia (Sulawesi).

Remarks
Our specimens are distinguished from the holotype of *C. buelheri* from New Ireland by its long P5 propodus, 12.3–20.5 times as long as wide (vs short P5 propodus 9.4 in the holotype of *C. buelheri*) and 4.4–6.2 times as long as the dactylus (vs 3.8). In contrast, they fit well with the holotype of *C. gueryi* from Santo (vs 12.3–15.9 and 4.6–5.2 in the holotype of *C. gueryi*, respectively). However, if we include other specimens of *C. buelheri*, the characters overlap, which is the reason why we previously mistakenly placed them in synonymy (de Mazancourt *et al.* 2017a). These two species can thus be considered to be cryptic.

According to our molecular results, studied specimens from Sulawesi, the Solomon Islands and the Vanuatu archipelago belong to *C. gueryi*.

*Caridina papuana* Nobili, 1905
Figs 2N, 14, 26E

*Caridina weberi* var. *papuana* Nobili, 1905: 481, pl. XII, fig. 1.


Material examined

**Lectotype** (here designated)
PAPUA NEW GUINEA • ♂, 3.2 mm; “German New Guinea”, Stephansort, in a small stream in the forest; L. Biró leg.; HNHM 1124-1893.

**Paralectotypes**
PAPUA NEW GUINEA • 4 ♀♂, cl 2.5–3.1 mm, 2 ♀♀ ovig., cl 4.1–4.6 mm; same collection data as for holotype; HNHM 1124-1893.

**Other material**
SOLOMON ISLANDS – Choiseul Island • 1 ♂, cl 3.2 mm; Creek 1; 06°59.085´ S, 156°47.454´ E; 132 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2850 • 1 ♂, cl 3.3 mm; Creek 2; 06°59.085´ S, 156°47.913´ E; 93 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2851 • 1 ♂, cl 3.6 mm; same collection data as for preceding; MNHN-IU-2018-2852 • 1 ♀, cl 3.2 mm; same collection data as for preceding; MNHN-IU-2018-2853
• 1 ♀, cl 5.1 mm; same collection data as for preceding; MNHN-IU-2018-2854 • 1 ♀ ovig., cl 4.6 mm; same collection data as for preceding; MNHN-IU-2018-2855 • 1 ♀ ovig., cl 3.4 mm; Lopakare River; 07°01.613´ S, 156°46.567´ E; 20 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1361; MNHN-IU-2018-2856 • 1 ♀ ovig., cl 3.4 mm; same collection data as for preceding; MNHN-IU-2018-2857 • 1 ♀ ovig., cl 3.4 mm; same collection data as for preceding; MNHN-IU-2018-2858 • 1 ♀ ovig., cl 3.5 mm; same collection data as for preceding; MNHN-IU-2018-2859 • 1 ♀ ovig., cl 3.6 mm; same collection data as for preceding; MNHN-IU-2018-2860 • 1 ♀, 4.6 mm; same collection data as for preceding; MNHN-IU-2018-2861 • 1 ♀, 4.6 mm; same collection data as for preceding; DNA voucher: CA1286; MNHN-IU-2018-2862 • 1 ♀, cl 5.0 mm; Pisuku River, sector 1; 06°58.951´ S, 156°46.582´ E; 15 m a.s.l.; 10 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2863 • 1 ♀ ovig., cl 4.1 mm; Gu’ma River; 07°01.764´ S, 156°49.899´ E; 50 m a.s.l.; 17 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2864 • 1 ♀ ovig., cl 5.3 mm; same collection data as for preceding; MNHN-IU-2018-2865 • 1 ♀, cl 4.7 mm; same collection data as for preceding; MNHN-IU-2018-2866.

**Comparative material**

*Caridina weberi* De Man, 1892

INDONESIA • 3 syntypes, 2 ♂♂, cl 4.4–4.5 mm, 1 ♀ ovig., cl 6.1 mm; Flores Island, Kotting; Dec. 1888; M. Weber leg.; MNHN-IU-2015-1755.

**Description**

**Cephalothorax.** Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin rounded. Rostrum (Fig. 14m): curved down, short, 0.3–0.4 of cl, sometimes reaching middle of second segment of antennular peduncle, armed with 9–11 teeth on dorsal margin, 0–1 of them situated on carapace behind orbital margin, ventral margin with 2–4 teeth. Eyes well developed, anterior end reaching to 0.67 length of basal segment of antennular peduncle. Antennular peduncle 0.66 times as long as carapace. Anterolateral angle reaching 0.30 length of second segment, second segment of equal length with third segment. Stylocerite reaching to 0.8 length of basal segment of antennular peduncle.

**Pereiopods.** Epipods on first four pereiopods. P1 (Fig. 14a): chela about 1.9–2.1 times as long as wide, movable finger 2.6–3.2 times as long as wide, 0.7–0.9 times length of palm; short carpus 1.3–1.5 times as long as wide. P2 (Fig. 14b) More slender and longer than first pereiopod, with chela 2.2–2.5 times as long as wide: movable finger 4.3–5.0 times as long as wide, 1.6–2.0 times length of palm; carpus slender, 4.2–5.1 times as long as wide. P3 (Fig. 14c): stout, dactylus (Fig. 14e) 3.0–3.2 times as long as wide (terminal spiniform seta included), with 5–6 spiniform setae on flexor margin in addition to terminal one; propodus 8.9–10.7 times as long as wide, 3.8–4.5 times as long as dactylus. P5 (Fig. 14d): dactylus (Fig. 14f) 2.8–3.9 as long as wide, with 25–31 spiniform setae on flexor margin, first setae enlarged; propodus 12.1–15.1 times as long as wide, 4.2 5.0 times as long as dactylus.

**Abdomen.** Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite about half length of carapace, 1.7 times as long as fifth somite, slightly shorter than telson.

**Telson** (Fig. 14i). 2.6 times as long as wide, with four or five pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin without a median process, rounded, with 5–9 very long intermediate setae longer than lateral.

**Male pleopods.** P1 (Fig. 14j): endopod subrectangular, 3 times as long as wide, reaching 0.43 times length of endopod, with an appendix on subdistal outer margin which reaches beyond distal end of endopod on a short length. P12 (Fig. 14k): appendix masculina reaching 0.76 times length of endopod; appendix interna reaching 0.64 of appendix masculina.
Pre-anal carina (Fig. 14g). High, unarmed.

Uropodal diaeresis (Fig. 14h). With 14–21 spinules.

Eggs. Size: 0.36–0.44 × 0.21–0.26mm.

Habitat
This species is largely rheophile and prefers fresh and well-oxygenated waters from the lower to the higher course of rivers.

Colour pattern (Fig. 26E)
Body dark all over, sometimes with a white dorsal band running from the rostrum to the telson.

Distribution
This species occurs in the Solomon Islands (Choiseul) and in Papua New Guinea.

Remarks
All former mentions of this taxa were subspecific; given the results of our study, we decided to erect it to specific level (de Mazancourt et al. 2019a). Our specimens fit well with the types from Papua New Guinea: Rostrum curved down, short, 0.3–0.4 of cl (vs 0.4 in type specimens) sometimes reaching middle of the second segment of the antennular peduncle, armed with 9–11 teeth on the dorsal margin (vs 9–14), 0–1 of them situated on the carapace behind the orbital margin (vs 0), ventral margin with 2–4 teeth (vs 2–5); P1 carpus 1.3–1.5 times as long as wide (vs. 1.4–1.7); P2 carpus 4.2–5.1 times as long as wide (vs 4.5–5.5); P3 dactylus with 5–6 spiniform setae (vs 5), propodus 3.8–4.5 times as long as dactylus (vs 4.3); P5 dactylus with 25–31 spiniform setae (vs 25); uropodal diaeresis 14–21 (vs 17–19); small eggs, 0.36–0.44 × 0.21–0.26 mm (vs 0.33–0.38 × 0.24–0.29); appendix interna on the endopod of the male first pleopod. Some specimens from Gu’ma River have one tooth situated on the carapace behind the orbital margin. However, their P5 are similar to those of C. papuana, with the dactylus 3.5 times as long as wide (vs 2.8–3.9), with 27 spiniform setae on the flexor margin (vs 25–31) and propodus 12.1 times as long as wide (vs 12.1–15.1), 4.4 times as long as dactylus (vs 4.2 5.0).

Caridina weberi De Man, 1892
Figs 2T, 15, 26C

Caridina weberi De Man, 1892: 371, pl. 22, fig. 23a (type locality: Kotting, Flores, Indonesia).


Not Caridina weberi Edmondson, 1935: 8; figs 3a–f.

Material examined

Syntypes
INDONESIA • 2 ♂♂, cl 4.4–4.5 mm, 1 ♀ ovig., cl 6.1 mm; Flores Island, Kotting; Dec. 1888; M. Weber leg.; MNHN-IU-2015-1755.

Other material
SOLOMON ISLANDS – Kolombangara Island • 1 ♀ ovig., cl 6.4 mm; Sulumuni River; 08°02.253’ S, 157°09.257’ E; 148 m a.s.l.; 12 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher:
CA1516; MNHN-IU-2018-2867. – Malaïta Island • 1 ♂, cl 3.5 mm; Tanana River; 09°17.383’S, 167°07.012’E; 276 m a.s.l.; 16 Jun. 2015; D. Boseto leg.; DNA voucher: CA1511; MNHN-IU-2018-2868 • 1 ♂, cl 3.7 mm; same collection data as for preceding; MNHN-IU-2018-2869 • 1 ♂, cl 3.8 mm; same collection data as for preceding; MNHN-IU-2018-2870.

PAPUA NEW GUINEA – New Britain • 1 ♂, cl 4.6 mm; Bereme village, Huvenganga River; 05°45.187’S, 150°35.0014’E; 19 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2018-2871 • 1 ♂, cl 5.3 mm; same collection data as for preceding; MNHN-IU-2018-2872 • 1 ♀ ovig., cl 6.8 mm; same collection data as for preceding; MNHN-IU-2018-2873 • 1 ♀ ovig., cl 7.5 mm; same collection data as for preceding; DNA voucher: CA2254; MNHN-IU-2018-2874 • 1 ♀ ovig., cl 6.2 mm; Bereme district, Galaku River; 05°45.187’S, 150°35.0014’E; 20 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2018-2875 • 1 ♀ ovig., cl 6.5 mm; Bereme district, Wogan River; 05°45.187’S, 150°35.0014’E; 21 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; DNA voucher: CA2244; MNHN-IU-2018-2876.

Description

Cephalothorax. Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin rounded. Rostrum (Fig. 15m): straight, short, 0.4 of cl, reaching to base or near middle of second segment of antennular peduncle, armed with 11–23 teeth on dorsal margin, 0–2 of them situated on carapace behind orbital margin, ventral margin with 2–5 teeth. Eyes well developed, anterior end reaching to 0.7 times length of basal segment of antennular peduncle. Antennular peduncle 0.64 times as long as carapace. Anterolateral angle reaching 0.21 length of second segment, second segment longer than third segment. Stylocerite reaching to 0.75 length of basal segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 15a): chela about 2.0–2.3 times as long as wide, movable finger 2.6–4.1 times as long as wide, 0.8–1.5 times length of palm; carpus 1.4–2.0 times as long as wide. P2 (Fig. 15b) more slender and longer than first pereiopod, with chela 2.5–2.9 times as long as wide: movable finger 3.9–5.1 times as long as wide, 1.3–1.7 times length of palm; carpus slender, 4.8–5.5 times as long as wide. P3 (Fig. 15c): stout, dactylus (Fig. 15e) 2.8–37 times as long as wide (terminal spiniform seta included), with 6–8 spiniform setae on flexor margin in addition to terminal one; propodus 9.5–12.7 times as long as wide, 4.0–4.6 times as long as dactylus. P5 (Fig. 15d): dactylus (Fig. 15f) 3.9–5.2 times as long as wide, with 47–66 spiniform setae on flexor margin; propodus 13.3–19.3 times as long as wide, 3.8–4.5 times as long as dactylus.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite about half length of carapace, 1.7 times as long as fifth somite, reaching 0.84 times length of telson.

Telson (Fig. 15i). 2.6 times as long as wide, with five to seven pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with median process, rounded, with 6–11 very long intermediate setae longer than one or two lateral ones.

Male pleopods. Pl1 (Fig. 15j): endopod of male subrectangular, 2.5 times as long as wide, reaching 0.40 length of endopod, with an appendix on distal outer margin which reaches beyond distal end of endopod on a short length. Pl2 (Fig. 15k): appendix masculina reaching 0.57 times length of endopod; appendix interna reaching 0.75 of appendix masculina.

Pre-anal carina (Fig. 15g). High, unarmed.

Uropodal diaeresis (Fig. 15h). With 17–21 spinules.

Eggs. Ovigerous females with eggs size: 0.35–0.42 × 0.19–0.25mm.
**Fig. 15.** *Caridina weberi* De Man, 1892. **a.** First pereiopod. **b.** Second pereiopod. **c.** Third pereiopod. **d.** Fifth pereiopod. **e.** Dactylus of third pereiopod. **f.** Dactylus of fifth pereiopod. **g.** Pre-anal carina. **h.** Uropodal diaeresis. **i.** Telson. **j.** First male pleopod. **k.** Second male pleopod. **l.** Eggs. **m.** Cephalothorax. MNHN-IU-2018-2867 (a–i, l–m) and MNHN-IU-2018-2870 (j–k).
Habitat
This species is largely rheophile and prefers fresh and well-oxygenated waters from the higher course of rivers (148–276 m a.s.l.).

Colour pattern (Fig. 26C)
Body covered in small dots, several red stripes, sometimes with a white dorsal band running from the rostrum to the telson.

Distribution
This species occurs in Indonesia (Sumba, Halmahera), Papua New Guinea (New Britain) and the Solomon Islands (Kolombangara and Malaita).

Remarks
Our specimens fit well with the types, described by De Man (1892) from Flores, by its P1 carpus 1.4–2.0 times as long as wide (vs 1.9–2.1 in type specimens); by its P2 carpus 4.8–5.5 times as long as wide (vs 4.9–5.4); by its P3 dactylus 2.8–3.7 times as long as wide (terminal spiniform setae included) (vs 3.2) with 6–8 spiniform setae on the flexor margin in addition to the terminal one (vs 6–7), propodus 9.5–12.7 times as long as wide (vs 9.0), 4.0–4.6 times as long as dactylus (vs 3.5–3.9): by its P5 dactylus 3.9–5.2 as long as wide (vs 4.6) with 47–66 spiniform setae on the flexor margin (vs 60–65), propodus 13.3–19.3 times as long as wide (vs 15.6) and 3.8–4.5 times as long as dactylus (vs 3.6); by its telson with one or two pairs of setae, lateral pair of setae distinctly longer than sublateral pair, both shorter than 6–11 intermediate setae (vs 8); by its eggs size 0.35–0.42 × 0.19–0.25 mm (vs 0.39–0.40 × 0.23–0.26 mm).

Our specimens are also similar to *C. weberi* as described by Cai & Ng (2001) from Halmahera (Indonesia) in the shape of the rostrum, which is straight, reaching to base or near middle of second segment of antennular peduncle (see Fig. 3A–B) with 0–2 teeth situated on carapace behind orbital, and also by its telson with two pairs of setae, lateral pair of setae distinctly longer than sublateral pair, both shorter than intermediate setae (vs 7–9); its P5 dactylus with 47–66 spiniform setae on flexor margin (vs 55 according to Cai & Ng (2001)), and by its eggs size 0.35–0.42 × 0.19–0.25 mm (vs 0.4–0.2 mm). However, the rostrum has more teeth (0–2) 11–23/2–5 (vs (1–2) 12–19/2–6 according to Roux (1928)), by its P1 carpus 1.4–2.0 times as long as wide (vs 1.5–2.1), its chela about 2.0–2.3 times as long as wide (vs 2–2.1), its P2 carpus 4.8–5.5 times as long as wide (vs 5–5.7), its P2 chela about 2.5–2.9 times as long as wide (vs 2.8–3.1), its P3 dactylus 2.8–3.7 times as long as wide (terminal spiniform setae included) (vs 3.1–3.8), with 6–8 spiniform setae on flexor margin in addition to the terminal one (vs 7–8), its P3 propodus 4.0–4.6 times as long as dactylus (vs 4.5–5.4), P5 dactylus 3.9–5.2 as long as wide (vs 4.4–5.5), with 47–66 spiniform setae (vs 62–70) on flexor margin, and its eggs size 0.35–0.42 × 0.19–0.25 mm (vs 0.35–0.38 × 0.20–0.21 mm). However, its P5 propodus is longer 3.8–4.5 times as long as dactylus (vs 5.0). We consider the observed differences to be within an intra-specific range.

It is also similar to *C. weberi* as described by Roux (1928) from Sumba by its rostrum formula (0–2) 11–23/2–5 (vs (1–2) 12–19/2–6 according to Roux (1928)), by its P1 carpus 1.4–2.0 times as long as wide (vs 1.5–2.1), its chela about 2.0–2.3 times as long as wide (vs 2–2.1), its P2 carpus 4.8–5.5 times as long as wide (vs 5–5.7), its P2 chela about 2.5–2.9 times as long as wide (vs 2.8–3.1), its P3 dactylus 2.8–3.7 times as long as wide (terminal spiniform setae included) (vs 3.1–3.8), with 6–8 spiniform setae on flexor margin in addition to the terminal one (vs 7–8), its P3 propodus 4.0–4.6 times as long as dactylus (vs 4.5–5.4), P5 dactylus 3.9–5.2 as long as wide (vs 4.4–5.5), with 47–66 spiniform setae (vs 62–70) on flexor margin, and its eggs size 0.35–0.42 × 0.19–0.25 mm (vs 0.35–0.38 × 0.20–0.21 mm). However, its P5 propodus is longer 3.8–4.5 times as long as the dactylus (vs 3.4–3.6). We think that the observed differences are also within an intra-specific range.

**Caridina tupaia** de Mazancourt, Marquet & Keith, 2019
Figs 2S, 16

Material examined
SOLOMON ISLANDS – Choiseul Island • 1 ♂, cl 3.2 mm; Creek 2; 06°59.085´ S, 156°47.454´ E; 93 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2877 • 1 ♂, cl 3.4 mm; same collection data as for preceding; MNHN-IU-2018-2878 • 1 ♂, cl 3.6 mm; same
collection data as for preceding; MNHN-IU-2018-2879 • 1 ♂, cl 3.6 mm; same collection data as for preceding; MNHN-IU-2018-2880 • 1 ♂, cl 3.9 mm; same collection data as for preceding; MNHN-IU-2018-2881 • 1 ♀, cl 3.5 mm; same collection data as for preceding; DNA voucher: CA1927; MNHN-IU-2018-2882 • 1 ♀ ovig., cl 4.5 mm; same collection data as for preceding; MNHN-IU-2018-2884 • 1 ♀ ovig., cl 5.2 mm; Creek 1; 06°59.085´ S, 156°47.454´ E; 132 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2885. – Malaita Island • 1 ♂, cl 3.6 mm; Tanana River; 09°17.383´ S, 167°07.012´ E; 276 m a.s.l.; 16 Jun. 2015; D. Boseto leg.; DNA voucher: CA1508; MNHN-IU-2018-2886 • 1 ♂, cl 3.1 mm; small tributary close to Nunubala Camp; 09°00.056´ S, 160°51.893´ E; 23 Jun. 2015; 315 m a.s.l.; D. Boseto leg.; MNHN-IU-2018-2887.

Description
See de Mazancourt et al. (2019b).

Habitat
This species is largely rheophile and prefers fresh and well-oxygenated waters from the lower course to the higher course of rivers.

Colour pattern
The live general colour of the body is yellowish and slightly translucent. Numerous red spots are visible all over the body. Sometimes, a lighter longitudinal dorsal band is present stretching from the rostrum to the telson (see de Mazancourt et al. 2019b).

Distribution
This species seems to have a wide distribution: Solomon Islands (Malaita and Choiseul), Fiji, Samoa, Cook (Rarotonga) and French Polynesia (Society and Austral archipelagos).

Remarks
Recently de Mazancourt et al. (2019b) have revised the species of the C. weberi group from Polynesia. Contrary to what Edmondson (1935) wrote, C. weberi does not occur in Polynesia but four other species of the C. weberi complex. Among these species, one also occurs in the Solomon Islands: C. tupaia.

Fig. 16. Caridina tupaia de Mazancourt, Marquet & Keith, 2019. Cephalothorax. MNHN-IU-2018-2884.
Curiously, although the dorsal teeth of the rostrum are situated all along its length, with sometimes 1–3 of them situated on the carapace behind the orbital margin in French Polynesia, in Samoa (Upolu) and the Cook Islands, specimens from the Solomon Islands have dorsal teeth situated considerably anterior to the orbital margin with none of them situated on the carapace behind the orbital margin (see Fig. 16).

**Caridina maeana** sp. nov.
urn:lsid:zoobank.org:act:36785008-1E93-4AE5-8162-238D2560E30C
Figs 2O, 17, 26F–H

**Caridina cf. weberi** sp. 4 – de Mazancourt et al. 2019a: 166, 169–170.

**Etymology**
This new species is named after the local name of the type locality, River Maeana. The name is used as an apposition.

**Material examined**

**Holotype**
SOLOMON ISLANDS • ♂, cl 3.6 mm; Malaita Island, Maeana River; 09°00.056´ S, 160°51.893´ E; 315 m a.s.l.; 23 Jun. 2015; D. Boseto leg.; DNA voucher: CA1509; MNHN-IU-2018-2888.

**Paratypes**
SOLOMON ISLANDS • Malaita Island • 1 ♂, cl 3.1 mm; same collection data as for holotype; MNHN-IU-2018-2889 • 1 ♂, cl 3.3 mm; same collection data as for holotype; MNHN-IU-2018-2890 • 1 ♂, cl 3.4 mm; same collection data as for holotype; MNHN-IU-2018-2891 • 1 ♂, cl 3.5 mm; same collection data as for holotype; MNHN-IU-2018-2892 • 1 ♂, cl 3.5 mm; same collection data as for holotype; MNHN-IU-2018-2893 • 1 ♂, cl 4.0 mm; same collection data as for holotype; MNHN-IU-2018-2894. – Choiseul Island • 1 specimen; Sicata River; 07°22.477´ S, 157°20.109´ E; 46 m a.s.l.; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2495; MNHN • 1 specimen; same collection data as for preceding; DNA voucher: CA2496; MNHN.

**Other material**
VANUATU • 1 ♀ ovig., cl 5.3 mm; Santo Island, Pelouva River; 14°58.685´ S, 166°38.757´ E; 279 m a.s.l.; 15 Nov. 2006; P. Gerbeaux, P. Keith and C. Lord leg.; DNA voucher: CA1417; MNHN-IU-2018-2895.

**Comparative material**

*Caridina weberi* var. *keiensis* (Roux, 1911)
INDONESIA • lectotype (selected by Y. Cai, accepted here), ♀ ovig., cl 5.7 mm; Kei Besar, Warka; 5 June 1908; H. Merton leg.; NMB 6.IV.b • 2 paralectotypes, 2 ♀♂, cl 2.6 mm; same collection data as for lectotype; NMB 6.IV.a • 2 paralectotypes, 1 ♀, cl 5.5 mm, 1 ♂, cl 3.4 mm; same collection data as for lectotype; NMB 6.IV.b.

*Caridina parvirostris* (De Man, 1892)
INDONESIA • 2 syntypes, ♂♂, cl 3.1–3.2 mm; Flores Island, river near Bombang; Jan. 1889; M. Weber leg.; MNHN-IU-2015-1748 • 1 syntype, ♀, cl 4.2 mm; same collection data as for preceding; MNHN-IU-2015-1754.

**Description**

**Cephalothorax.** Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin rounded. Rostrum (Fig. 17m): bent down, short, 0.3–0.5 of cl, reaching to base or middle of second
segment of antennular peduncle, armed with 8–13 teeth on dorsal margin, all on rostrum considerably anterior to orbital margin, ventral margin with 2–5 teeth. Eyes well developed, anterior end reaching to 0.75 length of basal segment of antennular peduncle. Antennular peduncle 0.70 times as long as carapace. Anterolateral angle reaching 0.20 length of second segment, second segment longer than third segment. Stylocerite reaching to 0.62 length of basal segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 17a): chela about 2.0–2.2 times as long as wide, movable finger 3.1–3.93 times as long as wide, 1.0–1.3 times length of palm; carpus 1.4–1.8 times as long as wide. P2 (Fig. 17b) more slender and longer than first pereiopod, with chela 2.3–2.6 times as long as wide: movable finger 4.6–4.9 times as long as wide, 1.6–2.0 times length of palm; carpus slender, 5.0–5.4 times as long as wide. P3 (Fig. 17c): stout, dactylus (Fig. 17e) 2.4–3.1 times as long as wide (terminal spiniform seta included), with 5–7 spiniform setae on flexor margin in addition to terminal one; propodus 8.6–9.2 times as long as wide, 3.9–5.2 times as long as dactylus. P5 (Fig. 17d): dactylus (Fig. 17e) 2.4–4.4 times as long as wide, ending in two large claws, with 35–47 spiniform setae on flexor margin; propodus 13.0–17.7 times as long as wide, 4.4–6.0 times as long as dactylus.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.49 times as long as carapace, 1.6 times as long as fifth somite, slightly shorter than telson.

Telson (Fig. 17i). 3 times as long as wide, with four or five pairs of dorsal spinules and one pair of dorsolateral spinules; posterior margin with median process, rounded, with 6 very long intermediate setae longer than lateral.

Male pleopods. Pl1 (Fig. 17j): endopod subrectangular, 2.5 times as long as wide, reaching 0.41 length of endopod, with appendix on subdistal outer margin which reaches beyond distal end of endopod on short length. Pl2 (Fig. 17k): appendix masculina reaching 0.70 times length of endopod; appendix interna reaching 0.64 times length of appendix masculina.

Pre-anal carina (Fig. 17g). High, unarmed.

Uropodal diaeresis (Fig. 17h). With 16–19 spinules.

Eggs (Fig. 17l). Size: 0.49–0.50 × 0.29–0.30 mm.

Habitat
This new species is largely rheophile and prefers fresh and well-oxygenated waters in the higher course of rivers (279–315 m a.s.l.).

Colour pattern (Fig. 26F)
The general colour is blueish overall, reddish on the cephalothorax with many red dots all over the body.

Distribution
This species occurs in the Solomon Islands (Malaita and Choiseul) and Vanuatu (Santo Island).

Remarks
This species looks like C. weberi keiensis from Kei Besar Island (Indonesia) by its rostrum with 8–13 dorsal teeth (vs 2–13 in C. w. keiensis), all of them on the rostrum, considerably anterior to the orbital margin, and its P5 dactylus ending in two large claws. However, the P2 dactylus is longer, 4.6–4.9 times as long as wide (vs 3.2–4.1), as is the P2 carpus, 5.0–5.4 (vs 3.5–4.5).
Fig. 17. *Caridina maeana* sp. nov. **a.** First pereiopod. **b.** Second pereiopod. **c.** Third pereiopod. **d.** Fifth pereiopod. **e.** Dactylus of third pereiopod. **f.** Dactylus of fifth pereiopod. **g.** Pre-anal carina. **h.** Uropodal diaeresis. **i.** Telson. **j.** First male pleopod. **k.** Second male pleopod. **l.** Eggs. **m.** Cephalothorax. MNHN-IU-2018-2889: (a–i, m), MNHN-IU-2018-2891 (j–k) and MNHN-IU-2018-2895 (l).
This species also looks like *C. parvirostris* (De Man, 1892) from Flores (Indonesia) by its rostrum with 8–13 dorsal teeth (vs 8–10 in *C. parvirostris*), but the P2 carpus is shorter, 5.0–5.4 times as long as wide (vs 6.0–7.4), as is the P2 chela, 2.3–2.6 (vs 2.6–3.0), and its P5 ends in two large claws (vs one claw).

*Caridina piokerai* sp. nov.  
_urn:lsid:zoobank.org:act:CF802FC0-547B-4E48-A7D5-9E99A4561F9D_  
Figs 2U, 18

*Caridina cf. weberi* sp. 5 – de Mazancourt et al. 2019a: 166, 169–170.

Etymology
This species is dedicated to Piokera S. Holland (Ecological Solutions Solomon Islands team member) who helped with the sampling in Kolombangara Island.

Material examined

**Holotype**


**Paratypes**

SOLOMON ISLANDS – Kolombangara Island • 1 ♀ ovig., cl 2.9 mm; Vagé River; 08°06.640˚ S, 157°00.1674˚ E; 59 m a.s.l.; 10 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2897  
• 1 ♀ ovig., cl 3.1 mm; same collection data as for preceding; MNHN-IU-2018-2898  
• 1 ♀ ovig., cl 3.3 mm; same collection data as for preceding; MNHN-IU-2018-2899  
• 1 ♀ ovig., cl 2.9 mm; Liva River; 08°03.881˚ S, 157°10.421˚ E; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2900  
• 1 ♀ ovig., cl 3.6 mm; Sulumni River; 08°02.253˚ S, 157°09.257˚ E; 148 m a.s.l.; 12 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2901  
• 1 ♀ ovig., cl 3.3 mm; Vanga 1 River; 07°55.088˚ S, 156°57.624˚ E; 18 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2902. – Choiseul Island • 1 ♀ ovig., cl 3.1 mm; Lopakare River; MNHN-IU-2018-2903  
• 1 ♀, cl 3.9 mm; 07°01.613˚ S, 156°46.567˚ E; 50 m a.s.l.; 20 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1930; MNHN-IU-2018-2904. – Vella Lavella Island • 1 ♀ ovig., cl 2.6 mm; Vala Kadju River; MNHN-IU-2018-2905  
• 1 ♀ ovig., cl 2.8 mm; 07°49.860˚ S, 156°42.644˚ E; 17 m a.s.l.; 28 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2906  
• 1 ♀, cl 3.2 mm; Maravari River; 07°51.703˚ S, 156°41.768˚ E; 81 m a.s.l.; 31 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2907  
• 1 ♀ ovig., cl 2.8 mm; same collection data as for preceding; MNHN-IU-2018-2908  
• 1 ♀ ovig., cl 3.2 mm; same collection data as for preceding; MNHN-IU-2018-2909  
• 1 ♀ ovig., cl 3.2 mm; same collection data as for preceding; MNHN-IU-2018-2910 • 1 ♀ ovig., cl 2.1 mm; same collection data as for preceding; DNA voucher: CA1981; MNHN-IU-2018-2911.

Description

**Cephalothorax.** Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin rounded. Rostrum (Fig. 18k): straight or bent down, short, 0.3–0.5 of cl, reaching to second segment of antennular peduncle, armed with 9–13 teeth on dorsal margin, 0–1 of them situated on carapace behind orbital margin, ventral margin with 1–4 teeth. Eyes well developed, anterior end reaching to 0.66 length of basal segment of antennular peduncle. Antennular peduncle 0.50 times as long as carapace. Anterolateral angle reaching 0.33 length of second segment, second segment shorter than third segment. Stylocerite reaching to 0.90 length of basal segment of antennular peduncle.

**Pereiopods.** Epipods on first four pereiopods. P1 (Fig. 18a): chela about 1.9–2.3 times as long as wide, movable finger 2.5–3.6 times as long as wide, 0.9–1.5 times length of palm; carpus 1.4–1.8 times as long
as wide. P2 (Fig. 18b) more slender and longer than first pereiopod, with chela 2.4–3.0 times as long as wide: movable finger 3.9–5.2 times as long as wide, 1.4–2.1 times length of palm; carpus slender, 4.6–6.2 times as long as wide. P3 (Fig. 18c): stout, dactylus (Fig. 18e) 2.6–3.4 times as long as wide (terminal spiniform seta included), with 4–5 spiniform setae on flexor margin in addition to terminal one; propodus 8.1–10.4 times as long as wide, 3.9–5.3 times as long as dactylus. P5 (Fig. 18d): dactylus (Fig. 18f) 2.7–4.5 times as long as wide, with 21–33 spiniform setae on flexor margin; propodus 10.5–15.0 times as long as wide, 3.5–6.2 times as long as dactylus.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.48 times as long as carapace, 1.4 times as long as fifth somite, 0.88 as long as telson.

Telson (Fig. 18i). 3 times as long as wide, with five pairs of dorsal spinules and pair of dorsolateral spinules; posterior margin with median process, rounded, with 5–10 very long intermediate setae longer than lateral ones.

Male pleopods. No males.

Pre-anal carina (Fig. 18g). High, unarmed.

Uropodal diaeresis (Fig. 18h). With 17–20 spinules.

Eggs. Size: 0.39–0.47 × 0.20–0.28 mm.

Habitat
This species is largely rheophile and prefers fresh and well-oxygenated waters from the lower course to the higher course of rivers (17–148m a.s.l.).

Colour pattern
Unknown.

Distribution
This new species occurs on several of the Solomon Islands (Choiseul, Kolombangara and Vella Lavella).

Remarks
These specimens from the Solomon Islands are very similar to C. macrodentata Cai & Shokita (2006a) because of the large teeth on the dorsal margin of the rostrum. However, the P1 and P2 carpus are slender, 1.4–1.8 times as long as wide (vs 1.2 in C. macrodentata) and 4.6–6.2 (vs 3.8), respectively, and the P5 dactylus is longer, 3.5–6.2 as long as wide (vs 2.4), not ending in two large claws (vs ending in two large claws).

Caridina nana sp. nov.

*urn:lsid:zoobank.org:act:312659E0-1F36-4BAB-9714-2FBC71B57C6A*

Figs 2P, 19


Etymology
This species is named after its small size.
Material examined

Holotype
SOLOMON ISLANDS • ♀, cl 3.0 mm; Vella Lavella Island, Maravari River; 07°51.703´ S, 156°41.748´ E; 31 Oct. 2016; P. Keith and C. Lord leg.; DNA voucher: CA1903; MNHN-IU-2018-2912.

Paratype
SOLOMON ISLANDS • 1 ♀, cl 2.7 mm; same collection data as for holotype; DNA voucher: CA1902; MNHN-IU-2018-2913.

Comparative material

*Caridina parvirostris* De Man, 1892
INDONESIA • 2 syntypes, ♂♂, cl 3.1–3.2 mm; Flores Island, river near Bombang; Jan. 1889; M. Weber leg.; MHNN-IU-2015-1748 • 1 syntype, ♀, cl 4.2 mm; same collection data as for preceding; MNHN-IU-2015-1754.

Description

**Cephalothorax.** Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin rounded. Rostrum (Fig. 19k): bent down, very short, 0.2–0.3 of cl, not reaching to first segment of antennular peduncle, armed with 7 teeth on dorsal margin, 0 of them situated on carapace behind orbital margin, ventral margin with 1 tooth. Eyes well developed, anterior end reaching to 0.72 length of basal segment of antennular peduncle. Short antennular peduncle 0.36–0.49 times as long as carapace. Anterolateral angle reaching 0.37 length of second segment, second segment longer than third segment. Stylocerite reaching to 0.95 length of basal segment of antennular peduncle.

**Pereiopods.** Epipods on first four pereiopods. P1 (Fig. 19a–b): chela about 1.9–2.0 times as long as wide, movable finger 2.5–2.8 times as long as wide, 0.7–0.9 times length of palm; carpus 1.6–1.7 times as long as wide. P2 (Fig. 19c) more slender and longer than first pereiopod, with chela 2.8–2.9 times as long as wide: movable finger 5.1 times as long as wide, 1.6–1.8 times length of palm; carpus slender, 6.6–6.8 times as long as wide. P3 (Fig. 19d): stout, dactylus (Fig. 19f) 2.7–3.0 times as long as wide (terminal one spiniform seta included), with 4–5 spiniform setae on flexor margin in addition to terminal; propodus 8.1–9.6 times as long as wide, 4.0–4.8 times as long as dactylus. P5 (Fig. 19e): dactylus (Fig. 19g) 3.2–3.4 times as long as wide, with 26–28 spiniform setae on flexor margin; propodus 11.5–13.6 times as long as wide, 4.2–4.7 times as long as dactylus.

**Abdomen.** Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.47 times as long as carapace, 1.5 times as long as fifth somite, 0.91 times as long as telson.

**Telson** (Fig. 19i). slender, 4.3 times as long as wide, with four pairs of dorsal spines and pair of dorsolateral spines; posterior margin with median process, rounded, with 6–7 very long intermediate setae longer than lateral ones.

**Male pleopods.** No males.

**Pre-anal Carina** (Fig. 19j). High, unarmed.

**Uropodal diaeresis** (Fig. 19h). With 16–17 spinules.

**Eggs.** Size: 0.39–0.41 × 0.19–0.21.

**Habitat**

This species is largely rheophile and prefers fresh and well-oxygenated waters from the higher course of rivers.
Fig. 19. *Caridina nana* sp. nov. 

- **a.** First pereiopod. 
- **b.** Details of the fingers of the first pereiopod. 
- **c.** Second pereiopod. 
- **d.** Third pereiopod. 
- **e.** Fifth pereiopod. 
- **f.** Dactylus of third pereiopod. 
- **g.** Dactylus of fifth pereiopod. 
- **h.** Uropodal diaeresis. 
- **i.** Telson. 
- **j.** Pre-anal carina. 
- **k.** Cephalothorax. MNHN-IU-2018-2912 (a–k).
Colour pattern

Unknown.

Distribution

As far as we know, this new species occurs only in Vella Lavella (Solomon Islands).

Remarks

These specimens from the Solomon Islands are very similar to *C. parvirostris* by the long P2 carpus, 6.6–6.8 times as long as wide (vs 6.0–7.4 in *C. parvirostris*), but are different by the bent rostrum with fewer and smaller dorsal teeth 6–7 (vs 8–10), by the shorter P1 dactylus, 2.5–2.8 times as long as wide (vs 3.0–3.4), and also the shorter P1 chela, 1.9–2.0 times as long as wide (vs 2.0–2.3).

*Caridina sikipozo* sp. nov.

urn:lsid:zoobank.org:act:6A7B9C82-DA70-47AA-81C4-21C351A7BD4F

Figs 2V, 20

Etymology

This species is named after the Sikipozo tribe living around the type locality.

Material examined

**Holotype**

SOLOMON ISLANDS • ♂, cl 3.2 mm; Choiseul Island, Lokataveva Creek; 06°59.085´ S, 156°47.454´ E; 93 m a.s.l.; 14 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1928; MNHN-IU-2018-2914.

**Paratype**

SOLOMON ISLANDS • 1 ♂, cl 3.1 mm; same collection data as for holotype; DNA voucher: CA2310; MNHN-IU-2018-2915.

Description

**Cephalothorax.** Suborbital angle indistinguishably fused with antennal spine. Rostrum (Fig. 20j): bent down, short, 0.3–0.4 of cl, reaching end of first segment of antennular peduncle, armed with 14–17 teeth on dorsal margin, 2–3 of them situated on carapace behind orbital margin, ventral margin with 4–5 teeth. Eyes well developed, anterior end reaching to 0.70 length of basal segment of antennular peduncle. Antennular peduncle 0.63 (♂) times as long as carapace. Pointed anterolateral angle reaching 0.31 length of second segment, second segment longer than third segment. Stylocerite reaching to 0.94 length of basal segment of antennular peduncle.

**Pereiopods.** Epipods on first four pereiopods. P1 (Fig. 20a): chela about 2.1–2.2 times as long as wide, movable finger 3.4–3.5 times as long as wide, 1.1–1.3 times length of palm; carpus 1.7–1.8 times as long as wide. P2 (Fig. 20b) more slender and longer than first pereiopod, with chela 2.3–2.4 times as long as wide: movable finger 4.7–4.8 times as long as wide, 1.6–1.8 times length of palm; short carpus, 5.2–5.3 times as long as wide. P3 (Fig. 20c): stout, dactylus (Fig. 20d) 3.2 times as long as wide (terminal spiniform seta included), with 6 spiniform setae on flexor margin including terminal one; propodus 10.3–11.3 times as long as wide, 4.3–4.4 times as long as dactylus. P5: missing in all specimens.

**Abdomen.** Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.48 times as long as carapace, 1.7 times as long as fifth somite, 0.86 times as long as telson.
Fig. 20. *Caridina sikipozo* sp. nov. **a.** First pereiopod. **b.** Second pereiopod. **c.** Third pereiopod. **d.** Dactylus of third pereiopod. **e.** Pre-anal carina. **f.** Uropodal diaeresis. **g.** Telson. **h.** First male pleopod. **i.** Second male pleopod. **j.** Cephalothorax. MNHN-IU-2018-2914 (a–e, g, j) and MNHN-IU-2018-2915 (f, h–i).
Telson (Fig. 20g). 2.3 times as long as wide, eight pairs of dorsal spinules and pair of dorsolateral spinules; posterior margin without median process, rounded, with 6–9 long intermediate setae longer than lateral ones.

Male pleopods. Pl1 (Fig. 20h): endopod subrectangular, 3 times as long as wide, reaching 0.53 length of endopod, with an appendix on subdistal outer margin which reaches beyond distal end of endopod on a short length. Pl2 (Fig. 20i): appendix masculina reaching 0.72 times length of endopod; appendix interna reaching 0.61 length of appendix masculina.

Pre-anal carina (Fig. 20e). High, unarmed.

Uropodal diaeresis (Fig. 20f). With 23 spinules.

**Habitat**

This new species is largely rheophile and prefers fresh and well-oxygenated waters in the higher course of rivers.

**Colour pattern**

Unknown.

**Distribution**

As far as we know, this new species occurs only on Choiseul (Solomon Islands).

**Remarks**

These specimens from the Solomon Islands are very similar to *Caridina turipi* sp. nov. by the high number of postorbital teeth on the dorsal margin of the rostrum (2–3 vs 2–4 for *C. turipi* sp. nov.). However, this new species can be separated by its longer P1 dactylus (3.4–3.5 vs 2.8–3.0 mm), by its shorter P2 chela (2.3–2.4 vs 2.6–3.1 mm) and shorter P2 carpus (5.2–5.3 vs 5.5–6.6 mm).

*Caridina poarae* sp. nov.

*urn:lsid:zoobank.org:act:CF9FB7DB-335A-4A29-ABD4-68082519CEFF*

Figs 2R, 21

**Etymology**

This new species is named after the local name of the type locality, river Poarae. The name is used as an apposition.

**Material examined**

**Holotype**

SOLOMON ISLANDS • ♀, cl 4.1 mm; Ranongga Island, Poarae River; 08°05.028´ S, 156°35.979´ E; 25 Oct. 2016; D. Boseto leg.; DNA voucher: CA2350; MNHN-IU-2018-2920.

**Paratypes**

SOLOMON ISLANDS • 1 juvenile, cl 2.9 mm; same collection data as for holotype; DNA voucher: CA2348; MNHN-IU-2018-2921 • 1 ♀ ovig., cl 3.4 mm; same collection data as for holotype; DNA voucher: CA2349; MNHN-IU-2018-2922.

**Other material**

VANUATU • 1 ♀ ovig., cl 5.3 mm; Santo Island; MNHN-IU-2018-2923 • 1 ♀, cl 5.3 mm; same collection data as for preceding; MNHN-IU-2018-2924.
de MAZANCOURT V. et al., List of *Caridina* freshwater shrimp species from the Solomon Islands

**Description**

**Cephalothorax.** Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin broadly subrectangular. Rostrum (Fig. 21k): straight, short, 0.3 of cl, reaching to near end of first segment of antennular peduncle, unarmed dorsally, ventral margin with 1–3 teeth. Eyes well developed. Antennular peduncle 0.54 times as long as carapace. Anterolateral angle reaching 0.33 length of second segment, second segment little longer than third segment. Stylocerite reaching to 0.83 times length of basal segment of antennular peduncle.

**Pereiopods.** Epipods on first four pereiopods. P1 (Fig. 21a): chela about 2.0–2.3 times as long as wide, movable finger 2.3–3.2 times as long as wide, 0.8–1.2 times length of palm; carpus 1.3–1.7 times as long as wide. P2 (Fig. 21b) more slender and longer than first pereiopod, with chela 1.4–3.8 times as long as wide: movable finger 4.7–4.9 times as long as wide, 1.4–1.6 times length of palm; carpus slender, 4.5–5.7 times as long as wide. P3 (Fig. 21c): stout, dactylus (Fig. 21e) 2.9–3.0 times as long as wide (terminal spiniform seta included), with 5–6 spiniform setae on flexor margin including terminal; propodus 6.7–7.7 times as long as wide, 3.2–3.7 times as long as dactylus. P5 (Fig. 21d): dactylus (Fig. 21f) 3.9–4.5 times as long as wide, with 42–61 spiniform setae on flexor margin; propodus 9.6–13.8 times as long as wide, 2.9–3.5 times as long as dactylus.

**Abdomen.** Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.48 times as long as carapace, 1.5 times as long as fifth somite, shorter than telson.

**Telson** (Fig. 21i). 2.7 times as long as wide, with four or five pairs of dorsal spinules and pair of dorsolateral spinules, posterior margin with median process, rounded, with 5–8 plumose intermediate setae longer than lateral ones.

**Male pleopods.** No males.

**Pre-anal Carina** (Fig. 21g). High, unarmed.

**Uropodal diaeresis** (Fig. 21h). With 19–24 spinules.

**Eggs.** Ovigerous females with eggs size: 0.42–0.49 × 0.22–0.32 mm.

**Habitat**

This new species is rheophile and prefers fresh and well-oxygenated waters from the middle to upper course of rivers.

**Colour pattern**

Unknown.

**Distribution**

This species occurs in Solomon Islands (Ranongga) and Vanuatu (Santo).

**Remarks**

This new species looks like *C. typus* by its unarmed dorsal rostrum, but it is distinguished by its shorter P3 propodus, 6.7–7.7 times as long as wide (vs 7.9–10.0 in *C. typus*), and P3 propodus 3.2–3.7 times as long as dactylus, (vs 3.6–4.6). This new species also looks like *C. jeani*, by its unarmed dorsal rostrum but it is easily distinguish by its longer P3 dactylus, 4.4–4.6 times as long as wide (vs 1.6 in *C. jeani*) and its P5 dactylus, 3.9–4.5 times as long as wide (vs 2.7–3.2).
Caridina paratypus sp. nov.
urn:lsid:zoobank.org:act:5E893FC0-9914-4441-BBD4-7824C0D5747D
Figs 2Q, 22


Etymology
This new species is named after its resemblance to *C. typus*.

Material examined

Holotype

Paratypes
VANUATU • 1 ♀ ovig., cl 6.2 mm; Epi Island, Buavinai River; 16°47.908´ S, 168°11.3654´ E; 28 Oct. 2014; 117 m a.s.l.; A. Acou, D. Kalfatak, G. Marquet and M. Mennesson leg.; DNA voucher: CA1371; MNHN-IU-2018-2926.

Description

Cephalothorax. Suborbital angle indistinguishably fused with antennal spine. Pterygostomian margin broadly subrectangular. Rostrum (Fig. 22m): straight, short, 0.4 of cl, reaching to near middle of second segment of antennular peduncle, unarmed dorsally, ventral margin with 0–5 teeth. Eyes well developed. Antennular peduncle 0.51 (♀) – 0.60 (♂) times as long as carapace. Anterior lateral angle reaching 0.40 length of second segment, second segment shorter than third segment. Stylocerite reaching near basal segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 22a): chela about 1.9–2.1 times as long as wide, movable finger 2.1–2.2 times as long as wide, 0.7 times length of palm; carpus 1.5–16 times as long as wide. P2 (Fig. 22b) more slender and longer than first pereiopod, with chela 2.5–2.8 times as long as wide: movable finger 4.8–4.9 times as long as wide, 1.7–1.8 times length of palm; carpus slender, 5.4–5.9 times as long as wide. P3 (Fig. 22c): stout, dactylus (Fig. 22e) 3.2–3.9 times as long as wide (terminal spineiform seta included), with 7 spineiform setae on flexor margin in addition to terminal one; propodus 11.1–11.3 times as long as wide, 4.4–4.6 times as long as dactylus, merus bearing long setae on ventral margin. P5 (Fig. 22d): dactylus (Fig. 22f) 5.6–6.6 times as long as wide, with 59–60 spineiform setae on flexor margin; propodus 16.2–18.1 times as long as wide, 3.7–4.4 times as long as dactylus, merus bearing long setae on ventral margin.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.46 times as long as carapace, 1.5 times as long as fifth somite, shorter than telson.

Telson (Fig. 22i). 2.3 times as long as wide, with five or six pairs of dorsal spines and pair of dorsolateral spines; posterior margin with median process, rounded, with 10–11 plumose intermediate setae longer than lateral ones.

Male pleopods. Pl1 (Fig. 22j): endopod subrectangular, 3.2 times as long as wide, reaching 0.54 length of endopod, with appendix on subdistal outer margin which reaches slightly beyond distal end of endopod on short length. P12 (Fig. 22k): appendix masculina reaching 0.58 times length of endopod; appendix interna reaching 0.41 times length of appendix masculina.

High pre-anal carina (Fig. 22g). Unarmed.
Fig. 22. *Caridina paratypus* sp. nov. a. First pereiopod. b. Second pereiopod. c. Third pereiopod. d. Fifth pereiopod. e. Dactylus of third pereiopod. f. Dactylus of fifth pereiopod. g. Pre-anal carina. h. Uropodal diaeresis. i. Telson. j. First male pleopod. k. Second male pleopod. l. Eggs. m. Cephalothorax. MNHN-IU-2018-2925 (a–h, j–k, m) and MNHN-IU-2018-2926 (i, l).
Uropodal diaeresis (Fig. 22h). With 17–19 spinules.

Eggs (Fig. 22l). Size: 0.50–0.54 × 0.29–0.31mm.

Habitat
This species is largely rheophile and prefers fresh and well-oxygenated waters from the middle to upper course of rivers (117–250 m a.s.l.).

Colour pattern
Unknown.

Distribution
This species occurs in the Solomon Islands (Malaita) and Vanuatu (Epi).

Remarks
This new species looks like C. typus by its unarmed dorsal rostrum and its elongate P2 carpus, 5.4–5.9 times as long as wide (vs 5.0–6.5 in C. typus), but is easily distinguished by its longer P5 dactylus, 5.6–6.6 (vs 3.6–5.1), and its telson with 10–11 plumose intermediate setae longer than lateral ones (vs 5–8 smooth intermediate setae subequal to lateral ones).

This new species also looks like C. jeani by its unarmed dorsal rostrum and its telson with 10–11 plumose intermediate setae longer than lateral ones (vs 6–8 in C. jeani), but it is easily distinguished by its longer P3 dactylus, 4.4–4.6 times as long as wide (terminal spiniform seta included), with 7 spiniform setae on the flexor margin in addition to the terminal one (vs 1.6 with 5 spiniform setae), and by its shorter appendix masculine on the second male pleopod, 0.58 of the length of the endopod (vs 0.80).

In the same way as for the C. typus group, we include in the C. weberi group species with or without dorsal teeth on their rostrum. The length of setae on the telson (namely long and plumose terminal setae on the telson clearly longer than lateral ones) is a better criterion to characterize this group.

Caridina serratiostris species group

Diagnosis
Moderately robust morphology with a moderately short and straight rostrum (reaching end of antennular peduncle), armed with many dorsal teeth, at least 6 of them on the carapace, without apical teeth, the antennal spine ventral to the inferior orbital angle, a long antennular peduncle (about half the carapace length) with an usually long stylocerite (reaching end of first segment of antennular peduncle), pterygostomial margin rounded, segments of walking legs very slender, sixth abdominal somite about half of carapace length, a small pre-anal carina sometimes bearing an acute spine, a great number of spinules on the uropodal diaeresis (>15), numerous, long and plumose terminal setae on the telson and a rounded endopod of the first male pleopod, without appendix interna.

Caridina serratiostris De Man, 1892
Figs 2A, 23

Caridina serratiostris De Man, 1892: 382, pl. 23, figs 28a–e (type locality: “Bangkalan” and “Bonea” Rivers, Selayar, Indonesia).

Caridina serratiostris var. typica Bouvier, 1925: 218 (partim), 480–486.


Not Caridina serratiostris – Holthuis 1978: 38; fig. 13.
Material examined

Paralectotypes (lectotype designated in Cai & Shokita 2006b)
INDONESIA • 1 ♀ ovig., cl 4.0 mm, 1 ♂, cl 3.1 mm; Selayar Island, Bangkalan; 1889; M. Weber leg.; MNHN-IU-2015-1907 • 1 ♀ ovig., cl 4.1 mm; same collection data as for preceding; MNHN-IU-2015-1908.

Other material

SOLOMON ISLANDS – Choiseul Island • 1 ♀ ovig., cl 5.0 mm; Vorama River; 06°58.687’ S, 156°46.746’ E; 15 m a.s.l.; 11 Oct. 2014; P. Gerbeaux, P. Keith and G. Marquet leg.; DNA voucher: CA1351; MNHN-IU-2018-2927 • 1 ♀ ovig., cl 3.4 mm; Lopakare River, upstream; 07°01.613’ S, 156°45.789’ E; 20 Oct. 2014; 14 m a.s.l.; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2928 • 1 ♀ ovig., cl 3.5 mm; Lopakare River, downstream; 07°01.834’ S, 156°45.789’ E; 21 Oct. 2014; 14 m a.s.l.; P. Gerbeaux, P. Keith and G. Marquet leg.; MNHN-IU-2018-2929 • 1 ♂, cl 2.5 mm; Maravari River; 07°51.703’ S, 156°41.748’ E; 31 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2930. – Kolombangara Island • 1 ♀ ovig., cl 3.6 mm; Vanga 2 River; 07°54.825’ S, 156°57.7624’ E; 18 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1523; MNHN-IU-2018-2931. – Vella Lavella Island • 1 ♀ ovig., cl 3.8 mm; Vala Kadju; 07°49.860’ S, 156°42.644’ E; 28 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2932 • 1 ♂, cl 2.5 mm; Maravari River; 07°51.703’ S, 156°41.748’ E; 31 Oct. 2016; P. Keith and C. Lord leg.; MNHN-IU-2018-2933 • 1 ♀ ovig., cl 3.6 mm; same collection data as for preceding; MNHN-IU-2018-2934. – Isabel Island • 1 specimen; Rapa River; 07°28.527’ S, 158°17.105’ E; 0–7 m a.s.l.; 23 Oct. 2019; P. Keith, C. Lord, R. Causse and D. Boseto leg.; DNA voucher: CA2530; MNHN.

AUSTRALIA – Queensland • 1 ♀ ovig., cl 4.1 mm; Captain Cook Highway; 16°22.266˚ S, 145°24.551˚ E; 64 m a.s.l.; 14 Jun. 2016; B. Mos leg.; MNHN-IU-2018-2935 • 1 ♀ ovig., cl 3.2 mm; same collection data as for preceding; MNHN-IU-2018-2936 • 1 ♀ ovig., cl 3.8 mm; Johnstone River; 17°30.933˚ S, 145°59.437˚ E; 8 m a.s.l.; 11 Jun. 2016; B. Mos leg.; MNHN-IU-2018-2937 • 1 ♀ ovig., cl 3.2 mm; Barron River; 16°52.443˚ S, 145°40.830˚ E; 5 m a.s.l.; 8 Jun. 2016; B. Mos leg.; MNHN-IU-2018-2938 • 1 ♀ ovig., cl 3.6 mm; Mowbray River; 16°33.859˚ S, 145°27.844˚ E; 15 m a.s.l.; 14 Jun. 2016; B. Mos leg.; MNHN-IU-2018-2939.

PAPUA NEW GUINEA • 1 ♀ ovig., cl 5.4 mm; New Britain, Rangihi swamp; 05°34.549˚ S, 149°28.943˚ E; 24 Oct. 2018; R. Causse, P. Keith and C. Lord leg.; MNHN-IU-2018-2940.

Description

CEPHALOTHORAX. Antennal spine ventral to inferior orbital angle. Pterygostomian margin rounded. Rostrum (Fig. 23m–n): straight, short, 0.6–0.9 of cl, reaching beyond end of antennular peduncle, armed with 22–26 teeth on dorsal margin, 7–10 of them situated on carapace behind orbital margin, ventral margin with 6–7 teeth. Eyes developed, anterior end reaching to 0.54 times length of basal segment of antennular peduncle. Long antennular peduncle, 0.78 (♀) – 0.95 (♂) times as long as carapace; second segment distinctly longer than third segment. Stylocerite reaching to middle of second segment of antennular peduncle.

PEREIOPODS. Epipods on first four pereiopods. P1 (Fig. 23a): chela about 2.3–2.9 times as long as wide, movable finger 4.1–5.1 times as long as wide, 1.1–1.8 times length of palm; carpus 3.3–4.5 times as long as wide. P2 (Fig. 23b) more slender and longer than first pereiopod, with chela 3.7–5.1 times as long as wide: movable finger 6.0–8.3 times as long as wide, 1.7–1.9 times length of palm; carpus slender, 8.3–10.9 times as long as wide. P3 (Fig. 23c): slender, dactylus (Fig. 23e) 3.7–4.4 times as long as wide (terminal spiniform seta included), with 6–7 spiniform setae on flexor margin including terminal one; propodus 14.2–17.1 times as long as wide, 4.1–5.3 times as long as dactylus, distinctive very long seta on distal end of carpus and merus. P5 (Fig. 23d): dactylus (Fig. 23f) 4.5–5.5 as long as wide, with 10–15
spiniform setae on flexor margin; propodus 18.7–24.0 times as long as wide, 4.5–5.5 times as long as dactylus.

**ABDOMEN.** Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.56 times as long as carapace, 1.7 times as long as fifth somite, shorter than telson.

**TELSON** (Fig. 23i). 2.5–3.5 times as long as wide, with five pairs of dorsal spinules and pair of dorsolateral spinules; posterior margin with small median process, rounded, with 8–10 very long intermediate plumose setae longer than lateral ones.

**MALE PLEOPODS.** Pl1 (Fig. 23j): endopod rounded, 1.4 times as long as wide, reaching 0.22 times length of endopod, no appendix. Pl2 (Fig. 23k): appendix masculina reaching 0.77 times length of endopod; appendix interna reaching 0.75 times length of appendix masculina.

**PRE-ANAL CARINA** (Fig. 23g). High, with a spine.

**UROPODAL DIAERESIS** (Fig. 23h). With 15–17 spinules.

**EGGS.** Ovigerous females with small eggs, size: 0.30–0.38 × 0.18–0.23mm.

**Habitat**

*Caridina serratirostris* lives from the estuarine brackish water to the fresh water in the lower course of the rivers.

**Colour pattern** (Fig. 26D)
The body is yellowish to reddish with many red dots.

**Distribution**

This species occurs in Indonesia (Selajar), the Solomon Islands, Australia and Papua New Guinea (New Britain).

**Remarks**

Our specimens fit well with the types from Selayar: straight rostrum, 0.6–0.9 of cl (vs 0.6–0.9 in the type specimens), sometimes reaching the end of the antennular peduncle, armed with 22–26 teeth on dorsal margin (vs 20–27), 7–10 of them situated on carapace behind orbital margin (vs 8–9), ventral margin with 6–7 teeth (vs 4–7); P1 carpus 3.3–4.5 times as long as wide (vs 3.1–4.9); P2 carpus 8.3–10.9 times as long as wide (vs 7.0–9.0); P3 dactylus with 6–7 spiniform setae (vs 6–7) propodus 4.1–5.3 times as long as dactylus (vs 3.8–4.2); uropodal diaresis with 15–17 spinules (vs 14–19); small eggs, 0.30–0.38 × 0.18–0.23 mm (vs 0.28–0.31 × 0.13–0.15); no appendix interna on the endopod of the male first pleopod.

*Caridina celebensis* De Man, 1892

Figs 2B, 24

*Caridina serratirostris* var. *celebensis* De Man, 1892: 385, pl. 23, figs 28f–h (type locality: river at Palopo, Luwu, Sulawesi (Celebes), Indonesia).

*Caridina serratirostris* var. *celebensis* – Bouvier 1925: 220.

Material examined

Paralectotype (lectotype designated in Cai & Shokita 2006b)
INDONESIA • 1 ♀ ovig., cl 3.5 mm; Sulawesi, Luwu, river near Palopo; Feb. 1889; M. Weber leg.; MNHN-IU-2015-1926.

Other material
SOLOMON ISLANDS – Kolombangara Island • 1 ♀ ovig., cl 3.1 mm; Lodumoe River; 07°50.961’ S, 157°04.320’ E; 16 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2941 • 1 ♀ ovig., cl 3.2 mm; same collection data as for preceding; MNHN-IU-2018-2942 • 1 ♀, cl 3.5 mm; Munga River; 07°54.420’ S, 156°57.932’ E; 5 m a.s.l.; 19 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; DNA voucher: CA1518; MNHN-IU-2018-2943 • 1 ♀ ovig., cl 3.4 mm; Liva River; 08°03.863’ S, 157°10.633’ E; 14 m a.s.l.; 11 Nov. 2015; P. Keith, C. Lord and G. Marquet leg.; MNHN-IU-2018-2944.

VANUATU – Efate Island • 1 ♀, cl 3.0 mm; Marona River; 17°33’51.860˝ S, 168°17´08.140˝ E; 5 m a.s.l.; 9 Nov 2014; A. Accou, G. Marquet and M. Mennesson leg.; DNA voucher: CA1381; MNHN-IU-2018-2946 • 1 ♀ ovig., cl 3.4 mm; Mele River; 17°40.578’ S, 168°15.462´ E; 9 Nov. 2014; 32 m a.s.l.; A. Acou, G. Marquet and M. Mennesson leg.; MNHN-IU-2018-2947.

Description

Cephalothorax. Antennal spine ventral to inferior orbital angle. Pterygostomian margin rounded. Rostrum (Fig. 24k): straight, 0.6–0.7 of cl, reaching to base of third segment of antennular peduncle, armed with 17–22 teeth on dorsal margin, 6–8 of them situated on carapace behind orbital margin, ventral margin with 4–7 teeth. Eyes developed, anterior end reaching to 0.66 times length of basal segment of antennular peduncle. Long antennular peduncle, 0.57–0.75 (♀) times as long as carapace. Anterolateral angle reaching 0.22 times length of second segment, second segment distinctly longer than third segment. Stylocerite reaching just beyond beginning of second segment of antennular peduncle.

Pereiopods. Epipods on first four pereiopods. P1 (Fig. 24a): chela about 2.7–2.8 times as long as wide, movable finger 3.6–4.5 times as long as wide, 1.0–1.7 times length of palm; carpus 4.0–5.0 times as long as wide. P2 (Fig. 24b) more slender and longer than first pereiopod, with chela 5.5–6.6 times as long as wide: movable finger 6.4–8.1 times as long as wide, 1.2–1.3 times length of palm; carpus slender, 11.9–12.0 times as long as wide. P3 (Fig. 24c): slender, dactylus (Fig. 24e) 3.7–4.6 times as long as wide (terminal spiniform seta included), with 7–10 spiniform setae on flexor margin including terminal one; propodus 12.4–13.2 times as long as wide, 3.5–4.0 times as long as dactylus. P5 (Fig. 24d): dactylus (Fig. 24f) 4.7–5.1 as long as wide, with 10–15 spiniform setae on flexor margin; propodus 15.0–16.2 times as long as wide, 3.7–3.9 times as long as dactylus.

Abdomen. Third abdominal somite with moderately convex dorsal profile. Sixth abdominal somite 0.58 times as long as carapace, 1.7 times as long as fifth somite, shorter than telson.

Telson (Fig. 24i). 2.4 times as long as wide, with four or five pairs of dorsal spinules and pair of dorsolateral spinules; posterior margin with median process, rounded, with 9–11 very long intermediate setae longer than lateral ones.

Male pleopods. No males.

Pre-anal Carina (Fig. 24g). High, with a spine.

Uropodal diaeresis (Fig. 24h). With 13–17 spinules.
Fig. 24. *Caridina celebensis* De Man, 1892. **a.** First pereiopod. **b.** Second pereiopod. **c.** Third pereiopod. **d.** Fifth pereiopod. **e.** Dactylus of third pereiopod. **f.** Dactylus of fifth pereiopod. **g.** Pre-anal carina. **h.** Uropodal diaeresis. **i.** Telson. **j.** Eggs. **k.** Cephalothorax. MNHN-IU-2018-2944 (a–f, j), MNHN-IU-2018-2946 (g) and MNHN-IU-2018-2943 (h–i, k).
Eggs. Size: 0.30–0.38 × 0.18–0.23mm.

Habitat
Caridina celebensis lives essentially in the estuarine brackish waters in the lower course of rivers.

Colour pattern
Unknown.

Distribution
This species occurs in Indonesia (Sulawesi), the Solomon Islands, Vanuatu and the Philippines (Palawan).

Remarks
According to Holthuis (1978), C. celebensis can be separated from C. serratiostris by its shorter rostrum reaching to the base of the third segment of the antennular peduncle (vs reaching beyond the end of the antennular peduncle), with less dorsal teeth 17–22 (vs 22–26). Its P2 carpus is longer, 11.9–12.0 as long as wide (vs 8.3–10.9), and also its P2 chela is 5.5–6.6 times as long as wide (vs 3.7–5.1), but its movable finger is 1.2–1.3 times the length of the palm (vs 1.7–1.9), its P3 dactylus has more spiniform setae on the flexor margin in addition to the terminal one, 7–10 (vs 6–7), and its P5 propodus is 15.0–16.2 times as long as wide (vs 18.7–24.0) and 3.7–3.9 times as long as the dactylus (vs 4.5–5.5).

According to Cai & Shokita (2006b), the characters used by Holthuis are not always reliable. On the contrary, the size of the arthrobranch on the base of P1 in C. serratiostris is highly variable, from very distinct to almost indiscernible, but is totally absent in C. celebensis.

Nevertheless, our study allowed us to find other morphological characters that separate these two species well, such as the number of teeth on the dorsal margin of the rostrum or the length of the P2 carpus.

Identification key
1. More than 6 dorsal rostrum teeth situated on carapace behind orbital margin. A long stylocerite, reaching at least the beginning of the second segment of antennular peduncle: C. serratiostris group .................................................................................................................................................. 2
   – Fewer than 6 dorsal rostrum teeth situated on carapace behind orbital margin. A long or short stylocerite .................................................................................................................................................. 3

2. Rostrum with 22–26 dorsal teeth and P2 carpus 8.2–10.9 times as long as wide .......................................................... C. serratiostris De Man, 1892
   – Rostrum with 17–22 dorsal teeth and P2 carpus 11.9–12.0 times as long as wide .......................................................... C. celebensis De Man, 1892

3. Number of spiniform setae on uropodal diaeresis 6–10 and a very long and upcurved rostrum with 5–9 dorsal teeth, widely spaced: C. gracilirostris group .......................................................... 4
   – Number of spiniform setae on uropodal diaeresis 8–22 and a long or short rostrum with 8–28 dorsal teeth, closely set ..................................................................................................................... 5

4. No appendix interna on the endopod of the male first pleopod. P1 and P2 carpus 1.5–1.9 and 3.2–5.1 times as long as wide, respectively .......................................................... C. gracilirostris De Man, 1892
   – With an appendix interna on the endopod of the male first pleopod. P1 and P2 carpus 2.3–3.1 and 5.2–6.4 times as long as wide, respectively .......................................................... C. neglecta Cai & Ng, 2007

5. Uropodal diaeresis with 14–22 spinules and short rostrum, armed or not .................................................. 6
   – Uropodal diaeresis with 8–17 spinules and rostrum variable in shape and length, always unarmed .................................................................................................................. 18
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Telson with numerous and very long plumose intermediate setae</td>
<td>(C. weberi complex)</td>
</tr>
<tr>
<td></td>
<td>– Telson with few long intermediate setae</td>
<td>(C. typus complex)</td>
</tr>
<tr>
<td>7.</td>
<td>Long stylocerite reaching to about halfway along second segment of peduncle</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>– Short stylocerite not reaching second segment of peduncle</td>
<td>9</td>
</tr>
<tr>
<td>8.</td>
<td>P5 propodus 3.8–4.4 times as long as dactylus</td>
<td>C. buehleri Roux, 1934</td>
</tr>
<tr>
<td></td>
<td>– P5 propodus 4.4–6.2 times as long as dactylus</td>
<td>C. gueryi Marquet, Keith &amp; Kalfatak, 2009</td>
</tr>
<tr>
<td>9.</td>
<td>No dorsal teeth on the rostrum</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>– 8–22 dorsal teeth on the rostrum</td>
<td>11</td>
</tr>
<tr>
<td>10.</td>
<td>P5 dactylus 4.9–6.6 times as long as wide and P3 propodus 8.6–11.3 times as long as wide</td>
<td>C. paratypus sp. nov.</td>
</tr>
<tr>
<td></td>
<td>– P5 dactylus 3.9–4.5 times as long as wide and P3 propodus 6.7–7.7 times as long as wide</td>
<td>C. poarae sp. nov.</td>
</tr>
<tr>
<td>11.</td>
<td>Dorsal teeth of rostrum situated considerably anterior to orbital margin</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>– Dorsal teeth of rostrum situated all along its length</td>
<td>14</td>
</tr>
<tr>
<td>12.</td>
<td>8–7 large teeth on dorsal margin of rostrum</td>
<td>C. nana sp. nov.</td>
</tr>
<tr>
<td></td>
<td>– 8–15 small teeth on dorsal margin of rostrum</td>
<td>13</td>
</tr>
<tr>
<td>13.</td>
<td>P5 dactylus biunguiculate</td>
<td>C. maeana sp. nov.</td>
</tr>
<tr>
<td></td>
<td>– P5 dactylus unguiculate</td>
<td>C. tupaia de Mazancourt, Marquet &amp; Keith, 2019</td>
</tr>
<tr>
<td>14.</td>
<td>Telson with one or two lateral pairs of setae, with 11–22 dorsal teeth</td>
<td>C. weberi De Man, 1892</td>
</tr>
<tr>
<td></td>
<td>– Telson always with one pair of lateral setae, with 9–13 dorsal teeth</td>
<td>15</td>
</tr>
<tr>
<td>15.</td>
<td>0–1 post-orbital teeth on the dorsal margin of the rostrum</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>– 2 or more post-orbital teeth on the dorsal margin of the rostrum</td>
<td>C. sikipozo sp. nov.</td>
</tr>
<tr>
<td>16.</td>
<td>P3 dactylus 2.8–3.0 times as long as wide</td>
<td>C. piokerai sp. nov.</td>
</tr>
<tr>
<td></td>
<td>– P3 dactylus 3.0–3.3 times as long as wide</td>
<td>C. papuana Nobili, 1905</td>
</tr>
<tr>
<td>17.</td>
<td>Rostrum with no dorsal teeth</td>
<td>C. typus H. Milne Edwards, 1837</td>
</tr>
<tr>
<td></td>
<td>– Rostrum with dorsal teeth</td>
<td>C. turipi sp. nov.</td>
</tr>
<tr>
<td>18.</td>
<td>P1 carpus shaped as a half crescent; no apical tooth on the rostrum</td>
<td>C. barakoma sp. nov.</td>
</tr>
<tr>
<td></td>
<td>– P1 carpus more or less long; 1–5 apical teeth on the rostrum</td>
<td>19 (C. nilotica complex)</td>
</tr>
<tr>
<td>19.</td>
<td>Very long rostrum, 1.1–2.1 times as long as carapace</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>– Moderately long rostrum, variable, 0.5–1.2 times as long as carapace</td>
<td>22</td>
</tr>
<tr>
<td>20.</td>
<td>Pre-anal carina without a spine</td>
<td>C. brevidactyla Roux, 1919</td>
</tr>
<tr>
<td></td>
<td>– Pre-anal carina with a spine</td>
<td>21</td>
</tr>
<tr>
<td>21.</td>
<td>Rostrum with 12–18 dorsal teeth, somewhat irregularly spaced, 8–12 dorsal teeth before the first ventral teeth</td>
<td>C. appendiculata Jalihal &amp; Shenoy, 1998</td>
</tr>
<tr>
<td></td>
<td>– Rostrum with 16–26 dorsal teeth, closely set, 11–16 dorsal teeth before the first ventral teeth</td>
<td>C. intermedia sp. nov.</td>
</tr>
</tbody>
</table>
22. Pre-anal carina always without a spine; rostrum with 4–9 ventral teeth ....... *C. mertoni* Roux, 1911
   – Pre-anal carina with or without a spine; rostrum with 6–18 ventral teeth ........................................... 23

23. Pre-anal carina always with a spine, pterygostomial margin rounded ....................... *C. pisuku* sp. nov.
   – Pre-anal carina with or without a spine, pterygostomial margin subrectangular ........................................ 23

**Conclusion**

By visiting only five major islands of the Solomon Archipelago, we identified 24 *Caridina* species including 11 of which are new. As expected for such a wide-ranging genus, regional differences in diversity of *Caridina* exist in the Indo-Pacific. When focusing on endemic species of *Caridina*, the maximum diversity occurs around the Coral Triangle (Veron *et al.* 2009), between the Philippines, Indonesia, and Papua-New Guinea. According to our study, the Solomon Archipelago belongs to this maximum diversity area. Indeed, among our 24 Solomon *Caridina* species, 5 appear to be endemic to this archipelago.

Regional patterns appear in the diversity of *Caridina* in the Indo-Pacific, which are explained by the age, size, and latitude of the islands. Geologically old islands have had more opportunity to be colonized by shrimps, and had time for colonizers to adapt and specialize to the different habitats and form new species (Chen & He 2009). Indeed, the complex geological history of the Solomon Islands may explain the richness of its fauna: the extension of the archipelago, stretching over 1300 km, with many large, high elevation and old islands (2700 m high, 10049 km$^2$ and formation in Early Miocene for Bougainville) promoted its great diversity.

The patterns in the diversity of endemic species vary considerably from those of amphidromous *Caridina* species (de Mazancourt *et al.* in press). The greatest diversity of amphidromous species is found in Indonesia, in the Solomon Islands and Vanuatu. Indeed, among our 24 species of the Solomon Islands, 12 are shared with Indonesia, 10 with Vanuatu and 6 with Papua New Guinea. On the other hand, only 4 species are shared with Australia and 3 with New Caledonia.

This may also include the Coral Triangle, as the diversity of *Caridina* from the area remains poorly known. The lowest diversity of amphidromous species is found in Polynesia and at the borders of the distribution area in general. Important areas of endemism, such as Madagascar, are not hotspots of diversity for amphidromous species. Localities with low endemism, like the Polynesian or Micronesian islands, often have a higher proportion of amphidromous species. Patterns in the diversity of amphidromous species may be explained by the recent colonization of the islands by amphidromous shrimps with great dispersal abilities, allowing them to colonize these isolated habitats without becoming reproductively isolated. Furthermore, small islands exhibit unstable conditions in which endemic landlocked populations could not maintain themselves in rivers, in contrast to amphidromous species that maintain a stock of larvae in the ocean, ready to recolonize depopulated habitats (McDowall 2007).

**Acknowledgements**

The authors wish to thank Dr Urs Wuest and Edi Stöckli (NMB) for providing the lectotype and paralectotypes of *C. weberi keiensis* from Kei Besar Island; Paula Martin-Lefèvre and Dr Laure Corbari (MNHN) for providing the cotypes of *C. parvirostris* and *C. weberi*, paralectotypes of *C. serratirostris* and paralectotype of *C. celebensis*; Dr Daisy Wowor (MZB) for providing the holotype of *C. neglecta*; Dr. Laszlo Forro (HNHM) for the type specimens of *C. papuana*; Werner Klotz for providing tissues and morphological data for *C. buehleri*. 
We would like to thank Brendan Ebner, Philippe Gerbeaux, Clara Lord and Robson Hevalo for their help collecting specimens on Choiseul and Kolombangara islands. Part of the study was made possible by a grant given to the French Ichthyological Society in the context of the ‘Critical Ecosystem Partnership Fund (CEPF)’ (Melanesia hotspot). The Critical Ecosystem Partnership Fund is a joint initiative of l’Agence Française de Développement, Conservation International, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation. Part of the sampling was made possible by a grant of the Fondation de France in the context of a freshwater fish biodiversity study. We would like to acknowledge the almost 20 customary landowners and tribes of Mount Maetambe in the Kolobangara River Watershed for allowing the expedition team to enter their customary lands. We would also like to thank the Lauru Land Conference of Tribal Community, Choiseul Province, the customary landowners, villages and tribes of Hunda-Kena, Jack Harbour, Potete, Lodumoe and Vanga who welcomed us on Kolombangara Island as on Vella Lavella and Malaita, and for allowing the expedition team to enter their customary lands, the Solomon Islands Government for the support and facilitation of the legal processes that have allowed the expedition team to conduct the scientific research in Choiseul Province, and of course ESSI (Ecological Solutions Solomon Islands) which organised the trip very efficiently. We would also like to thank all of our partners, institutions, museums, universities and collaborators.

We would also like to thank KIBCA (Kolombangara Island Biodiversity Conservation Association) and ESSI for the meetings in the villages prior to the expeditions and for the organisation of the trip. Thanks also to the MNHN and the BOREA (Biologie des ORganismes et Ecosystèmes Aquatiques) team.

We wish to thank Joe Penny and Brendan Kilme of Ainbul Village in the Whiteman Range. Fieldwork in Papua New Guinea (New Britain Island) was financed by the MNHN (UMR 7208 BOREA), SFI and the Fondation de France. Thanks to G. Kaipu (PNG NRI) for the research permit (n°018196), N. Gowep (CEPA) for the export permit and our P. Amick (New Guinea Binatang Research Centre (BRC)), B. Ruli (Live & Learn), J. Anamiato (National Museum and Art gallery of PNG) and D. Vaghelo (WNB Provincial Govt, Environment section) for their help in the field. Last, we want to thank all the responsible Chiefs of the areas investigated for their kind permission, and the villages and communities (especially Bereme village community) who have always heartily received us and helped us in our prospecting of rivers.

Finally, thanks go to the two anonymous reviewers for their helpful comments on the manuscript.

Part of this study was made possible by the MfN Taxonomiefonds (Kristina von Rintelen, Museum für Naturkunde Berlin, 2019).

References


de MAZANCOURT V. et al., List of Caridina freshwater shrimp species from the Solomon Islands


de Mazancourt V., Klotz W., Marquet G. & Keith P. 2018 c. Integrative taxonomy helps separate four species of freshwater shrimps commonly overlooked as *Caridina longirostris* (Crustacea: Decapoda: Atyidae) in Indo-West Pacific islands. *Invertebrate Systematics* 32 (6): 1422–1447. [https://doi.org/10.1071/is18034](https://doi.org/10.1071/is18034)


https://doi.org/10.1093/bioinformatics/btt499

Manuscript received: 11 September 2019  
Manuscript accepted: 24 March 2020  
Published on: 4 August 2020  
Topic editor: Rudy Jocqué  
Desk editor: Jeroen Venderickx

Printed versions of all papers are also deposited in the libraries of the institutes that are members of the *EJT* consortium: Muséum national d’histoire naturelle, Paris, France; Meise Botanic Garden, Belgium; Royal Museum for Central Africa, Tervuren, Belgium; Royal Belgian Institute of Natural Sciences, Brussels, Belgium; Natural History Museum of Denmark, Copenhagen, Denmark; Naturalis Biodiversity Center, Leiden, the Netherlands; Museo Nacional de Ciencias Naturales-CSIC, Madrid, Spain; Real Jardín Botánico de Madrid CSIC, Spain; Zoological Research Museum Alexander Koenig, Bonn, Germany; National Museum, Prague, Czech Republic.