



***Podochela meloi* Sankarankutty, Ferreira & Cunha, 2001, a junior synonym of the spider crab *Inachoides forceps* A. Milne-Edwards, 1879 (Crustacea: Brachyura: Inachoididae)**

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Abstract

Podochela meloi Sankarankutty, Ferreira & Cunha, 2001, originally described in the Inachidae MacLeay, 1838, was recently transferred to the Inachoididae genus *Inachoides* H. Milne Edwards & Lucas, 1842, based upon overall similarities. Placement of *P. meloi* in both Inachoididae and *Inachoides* is found to be supported by a number of synapomorphies as shown herein. *Podochela meloi* is shown to be a junior synonym of *Inachoides forceps* A. Milne-Edwards, 1879.

Key words: *Podochela*, *Inachoides*, Inachidae, Inachoididae, Decapoda, Brachyura

Introduction

An ongoing revision by Santana & Tavares of the family Inachoididae Dana, 1851, necessitated a reappraisal of *Podochela meloi* Sankarankutty, Ferreira & Cunha, 2001, originally described in the Inachidae MacLeay, 1838, but recently transferred by Coelho (2006) to the inachoidid genus *Inachoides* H. Milne Edwards & Lucas, 1842. A comparison of part of the type material of *P. meloi* from northeastern Brazil, with all the three species currently placed in *Inachoides*, revealed that *P. meloi* is a junior synonym of the Western Atlantic taxon *I. forceps* A. Milne-Edwards, 1879.

Abbreviations used include: MCZ (Museum of Comparative Zoology, Harvard University, Cambridge); MNRJ (Museu Nacional, Universidade Federal do Rio de Janeiro); MZUSP (Museu de Zoologia, Universidade de São Paulo); USNM (National Museum of Natural History, Smithsonian Institution, Washington, D.C.); G1, first gonopod.

Family INACHOIDIDAE Dana, 1851

***Inachoides forceps* A. Milne-Edwards, 1879**

(Figs. 1B, D; 2C; 3B)

Inachoides forceps A. Milne-Edwards, 1879: 199, pl. 33, figs. 4-4d. — Garth, 1958: 99, 101. — Powers, 1977: 45. — Melo, 1996: 206; 1998: 146. — Camp *et al.*, 1998: 146. — Boschi, 2000: 88. — Nizinski, 2003: 129. — McLaughlin *et al.*, 2005: 251, 311. — Coelho, 2006: 18. — Ng *et al.*, 2008: 115.

Inachoides obtusus A. Milne-Edwards, 1879: 199, pl. 33, figs. 3, 4d.

Inachoides intermedius Rathbun, 1894: 57. — Rathbun, 1901: 59.

Podochela meloi Sankarankutty, Ferreira & Cunha, 2001: 552, figs. 1, 2. — Coelho, 2006: 678.

Material examined. *Inachoides forceps* A. Milne-Edwards, 1879. *Puerto Rico*, Smithsonian-Hartford expedition, stn 21, W. L. Schmitt coll., 29.iii.1937: 1 ovigerous female (MCZ 12186). *Virgin Islands*, Saint Thomas, C. R. Shoemaker coll., 1915 1 ovigerous female (USNM 55488). *Brazil*, Maranhão, Tutóia, *Almirante Saldanha*, stn 1731A, 02°22,0'S–41°51,05'W, 30.x.1967, 37 m: 1 female (MZUSP 6594). Ceará, Ponta do Trapia, Camocim, P. Young coll., 6.viii.1982: 1 male, 2 females (MZUSP 6268). Pernambuco, Itamaracá, R. Paripe, 22.xi.1969: 2 males (MZUSP 6593). Espírito Santo, Projeto Rio Doce, stn 54, 18°54'08"S–39°15'04"W, i.1990, 41 m: 3 males, 6 females (MZUSP 9843). Rio de Janeiro, Ilha da Rata, *Hassler*: 2 males, 3 ovigerous females (MCZ 1834). Rio de Janeiro, Thayer expedition, iv.1865–vii.1866: 1 male (MCZ 8403). Rio de Janeiro, Thayer expedition, iv.1865–vii.1866: 1 male, 4 ovigerous females, 1 juvenile (MCZ 1833). Rio de Janeiro, Angra dos Reis, Praia Vila Velha, G. A. S. Melo coll., 21.v.1966: 1 female (MZUSP 2761). Rio de Janeiro, Angra dos Reis, Praia do Leste, G. A. S. Melo coll., 21.v.1966: 1 female (MZUSP 2762). Rio de Janeiro, Ilha Grande, stn 46, 10.xii.1965, 13 m: 1 juvenile (MZUSP 2765); stn 104, 01.vii.1966, 26 m: 1 female (MZUSP 2766); stn 132, 12.v.1966, 24 m: 1 male, 3 females (MZUSP 2767); stn 133, 12.v.1966: 1 male (MZUSP 2768); stn 212, 15.vi.1967, 10 m: 1 male (MZUSP 3477); Praia da Baleia, G. A. S. Melo coll., 20.vii.1966: 1 female (MZUSP 2760); Praia Brava, G. A. S. Melo coll., 21.vii.1966: 1 female (MZUSP 2759); Praia Freguesia do Leste, G. A. S. Melo coll.: 1 female (MZUSP 2756); Praia Freguesia do Sul, G. A. S. Melo coll., 24.vii.1966: 1 male, 1 female (MZUSP 2755); Praia do Funil, G. A. S. Melo coll., 24.vii.1966: 1 male (MZUSP 2758); Praia do Funil, 24.vii.1966: 1 male (MZUSP 2764). Praia do Furado, G. A. S. Melo coll., 20.vii.1966: 1 female (MZUSP 2753); Praia do Furado, 22.vii.1966: 1 juvenile (MZUSP 2754); Praia do Grumixama, G. A. S. Melo coll., 23.vii.1966: 1 female (MZUSP 2757); Praia do Leste, G. A. S. Melo coll., 20.vii.1966: 1 male (MZUSP 2763). Praia do Guarda-Mor, R. Y. Tsukamoto coll., 14.ii.1983: 6 males, 3 females (MZUSP 6011). São Paulo, Ubatuba, P. Moreira coll., 27.iv.1964, 1 male (MZUSP 1821); Praia do Lamberto, 04.iv.1969: 1 male (MZUSP 3727); Praia do Lamberto, E. Boffi coll., 02.v.1969: 1 male (MZUSP 3726). Santa Catarina, Florianópolis, A. R. Magalhães coll., 20.iii.1991: 1 female (MZUSP 12609). Locality unknown, 16.i.1985: 1 male (MZUSP 6067).

Podochela meloi Sankarankutty, Ferreira & Cunha, 2001. *Brazil*, Rio Grande do Norte, estuary near Macau, 05°04'S–05°08'S; 36°35'W–36°30'W, male holotype (MNRJ 13769), female paratype (MZUSP 13192).

Comparative material: *Inachoides lambriformis* (De Haan, 1839). *Peru*, Paraca Bay, *Hassler*: 1 ovigerous female (MCZ 2051). *Chile*, Caldera, *Hassler*: 1 male, 1 ovigerous female (MCZ 1837). Valparaíso, *Hassler*: 1 male (MCZ 1838).

Inachoides laevis Stimpson, 1860. *Panamá* (Pacific coast), Sternberg coll., v.1869: 1 male (MCZ 2044). *Costa Rica* (Pacific coast), Punta Culebra Bay, *Velero III*, Allan Hancock Pacific Expedition, stn 254-34, 24.ii.1934, Dredge, 5–18 m: 1 male (USNM 134274).

Remarks. The description of *Podochela meloi* was based on six males and seven females collected from the sublittoral zone on broken stones and molluscan shells with algal growth bottoms in northeastern Brazil (Sankarankutty *et al.*, 2001). Additional specimens have never again been obtained. The male holotype and one female paratype are in the collections of the MNRJ and MZUSP, respectively. The remaining paratypes, housed in the collections of the Department of Oceanography and Limnology, Federal University of Rio Grande do Norte, Natal, were not found.

In a review of the inachid genus *Podochela* Stimpson, 1860, and allied genera from the Caribbean and the Atlantic coast of South America, Coelho (2006: 683) argued that *Podochela meloi* lacks typical inachid traits, such as the neck-like anterior part of the carapace, the swollen branchial and gastric regions of the carapace, and the prehensile pereopods. Comparing Sankarankutty *et al.*'s (2001: 555, fig. 2F) illustration of the G1 of *P. meloi* (Sankarankutty *et al.*, 2001: 555, fig. 2F) with those of Williams (1984: 305, fig. 241 j–l, i) for *I. forceps* and *Podochela* spp., Coelho (2006) noticed that in *P. meloi* the G1 markedly differs from those of *Podochela* species and resemble instead those of *I. forceps*. Accordingly, he transferred *P. meloi* from the Inachidae MacLeay, 1838 to the Inachoididae Dana, 1851, genus *Inachoides* H. Milne Edwards & Lucas, 1842, based on overall similarities. Overall similarities alone, however, do not imply close phylogenetic relationships.

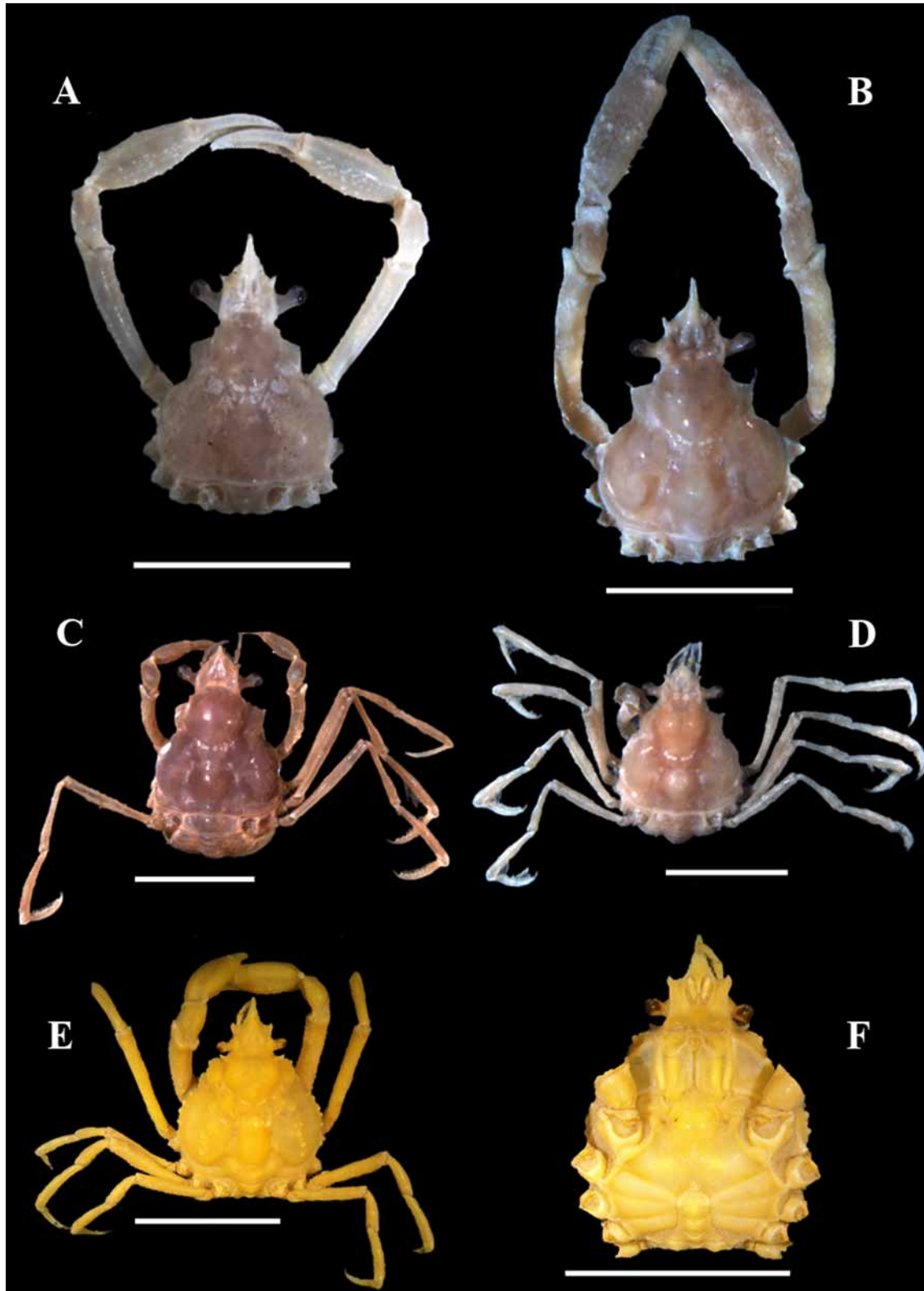


FIGURE 1. A, B. Dorsal view of the carapace, cephalothorax, and abdomen. A, *Podochela meloi* Sankarankutti, Ferreira & Cunha, 2001, male holotype (MNRJ 13769). B, *Inachoides forceps* A. Milne-Edwards, 1879, male (MZUSP 6593). C, D. *Habitus*, dorsal view. C, *Podochela meloi* Sankarankutti, Ferreira & Cunha, 2001, female paratype (MZUSP 13192). D, *Inachoides forceps* A. Milne-Edwards, 1879, female (MZUSP 6011). E, F. *Inachoides lambriformis* (De Haan, 1839), male (MCZ 1837). E, *Habitus*, dorsal view. F, ventral view of carapace, cephalothorax, and abdomen. Scale bars: A, B, 5 mm; B, C, 4 mm; E, F, 12 mm.

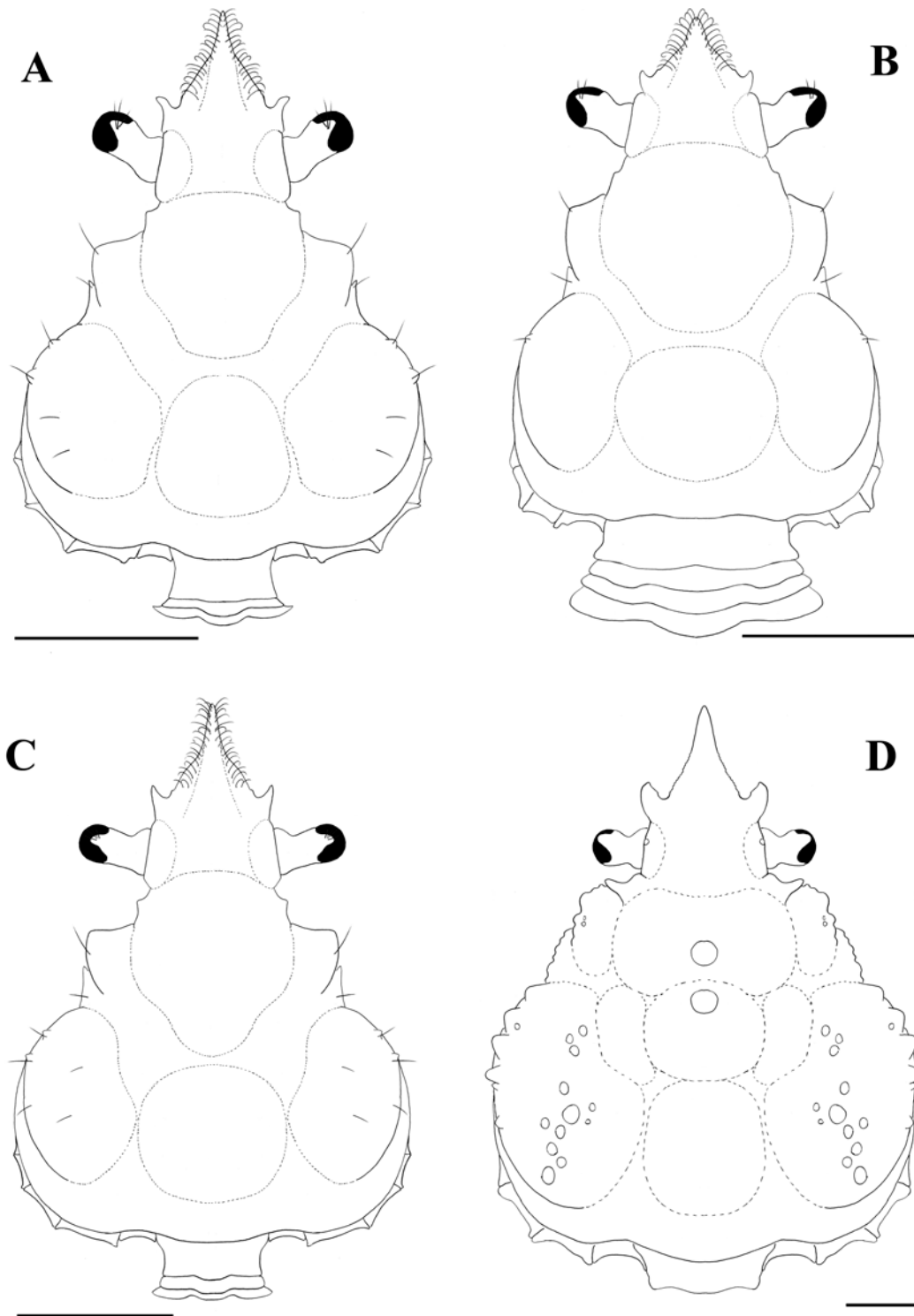


FIGURE 2. A–D. Dorsal view of carapace, cephalothorax, and abdomen. A, B, *Podochela meloi* Sankarankutti, Ferreira & Cunha, 2001. A, male holotype (MNRJ 13769). B, female paratype (MZUSP 13192). C, *Inachoides forceps* A. Milne-Edwards, 1879, male (MZUSP 6593). D, *Inachoides lambriformis* (De Haan, 1839) (MCZ 1837). Scale bars: 2 mm.

In an investigation of phylogenetic relationships of the groups in question Santana (2008) found four unambiguous synapomorphies that indicate the monophyly of the Inachoididae: 1) thoracic pleurites V–VIII gymnopleura (see also Drach & Guinot, 1982; 1983; Guinot & Richer de Forges, 1997); 2) female abdominal segments 5, 6 fused with each other and with telson; 3) second antennal segment with a longitudinal carina

parallel to the lateral margin of the antennular fossa; and 4) female sterno-abdominal cavity deeply concave. The genus *Inachoides* is also monophyletic as evidenced by the following synapomorphies: 1) single rostral spine; 2) antennular septum with no lobe or spine and restricted to antennular fossa; 2) propod of cheliped strongly swollen; 4) ventromesial margin of antennal article 2 with a low carina; 5) ventrolateral margin of subhepatic region with no spine or prominent tubercles. Comparisons of *P. meloi* with representatives of the valid species of *Inachoides* revealed that *P. meloi* has all the synapomorphies of Inachoididae and *Inachoides*. Therefore, these synapomorphies support the placement of *P. meloi* in *Inachoides*.

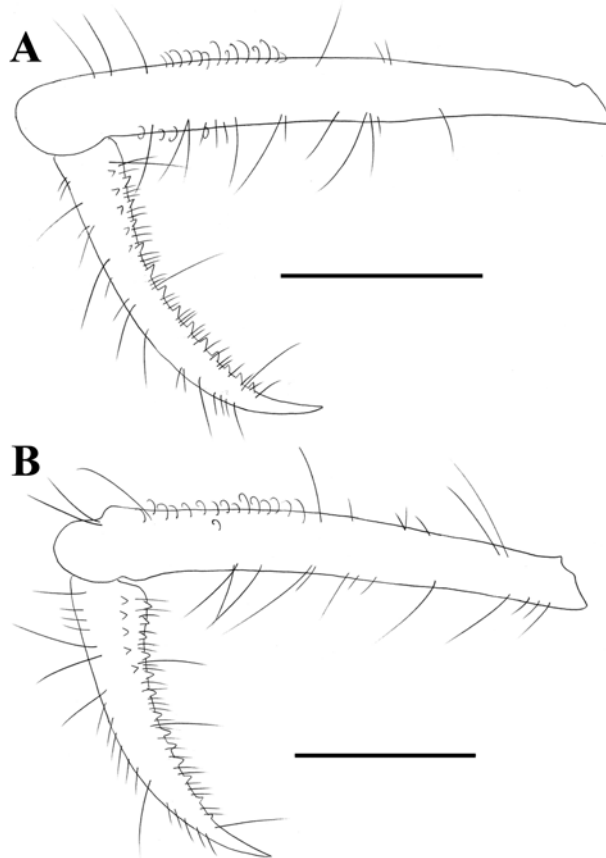


FIGURE 3. A, B. Outline drawing of dactyl and propodus of the third left pereopod. A, *Podochela meloi* Sankarankutti, Ferreira & Cunha, 2001, male holotype (MNRJ 13769). B, *Inachoides forceps* A. Milne-Edwards, 1879, male (MZUSP 6593). Scale bars: 1 mm.

Inachoides currently comprises three species: *I. laevis* and *I. lambriformis*, both from the Pacific coast of the Americas, and *I. forceps*, from the Western Atlantic. Striking variations in the rostral length in *I. forceps* (e.g., A. Milne-Edwards, 1879: 199, pl. 33, figs. 4, 4d; Williams, 1984: 299, fig. 234) resulted in the addition of two species, *I. obtusus* A. Milne-Edwards, 1879, and *I. intermedius* Rathbun, 1894. Variations in the ornamentation of the carapace and chelipeds led Rathbun (1925) to merge *I. forceps* into with *I. laevis*. Garth (1958: 101) returned to the concept of Stimpson (1860) and considered *I. laevis* as an exclusively Eastern Pacific species, an interpretation followed by many subsequent authors (e.g., Powers, 1977; Williams, 1984; Melo, 1996; 1998; Boschi, 2000; Ng *et al.*, 2008). *Inachoides forceps* differs from *I. laevis* mainly in the possession of a shorter rostrum, although its status as a valid species deserves further investigation. Comparatively, *I. lambriformis* (Figs. 1E, F; 2D) is a much larger species, with gastric and branchial regions of the carapace surmounted by tubercles and granules whereas in *I. forceps* and *I. laevis* these are smooth. *Inachoides lambriformis* has a strong postorbital spine, whereas it is inconspicuous in *I. forceps* and *I. laevis*.

In *Podochela meloi*, as in *Inachoides forceps*, the carapace (Figs. 1A–D; 2A–C) is pyriform and nearly smooth. The cardiac, branchial and gastric regions are swollen, and the anterior margin of the branchial region is ornamented with few small tubercles. The postorbital spine is inconspicuous. In both species the rostrum is usually long in males, short in females, tapering gradually to a rather blunt tip, and with lateral margins possessing a row of hooked setae. In males the cheliped is longer and heavier than in females, with sparsely distributed granules mainly in the dactylus, propodus, and carpus. In *P. meloi* and *I. forceps* the pereopods are similar in length and the dactyls are armed with calcareous spinules on the ventral margins (Figs. 3A, B). In this and other respects *P. meloi* shows no difference with *I. forceps* and is considered herein to be its junior synonym.

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