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Inclusion of the austral species *Pinnotheres politus* (Smith, 1869) and *Pinnotheres garthi* Fenucci, 1975 within the genus *Calyptraeotheres* Campos, 1990 (Crustacea: Brachyura: Pinnotheridae)

Ernesto Campos

Facultad de Ciencias, Universidad Autónoma de Baja California, Apartado Postal 2300, Ensenada, Baja California, México.

Abstract.—The limpet crabs *Pinnotheres politus* (Smith, 1869) known from Perú to Chile, and *P. garthi* Fenucci, 1975 known from Brazil to Argentina, are transferred to the genus *Calyptraeotheres* Campos, 1990. As result, the diagnosis of the genus is emended in order to account for the presence or absence of the minute dactylus of the third maxilliped. Additional characters that remain diagnostics for *Calyptraeotheres* are, caparace with two longitudinal cervical depressions, anteriorly arcuate and sharp edged; walking legs 1–3 similar in shape, walking leg 4 slender and its dactylus longer than other walking legs; third maxilliped with a robust carpus, larger than the propodus; abdomen in both sexes with six abdominal somites and telson well separated. Species of *Calyptraeotheres* are obligatory symbionts of slipper shells (family Calyptraeidae).

The study of specimens and published descriptions and figures indicates that the austral limpet crabs *Pinnotheres garthi* Fenucci, 1975 and *P. politus* (Smith, 1869) should be included in the genus *Calyptraeotheres* Campos, 1990. As a result the original diagnosis of this genus needs to be emended. However, most of the characters provided by Campos (1990) to distinguish *Calyptraeotheres* remain valid. The following Institutions provided specimens for the present study: National Museum of Natural History, Smithsonian Institution (USNM); Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" Washington D.C. (MACN); Laboratorio de Invertebrados, Facultad de Ciencias, Universidad Autónoma de Baja California, Ensenada (UABC). Other abbreviations used are: MXP3, third maxilliped; WL, walking legs.

Family Pinnotheridae de Haan, 1833
Calyptraeotheres Campos, 1990

Emended diagnosis (emendations underlined).—Female. Carapace arcuate anteriorly, sharp-edged; regions ill-defined, with 2 longitudinal cervical depressions from orbits to middle of carapace; front slightly projecting: MXP3 obliquely placed in buccal cavity; ischium and merus fused; palp 2- or 3-segmented, carpus larger than propodus, dactylus, when present, minute, inserted distoventrally on propodus; exopod with thin, unsegmented flagellum. WL1–3 similar in shape; WL4 more slender than others; propodus of WL1–2 with tuft of short stiff setae on distoventral margin; dactyli of WL1–3 similar in shape, acute and curved at tip, those of WL4 longest and sword-shaped. Abdomen covering sternum, with 6 abdominal somites and telson well separated.

Male: Carapace subpentagonal or suborbicular, regions ill-defined, dorsal region even, with short spaced setae; anterolateral margin with fringe of simple setae. MXP3 similar to that of female. Abdomen with 6 somites and telson well separated, widest at third somite, narrowing toward telson.

Distribution.—Northeast Pacific: Mexi-

co, throughout Gulf of California, and west coast of Baja California Sur at Bahía Magdalena (*C. granti*). Southeast Pacific: Bahía Ancón, Perú to Castro, Isla Chilóe, Chile (*C. politus*). Southwest Atlantic: Brazil, Rio Grande do Sul; Argentina, Mar del Plata, Necochea, Golfo San Matías (*C. garthi*).

Type species.—By original designation, *Fabia granti* Glassell, 1933; host, *Crucibulum spinosum* (Sowerby).

Calyptraeotheres garthi (Fenucci, 1975), new combination
Figs. 1 E–F, 2B

Pinnotheres politus (not Smith, 1869).—Fenucci, 1971:355–367.

Pinnotheres garthi Fenucci, 1975:167, 169–171, 178, fig. 1A–B, 3D, I; Campos, 1990:365; Martins & D'Incao, 1996:11–13, fig. 7, 8 14F.

Material examined.—2 ovig. females (MACN 26315, 26316), S. SE Puerto Quequén, 8 Feb 1962, in *Crepidula* sp. on *Mytilus* sp., colls. M. Birabén & E. Martinez-Fontes; 3 females (MACN 29265, 26700), Necochea, Provincia de Buenos Aires, Apr 1978, coll. I. Pollites.

Distribution.—Southwest Atlantic: Brazil, Rio Grande do Sul; Argentina, Mar del Plata, Necochea, Golfo de San Matias.

Hosts.—Gastropoda: Calyptraeidae; in *Crepidula unguiformis* Lamark, *C. protea* Orbigny, and *Crepidula* sp.

Calyptraeotheres politus (Smith, 1869), new combination
Figs. 1C–D, 2C

Restricted synonymy:

Pinnotheres politus.—Schmitt et al., 1973: 81–82; Fenucci, 1975:166; Saelzer & Hapette, 1986:63–60; Campos, 1990: 365: Marquez & Pohle, 1995:349.

Material examined.—1 ovig. female, Bahía Ancón, Perú, coll. R. E. Coker (USNM 40448).

Distribution.—Southeast Pacific: Bahía Ancón, Perú to Castro, Isla Chilóe, Chile.

Hosts.—Gastropoda: Calyptraeidae: *Crepidula fecunda* Gallardo [= *C. dilatata* (not Lamark)] and *Calyptraea* sp (see Schmitt et al. 1973). Gallardo (1979) split *C. dilatata* Lamark in two species, *C. dilatata* from Africa and *C. fecunda* Gallardo from Chile (see Gallardo 1979, Hoagland 1983).

Taxonomic Remarks on the Genus *Calyptraeotheres*

Several characters support the inclusion of *Pinnotheres granti* and *P. politus* in the genus *Calyptraeotheres.* These include the presence of two longitudinal depressions on the carapace, front little projected, WL1–3 of similar shape, WL4 slender and its dactyl longer than the others, MXP3 with a carpus robust, larger than the propodus, and abdomen in both sexes of six somites and telson well separated. These features clearly distinguish this genus from others currently in the Pinnotheridae (Campos 1990). The species of *Calyptraeotheres* are obligatory symbionts of slipper shells (family Calyptraeidae). No other member of the Pinnotheridae is known to be symbiotic with slipper shells (Geiger & Martin 1999).

Marques & Pohle (1995) included of *C. politus* within the genus *Tumidotheres* Campos, 1989 based on presumably shared characters between *C. politus* and *Tumidotheres* spp; namely the narrowly spatulate dactylus of MXP3 that is inserted at an angular notch on the middle of the ventral margin of the propodus. As previously noted (Campos 1989), these characters are diagnostics for *Tumidotheres* (Fig. 2D); however, MXP3 of *C. politus* does not exhibit such characters. *Calyptraeotheres politus* and *C. garthi,* have the dactylus of the MXP3 rounded, minute and inserted subdistally on the ventral margin of the propodus (Fig. 2B–C). The genus *Tumidotheres* can be separated from *Calyptraeotheres* by the tumid and setose carapace, and by the above noted shape and insertion point of articles of the MXP3. In addition, species of *Tumidotheres* inhabit the mantle cavity

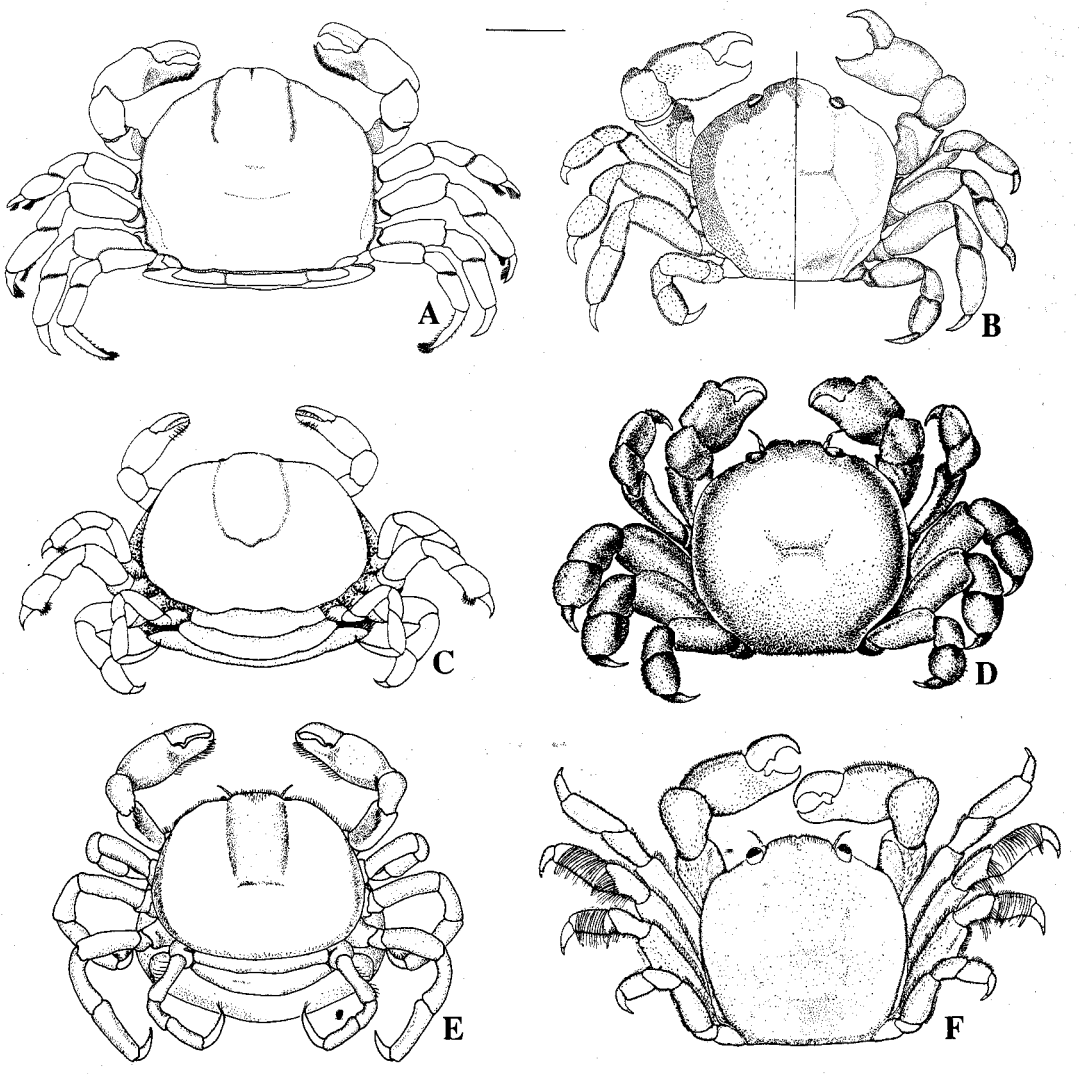

Fig. 1. Adult female and male respectively, A–B, *Calyptraeotheres granti* Glassell; C–D, *C. politus* (Smith); E–F, *C. garthi* (Fenucci). A–B from Campos, 1990; C modified from Retamal, 1981; D from Garth, 1957; E–F from Fenucci, 1975. Scale in mm, A = 2.5; B = 1.3; C = 2.6; D = 1.3; E = 3.1; F = 1.3.

of Bivalvia species, while species in *Calyptraeotheres* live between the shell and the head of slipper shells (family Calyptraeidae). Their different mode of life can be indicative of divergence and supports the separation of these genera.

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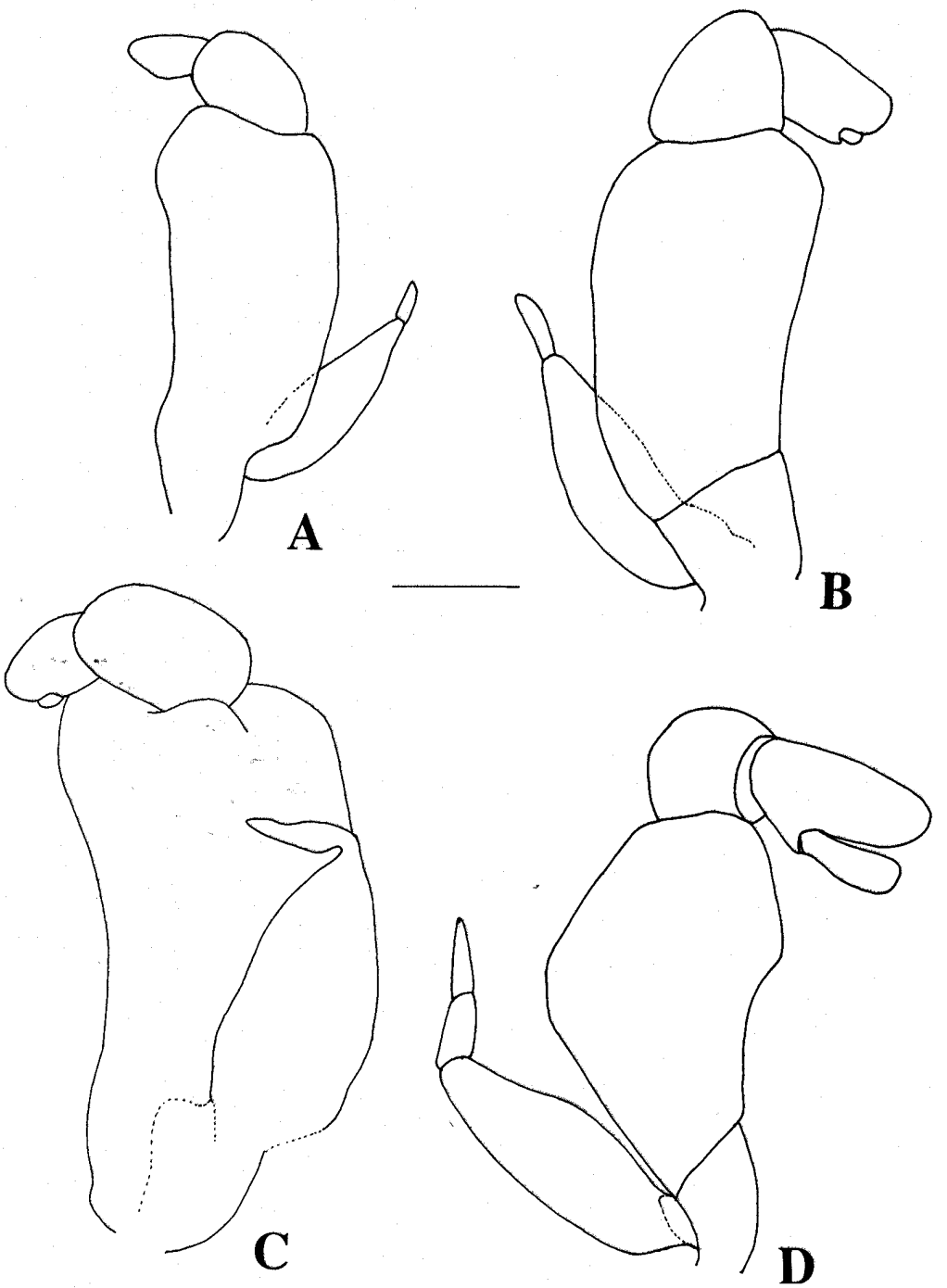

Fig. 2. Third maxilliped. A, *Calyptraeotheres granti* (Glassell); B, *C. garthi*; C, *C. politus* (Smith); D, *Tumidotheres margarita* (Smith). Scale in mm, A = 0.95; B = 0.43; C = 0.39; D = 0.70.

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