

# Clarification of the South American genus *Austromunida* SCHWEITZER & FELDMANN, 2000 (Crustacea: Decapoda: Anomura), with the establishment of a new species

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(With 1 figure)

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## Abstract

Ongoing confusion concerning the generic placement of the Argentinian Cenozoic species *Austromunida casadioi* SCHWEITZER & FELDMANN, 2000, is addressed by separating the referred specimens into two species: maintaining *A. casadioi* and erecting the new species *Munida deangelii*.

**Keywords:** Munididae, Galatheoidea, Argentina, Southern America, new taxa, Cenozoic

## Zusammenfassung

Die umstrittene Gattungszugehörigkeit der argentinischen, känozoischen Krabbenart *Austromunida casadioi* SCHWEITZER & FELDMANN, 2000 wird untersucht. Vergleiche des Typusmaterials und später zugeordneter Stücke zeigen die Verwechslung zweier Arten unter diesem Namen. *A. casadioi* verbleibt in *Austromunida*, wohingegen später zugeordnetes Material zur Gattung *Munida* gehört; für diese Form wird der Name *Munida deangelii* aufgestellt.

**Schlüsselworte:** Munididae, Galatheoidea, Argentinien, Südamerika, Neue Taxa, Känozoikum

## Introduction

The establishment of *Austromundia casadioi* SCHWEITZER & FELDMANN, 2000, marked the first known fossil occurrence of a munidid within the southern hemisphere, found in the Calafate area of Argentina. SCHWEITZER & FELDMANN (2000) justified the erection of a new genus based on the lack of supraorbital spines on any of the studied material, a trait not found in any other genus associated with munidids. GARASSINO & DE ANGELI

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(2003), followed by CASADÍO et al. (2004) subsequently examined material from a different locality that had remarkable similarities in the dorsal carapace to *A. casadioi*. Those specimens exhibited a clear trifid frontal margin, very typical of munidids. The trifid frontal margin on the material prompted GARASSINO & DE ANGELI (2003) to consider *Austromunida* a junior synonym of *Munida*. This paper separates the material from Argentina into two separate species.

### Abbreviations and Notes

The specimens referred to in this work are housed in the Museo Civico di Storia Naturale di Milano, Milan, Italy (MSNM), and the Geological Museum, Universidad Nacional de La Pampa, Santa Rosa, La Pampa, Argentina (GHUNLPam). For the genera list, the symbol <sup>§§</sup> indicates an exclusively fossil genus; <sup>§</sup> indicates an extant genus with a known fossil record.

## Systematic Paleontology

Order Decapoda LATREILLE, 1802

Infraorder Anomura H. MILNE-EDWARDS, 1832

Superfamily Galatheoidea SAMOUELLE, 1819

Family Munididae AHYONG et al., 2010

Type genus: *Munida*<sup>§</sup> LEACH, 1820.

Included genera: *Agononida*<sup>§</sup> BABA & DE SAINT LAURENT, 1996; *Anomoeomunida* BABA, 1993; *Anoplionida* BABA & DE SAINT LAURENT, 1996; *Austromunida*<sup>§§</sup> SCHWEITZER & FELDMANN, 2000; *Babamunida* CABEZAS, MACPHERSON & MACHORDOM, 2008; *Bathymunida* BALSS, 1914; *Cervimunida* BENEDICT, 1902; *Cretagalathea*<sup>§§</sup> GARASSINO, DE ANGELI, & PASINI, 2008; *Crosnierita* MACPHERSON, 1998; *Enriquea* BABA, 2005; *Heteronida* BABA & DE SAINT LAURENT, 1996; *Juracrista*<sup>§§</sup> ROBINS et al., 2012; *Munida*<sup>§</sup> LEACH, 1820; *Neonida* BABA & DE SAINT LAURENT, 1996; *Onconida* BABA & DE SAINT LAURENT, 1996; *Paramunida* BABA, 1988; *Plesionida* BABA & DE SAINT LAURENT, 1996; *Pleuroncodes* STIMPSON, 1860; *Protomunida*<sup>§§</sup> BEURLIN, 1930; *Raymunida* MACPHERSON & MACHORDOM, 2000; *Sadayoshia*<sup>§</sup> BABA, 1969; *Setanida* MACPHERSON, 2006; *Tasmanida* AHYONG, 2007; *Torbenella* BABA, 2008.

**Diagnosis:** Dorsal carapace ornamented with strong transverse ridges. Frontal margin almost always trifid; composed of central rostral component and one or two pairs of supraorbital spines. Supraorbital spines and rostrum typically very narrow, needle-like.

**Discussion:** GARASSINO & DE ANGELI (2003) considered *Austromunida* a junior synonym for *Munida*, stating that the supraorbital spines had not been preserved on any of the multiple specimens studied by SCHWEITZER & FELDMANN, 2000. Subsequently, *Austro-*

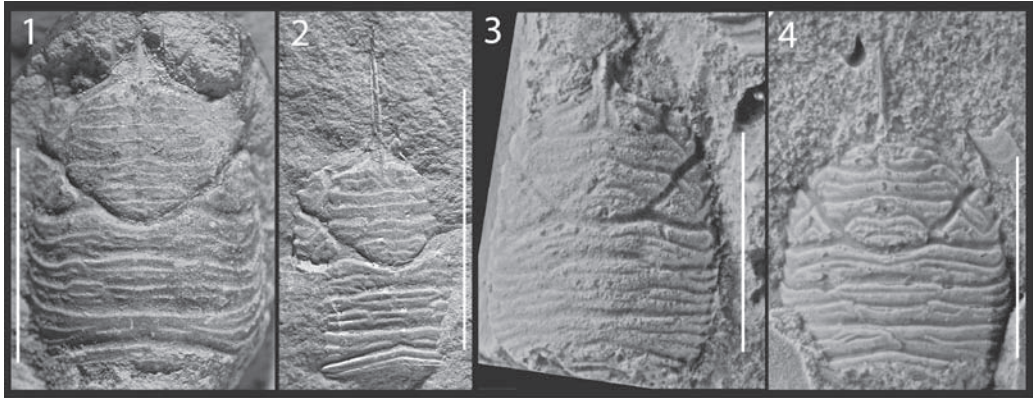


Fig. 1. **1:** *Munida deangelii* nov. spec., holotype, MSNM i26085. Modified after CASADÍO et al., 2004, p. 28, Fig. 2A. **2:** *M. deangelii*, paratype, MSNM i25745. Modified after CASADÍO et al., 2004, p. 28, Fig. 2B. **3:** *Austromunida casadioi*, holotype, GHUNLPam 16832. Modified after SCHWEITZER & FELDMANN, 2000, p. 153, Fig. 3.1. **4:** *A. casadioi*, paratype, GHUNLPam 16833. Modified after SCHWEITZER & FELDMANN, 2000, p. 153, Fig. 3.2. Scale bars equals 1 cm.

*munida* has been considered as a legitimate genus by some authors and regarded as a junior synonym by others. We hold *Austromunida* to be a valid genus. Munidids often exhibit variety within the frontal margin construction: *Bathymunida* has a very reduced frontal margin, *Anomoeomunida* and *Pleuroncodes* both have very reduced supraorbital spines, and *Sadayoshia* possesses two pairs of supraorbital spines. The absence of supraorbital spines is a significant difference from all other established munidid genera, and still fits within the variety of characteristics found within the Munididae.

Genus *Munida* LEACH, 1820

***Munida deangelii* nov. spec.**

(Figs 1.1–1.2)

2004 – *Munida casadioi* (SCHWEITZER & FELDMANN, 2000) in part – CASADÍO et al. pp 27–29, Figs 2–3.

**Diagnosis:** The emended diagnosis and description of what was considered *Munida casadioi* in CASADÍO et al. (2004, pp 27–29), is very detailed and need not be restated here. The emendation was based upon the specimens from the Bariloche area that are herein referred to *Munida deangelii*. The discussion section below details the complexities surrounding the newly separated *Austromunida casadioi* SCHWEITZER & FELDMANN, 2000 and *Munida deangelii*.

**Etymology:** The trivial name is in honor of ANTONIO DE ANGELI, who has made many contributions to the knowledge of fossil decapods, and was an author on the paper where this new species was first illustrated (CASADÍO et al. 2004).

Holotype: MSNM i26085.

Paratypes: MSNM i25745, MSNM i26087, MSNM i26073.

Type locality: Río Negro Province, Argentina (S 41° 43.589'; W 71° 27.480').

Type stratum: Río Foyel Formation.

Range: Late Oligocene – Early Miocene.

**Discussion:** The species *Austromunida casadioi* was originally described by SCHWEITZER & FELDMANN (2000), and figures modified from that publication are shown in Figs 1.3 and 1.4. The specimens they described were collected from Calafate, Santa Cruz Province, Argentina, over one thousand kilometers south of the locality bearing the specimens of *Munida deangelii*, studied by CASADÍO et al. (2004), which were collected from the Bariloche area of Río Negro Province, Argentina. After studying material from Bariloche, as well as casts of the holotypes of *A. casadioi*, GARASSINO & DE ANGELI (2003) declared the species to be a member of *Munida*, and published a composite drawing of the specimens they studied as a better representation of the species (GARASSINO & DE ANGELI, 2003: pp 72–73, Fig. 1). CASADÍO et al. (2004), using the Bariloche material originally examined by GARASSINO & DE ANGELI (2003), emended the original diagnosis of *A. casadioi*. The new information included in the emendation was based on the specimens from Bariloche that showed characteristics that were either not present or not preserved on the specimens from Calafate that were studied by SCHWEITZER & FELDMANN (2000).

Comparison of the illustrations of CASADÍO et al. (2004) and SCHWEITZER & FELDMANN (2000) reveals that there are two different species of munidids described, explaining the different interpretations of the characteristics.

The original description, photographic illustrations and carapace reconstructions of *A. casadioi* by SCHWEITZER & FELDMANN (2000) are true to the specimens from Calafate. The photographic illustrations have been modified and published herein as Figs 1.3 and 1.4. None of the specimens of *A. casadioi* that they illustrated show supraorbital spines. There are no discernable spines on the dorsal surface of the carapace.

The description, photographic illustration, and carapace reconstruction written by CASADÍO et al. (2004) are accurate for *Munida deangelii* and the specimens from Bariloche, although the carapace reconstruction seems to overemphasize the presence of epigastric spines. Unlike *Austromunida casadioi*, this species has one pair of short, but distinct supraorbital spines, and one strong anterolateral spine protruding anteriorly from the hepatic region, both characteristics commonly found within members of the genus *Munida*. Due to these differences, we place the Bariloche specimens within a new species of *Munida*.

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## References

- AHYONG, S.T. (2007): Decapod Crustacea collected by the NORFANZ Expedition: Galatheidae and Polychelidae. – *Zootaxa*, **1593**: 1–54.
- AHYONG, S.T., BABA, K.J., MACPHERSON, E., & POORE, G.C.B. (2010): A new classification of the Galatheoidea (Crustacea: Decapoda: Anomura). – *Zootaxa*, **2676**: 57–68.
- BABA, K. (1969): Four new genera with their representatives and six new species of the Galatheidae in the collection of the Zoological Laboratory, Kyushu University, with redefinition of the genus *Galathea*. – OHMU, Occasional Papers of the Zoological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, Japan, **2**: 1–32.
- BABA, K. (1988): Chirostylid and galatheid crustaceans (Decapoda: Anomura) of the “Albatross” Philippine Expedition, 1907–1910. – *Researches on Crustacea*, Special Number, **2**: 1–203.
- BABA, K. (1993): *Anomoeomunida*, a new genus proposed for *Phylladiorhynchus caribensis* MAYO, 1972 (Crustacea: Decapoda: Galatheidae). – *Proceedings of the Biological Society of Washington*, **106**: 102–105.
- BABA, K. (2005): Deep-sea chirostylid and galatheid crustaceans (Decapoda: Anomura) from the Indo-West Pacific, with a list of species. – *Galathea Reports*, **20**: 1–317.
- BABA, K. (2008): *Torbenella*, a replacement name for *Torbenia* BABA, 2005 (Decapoda, Galatheidae) preoccupied by *Torbenia* LIBERT, 2000 (Insecta, Lepidoptera, Lycaenidae). – *Crustaceana*, **81**: 1021–1022.
- BABA, K. & DE SAINT LAURENT, M. (1996): Crustacea Decapoda: Revision of the genus *Bathymunida* Balss, 1914, and description of six new related genera (Galatheidae). – In: CROSNIER, A. (ed.), *Résultats des Campagnes MUSORSTOM*, v. 15. – *Mémoires du Muséum National d’Histoire Naturelle*, **168**: 433–502.
- BALSS, H. (1914): Ueber einige interessante Decapoden der “Pola”-Expeditionen in das Rote Meer. – *Anzeiger der Kaiserlichen Akademie der Wissenschaften Mathematisch-Naturwissenschaftlichen Klasse*, **9**: 133–138.
- BENEDICT, J.E. (1902): Description of a new genus and forty six new species of crustaceans of the family Galatheidae with a list of the known marine species – *Proceedings of the Biological Society of Washington*, **26**: 243–334.
- BEURLEN, K. (1930): Vergleichende Stammesgeschichte, Grundlagen, Methoden, Probleme unter besonderer Berücksichtigung der höheren Krebse. – *Fortschritte in der Geologie und Paläontologie*, **8**: 317–586.
- CABEZAS, P., MACPHERSON, E. & MACHORDOM, A. (2008): A new genus of squat lobster (Decapoda: Anomura: Galatheidae) from the South West Pacific and Indian Ocean inferred from morphological and molecular evidence. – *Journal of Crustacean Biology*, **28**: 68–75.
- CASADÍO, S., DE ANGELI, A., FELDMANN, R.M., GARASSINO, A., HETLER, J.L., PARRAS, A., & SCHWEITZER, C.E. (2004): New decapod crustaceans (Thalassinidea, Galatheoidea, Brachyura), from the Middle Oligocene of Patagonia, Argentina. – *Annals of Carnegie Museum*, **73**: 25–47.
- GARASSINO, A. & DE ANGELI, A. (2003): *Munida casadii* (SCHWEITZER & FELDMANN) from the Eocene of the Bariloche area, Patagonia (Argentina). – *Contributions to Zoology*, **72**: 133–134.
- GARASSINO, A., DE ANGELI, A. & PASINI, G. (2008): New decapod assemblage from the Upper Cretaceous (Cenomanian-Turonian) of Gara Sbaa, southeastern Morocco. – *Atti della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale in Milano*, **149/1**: 37–67.

- LEACH, W.E. (1820): Galatéadées. – In: CUVIER, F. (ed.) Dictionnaire des Sciences Naturelles, dans lequel on trait Méthodiquement des Différens êtres de la Nature, considérés soit en eux-mêmes, d'après l'état actuel de nos connoissances, soit relativement a l'utilité qu'en peuvent retirer la Médecine, l'Agriculture, le Commerce et les Arts. Suivi d'une biographie des plus Célèbres Naturalistes. Ouvrage destiné aux médecins, aux agriculteurs, aux commerçans, aux artistes, aux manufacturiers, et à tous ceux qui ont intérêt à connoître les productions de la nature, leurs caractères génériques et spécifiques, leur lieu natal, leurs propriétés et leurs usages. – pp. 49–56, Paris (F.G. Leveault).
- MACPHERSON, E. (1998): A new genus of Galatheidae (Crustacea, Anomura) from the western Pacific Ocean. – *Zoosystema*, **20**: 351–355.
- MACPHERSON, E. (2006): Galatheidae (Crustacea, Decapoda) from the Austral Islands, Central Pacific. – In: RICHER DE FORGES, B. AND JUSTINE, J.L. (eds.), Tropical Deep-Sea Benthos. Volume 24. Mémoires du Muséum National d'Histoire Naturelle, **193**: 285–333.
- MACPHERSON, E. & MACHORDOM, A. (2000): *Raymunida*, new genus (Decapoda: Anomura: Galatheidae) from the Indian and Pacific Oceans. – *Journal of Crustacean Biology*, **20**: 253–258.
- ROBINS, C.M., SCHWEITZER, C.E. & FELDMANN, R.M. (2000): The oldest Munididae (Decapoda: Anomura: Galatheoidea) from Ernstbrunn, Austria (Tithonian). – *Annalen des Naturhistorischen Museums in Wien, Serie A*, **114**: 289–300.
- SCHWEITZER, C.E. & FELDMANN, R.M. (2000): First notice of the Chirostylidae (Decapoda) in the fossil record and new Tertiary Galatheidae (Decapoda) from the Americas. – *Bulletin of the Mizunami Fossil Museum*, **27**: 147–165.
- STIMPSON, W. (1860): Notes on North American Crustacea, in the Museum of the Smithsonian Institution, No. II. – *Annals of the Lyceum of Natural History of New York*, **7**: 177–246, Pls 2, 5.