

Fossil Crustacea (excluding Cirripedia and Ostracoda) in the University of Bucharest Collections, Romania, including two new species

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Abstract

The Paleontological Collections of the University of Bucharest, Romania, house a broad range of specimens of Crustacea including crabs, lobsters, shrimps, and isopods, including several types or illustrated specimens. Some of the material forms the basis for a new species of raninid crab, *Lophoranina albeshtensis*, from Eocene rocks of the southern Carpathians and a new species of pagurid, *Orhomalus spinosus*, from the Jurassic of Dobrogea, eastern Romania. The type specimens of *Coeloma macoveii* Lăzărescu, 1959, from the Miocene of Romania form the basis for a redescription of the species. *Eryma* spp. are reported from Romania for the first time. Included in the collection are specimens from Romania, other areas of Europe, and North America.

Key words: Crustacea, Decapoda, Isopoda, Brachyura, Paguridae, Raninidae, Romania, paleontological collections

Introduction

The Paleontological Collections of the University of Bucharest, Romania, house a number of specimens of Crustacea including crabs, lobsters, shrimps, and isopods including several types or illustrated specimens. Ongoing field and descriptive work by the authors continues to increase the number of specimens housed in the collection.

The Crustacean collection is composed of several generations of material, added over the past 150 years. A large portion of the crustacean material was derived from the Jurassic Solnhofen-type limestones in Germany. This material was widely traded or sold in the late 19th century and can be found in museums throughout Europe. The University of Bucharest Paleontological collection houses a modest but broad array of specimens from these Jurassic deposits.

A second class of material in the crustacean collection was derived from paleontological study during the middle 20th century. Most of these specimens were described in Romanian journals either in the Romanian or French language, and the species described therein are not well known outside of Romania.

A third group of material has resulted from 21st century collections, primarily in Jurassic rocks in Romania, by the authors and others. This material includes holotypes, paratypes, and illustrated and referred specimens. As work continues on material collected over the past three years, the cataloged collection will continue to grow.

Finally, there are other miscellaneous specimens that are not part of any of the above categories. The University's collection contains

some specimens from countries other than Romania, and there are some miscellaneous specimens probably acquired for comparative purposes. Other arthropods in the collection not treated here include Cirripedia (barnacles), Chelicerata (horseshoe crabs and eurypterids), and Hexapoda (insects).

Collection arrangement

The following listing of the Crustacea (excluding Cirripedia and Ostracoda) specimens in the University of Bucharest Collection is arranged taxonomically. Each taxon is listed; the specimen number, collecting locality, collector if known, and any other known information is listed; and relevant comments are added. The systematic placement follows the most current taxonomy for the groups treated here (Feldmann et al., 2006; Garassino and Schweigert, 2006; Karasawa and Schweitzer, 2006; Karasawa et al., 2008; Schweitzer et al., 2007).

The type species and geologic range is given for each genus present in the University of Bucharest Collection. Many genera and species are present in the collection that are not known from occurrences in Romania. The age and occurrence information for each species is based upon the University of Bucharest Collection specimens only; information is derived from labels, collecting information of the authors, or published information. Species known from specimens collected from Romania are marked with an asterisk (*) in front of the species name.

Systematic Paleontology

Order Decapoda Latreille, 1802

Suborder Dendrobranchiata Bate, 1888

Superfamily Penaeoidea Rafinesque, 1815

Family Aegeridae Burkenroad, 1963

Genus *Aeger* Münster, 1839

Type species: *Macrourites tipularius* Schlotheim, 1822.

Geologic range: Middle Triassic–Late Cretaceous (Garassino and Teruzzi, 1990).

Aeger tipularius Schlotheim, 1822

Occurrence: Solnhofen Limestone.

Material: No. 958.

Aeger elegans Münster, 1839

Occurrence: Solnhofen Limestone.

Material: No. 972.

Comments: One of the more recently rewritten labels for this specimen is numbered as No. 927; the original number, on the actual specimen itself, is No. 972.

Aeger sp.

Material: No. 961; an additional unnumbered, framed specimen.

Comments: Both specimens are preserved in Solnhofen-type limestone.

Family Penaeidae Rafinesque, 1815

Genus *Antrimpos* Münster, 1839

Type species: *Antrimpos speciosus* Münster, 1839

Geologic range: Triassic–Jurassic.

Antrimpos speciosus Münster, 1839

Occurrence: Eichstadt, Germany.

Material: No. 966.

Comments: The specimen is labeled as *Penaeus speciosus*; however, the correct name is *Antrimpos speciosus*.

Antrimpos intermedius Oppel, 1862

Occurrence: Eichstadt, Germany.

Material: No. 959.

Comments: The specimen is labeled as *Penaeus intermedius*; however, the correct name is *Antrimpos intermedius*.

Genus *Hefriga* Münster, 1839

Type species: *Hefriga serrata* Münster, 1839, by original designation.

Geological range: Jurassic.

Hefriga serrata Münster, 1839

Occurrence: Munsterjura Plattenkalk, Solnhofen, Germany.

Material: No. 960.

Infraorder Astacidea Latreille, 1802

Superfamily Glypheoidea Winkler, 1883

Family Glypheidae Winkler, 1883

Genus *Glypheia* von Meyer, 1835

Type species: *Palinurus regleyanus* Desmarest, 1822, by original designation.

Geologic range: Triassic–Eocene (Feldmann and Schweitzer, 2006).

Glypheia cf. *G. regleyana* (Desmarest, 1822)

Occurrence: Isle of Wight, Britain, United Kingdom.

Collector: Gr. Stefanescu.

Material: LPBIIart173.

Family Mecochiridae Van Straelen, 1924[1925]

Genus *Mecochirus* Germar, 1827

Type species: *Macrourites longimanatus* Schlotheim, 1822.

Geologic range: Jurassic–Early Cretaceous (Feldmann and Schweitzer, 2006).

Mecochirus longimanatus Schlotheim, 1822

Material and Occurrence: No. 962, Solnhofen, Germany; No. 968, Eichstatt, Germany.

Comments: Specimen No. 962 is referred to *Mecochirus bayeri* on the label, and No. 968 is referred to *M. longimanus*. Both are synonyms of *M. longimanatus* (Glaessner, 1929).

Genus *Meyeria* McCoy, 1849

Type species: *Astacus ornatus* Phillips, 1829.

Geologic range: Early–Late Cretaceous (Feldmann and Schweitzer, 2006).

Meyeria magna McCoy, 1849

Occurrence: Isle of Wight, Britain, United Kingdom.

Material: No. KL/Ap/6a, b, c.

Superfamily Nephropoidea Dana, 1852

Family Erymidae Van Straelen, 1924[1925]

Genus *Eryma* von Meyer, 1840

Type species: *Macrourites modestiformis* Schlotheim, 1822.

Geologic range: Jurassic–Late Cretaceous (Feldmann and Schweitzer, 2006).

Comments: Herein we note the first reported occurrences of *Eryma* in Romania.

Eryma modestiforme (Schlotheim, 1822)

For extensive synonymy, see Garassino and Schweigert (2006).

Occurrence: Eichstadt.

Material: No. 963, labeled as *Eryma leptodactylina*.

Comments: Garassino and Schweigert (2006) listed an extensive synonymy for *Eryma modestiforme*, including many specimens that had been referred to *Eryma leptodactylina* (Germar, 1827).

In their discussion, they suggested that the two species might be best regarded as synonymous (Garassino and Schweigert, 2006, p. 8). Thus, we refer the Bucharest specimen of *Eryma* to *E. modestiforme*, by far the most common species known from the Solnhofen-type limestones in Germany.

* *Eryma bedelta* (Quenstedt, 1857)

(Fig. 1.1, 1.2)

Occurrence: Pasul Strungulița, West Bucegi, south-east Carpathians, Romania, Bajocian (middle Middle Jurassic).

Material: LPBIIIart025.

Collector: I. Lazăr.

Comments: This is the first reported occurrence of *Eryma bedelta* in Romania. The species is well-known from other Jurassic localities

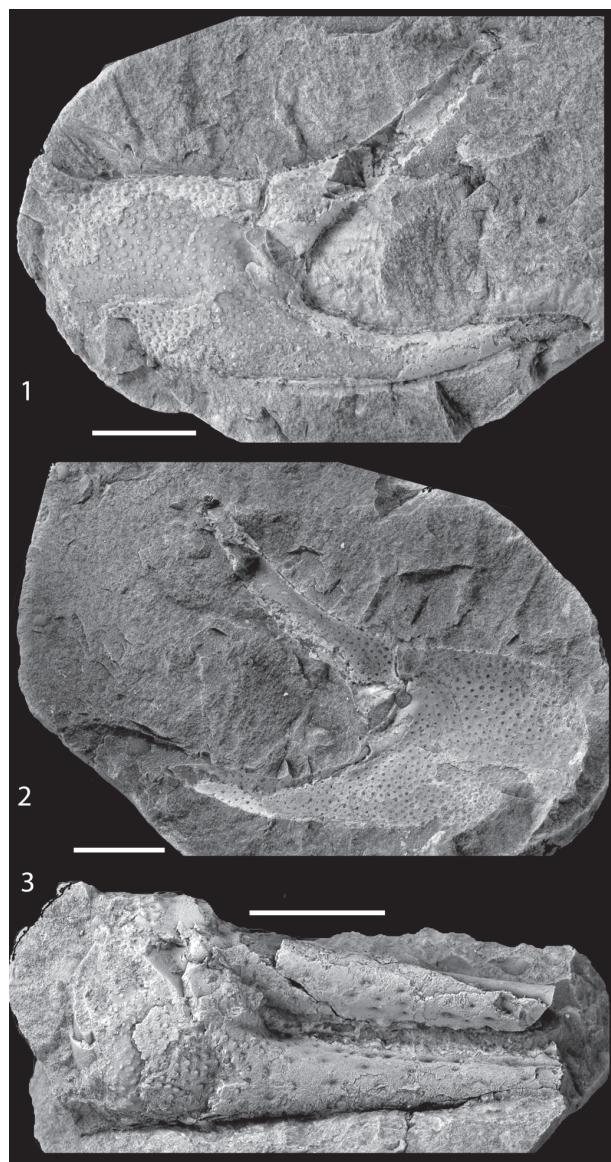


Fig. 1. *Eryma* spp. 1, 2, *Eryma bedelta* (Quenstedt, 1857), LPBIIIart025, outer surface of chela (1) and counterpart of same (2); 3, *Eryma guisei* (Wright, 1882), LPBIIIart026, outer surface of chela. Scale bars = 1 cm.

in Germany, Britain, France, and Switzerland (Förster, 1966). An additional lot of specimens (LPBIIIart172) from the same locality is herein referred to *Eryma?* sp.

* *Eryma guisei* (Wright, 1882)

(Fig. 1.3)

Occurrence: Pasul Strungulița, West Bucegi, south-east Carpathians, Romania, Bajocian (middle Middle Jurassic).

Material: LPBIIIart026.

Collector: I. Lazăr.

Comments: *Eryma guisei* was previously known from Middle Jurassic deposits of Britain (Förster, 1966). This is the first notice of the species in Romania.

Family Nephropidae Dana, 1852

Genus *Hoploparia* McCoy, 1849

Type species: *Astacus longimanus* Sowerby, 1826.

Geologic range: Early Cretaceous–early Miocene (Feldmann et al., 2007).

Hoploparia cf. H. longimana (Sowerby, 1826)

Occurrence: Isle of Wight, Britain, United Kingdom.

Collector: Gr. Stefanescu.

Material: Nr. 2384.

Infraorder Thalassinidea Latreille, 1831

Superfamily Callianassoidea Dana, 1852

Family Callianassidae Dana, 1852

Genus *Protocallianassa* Beurlen, 1930

Type species: *Callianassa archiaci* A. Milne Edwards, 1860.

Geologic range: Cretaceous–Eocene (Feldmann and Schweitzer, 2006).

Protocallianassa faujasi (Desmarest, 1822)

Occurrence: Maastrichtian of Holland (Nr. 787); Senonian of Hanover, Germany (Nr. 2564).

Material: Nr. 787, includes both major and minor claw; Nr. 2564, 3 specimens in the lot.

Comments: These two specimens were originally part of a stratigraphic collection of the University.

* *Callianassoidea* species indeterminate

Occurrence: Nisipul (sand) de la Besinchamps (presumably France).

Material: No. 1800, consisting of 10 mani glued to a board.

Infraorder Palinura Latreille, 1802

Superfamily Eryonoidea de Haan, 1841

Family Eryonidae de Haan, 1841

Genus *Cycleryon* Glaessner, 1965

Type species: *Macrourites propinquus* Schlotheim, 1822.

Geologic range: Jurassic.

***Cycleryon propinquus* (Schlotheim, 1822)**

Occurrence: Solnhofen.

Material: Unnumbered plaster cast labeled as *Eryon propinquus* Schlotheim.

Genus *Eryon* Desmarest, 1822

Type species: *Macrourites arctiformis* Schlotheim, 1822.

Geologic range: Jurassic.

***Eryon arctiformis* (Schlotheim, 1822)**

Occurrence: Weiser Jura v. Hardt h. Laugenaltheim.

Material: No. 970.

***Eryon* spp.**

Occurrence: Upper oolite, Solnhofen (LPBIIIart174); Solnhofen-type limestones (in frame, LPBIIIart175).

Material: LPBIIIart174, 175.

Superfamily Palinuroidea Latreille, 1802

Family Cancrinidae Beurlen, 1930

Genus *Cancrinos* Münster, 1839

Type species: *Cancrinos claviger* Münster, 1839.

Geologic range: Jurassic.

***Cancrinos claviger* Münster, 1839**

Cancrinos latipes Münster, 1839, p. 44, pl. 15.

Occurrence: Solnhofen-type limestones.

Material: No. 971, labeled as *Cancrinos latipes*.

Comments: Garassino and Schweigert (2006) synonymized *Cancrinos claviger* and *C. latipes*. Thus, the specimen should now be referred to *C. claviger*, the only species of *Cancrinos* now known from the Solnhofen-type limestone localities (Garassino and Schweigert, 2006).

Family Palinuridae Latreille, 1802

Genus *Palinurina* Münster, 1839

Type species: *Palinurina longipes* Münster, 1839.

Geologic range: Jurassic.

***Palinurina longipes* Münster, 1839**

Occurrence: Solnhofen-type limestone.

Material: No. 974.

Infraorder Anomura MacLeay, 1838

Superfamily Paguroidea Latreille, 1802

Family ?Paguridae Latreille, 1802

Genus *Orhomalus* Étallon, 1861

Type species: *Orhomalus virgulinus* Étallon, 1861, by subsequent designation of Glaessner (1929).

Included species: *Orhomalus ararieus* Étallon, 1861; *O. astartinus* Étallon, 1861; *O. corallinus* Étallon, 1861; *O. deformis* (Oppel, 1862), as *Magila*; *O. deslongchampsi* Hée, 1924; *O. jaccardi* (Tribolet, 1873), as *Gammarolithes*; *O. macrochirus* Étallon, 1861; *O. magnificus* Crônier

and Courville, 2004; *O. oppeli* Étallon, 1861; *O. oxfordensis* (Hée, 1924), as *Pagurus*; *O. pidanceti* Étallon, 1861; *O. portlandicus* Étallon, 1861; *O. rotulensis* De Gregorio, 1884; *O. spinosus* new species; *O. tombecki* Tribolet, 1875; *O. verrucosus* Étallon, 1861; *O. virgulinus* Étallon, 1861; *O. sp.*, Krause, 1891; *O. sp.* Étallon, 1861.

Diagnosis: Chelipeds nearly symmetrical; propodus with convex outer surface; manus higher than long; carpus/propodus articulation nearly entirely on inner surface of manus and barely visible on outer surface; outer surface of manus granular; fixed finger shorter than manus; occlusal surface complexly dentate.

Discussion: The genus *Orhomalus* is based almost exclusively on isolated chelipeds. The only exception is the holotype, and sole specimen, of *Orhomalus deformis* (Oppel, 1862), which is based upon the right cheliped exposed in lateral view, a left cheliped viewed from above, fragments of pereiopods, and what appears to be part of the carapace (Garassino and Schweigert, 2006, pl. 15, fig. 2). The specimen was originally identified by Oppel as *Magila*, but Van Straelen (1924 [imprint 1925]) recognized the similarity of the chelipeds to those of *Orhomalus* and assigned the specimen to the latter genus. We concur. Until the identification of the specimens described herein, the type of *O. deformis* was the only specimen known to us in which both chelipeds are preserved. The two appear to be similar in size, although the comparison of the two chelipeds is difficult because of their orientation. The holotype of the species described herein clearly shows that the two chelipeds are symmetrical and, therefore, the diagnosis reflects that observation.

The symmetry of the two chelipeds also bears upon the family placement of the genus. Although the majority of Paguridae are heterochelous, with the right cheliped larger than the left, some are isochelous. Because this is the largest family of hermit crabs, and because there is no compelling reason to assign the genus to one of the other families of hermit crabs, *Orhomalus* is being retained questionably in the Paguridae.

Geologic range: Middle Jurassic–Early Cretaceous.

****Orhomalus spinosus* new species**

(Fig. 2)

Diagnosis: Chelipeds isochelous, typical for genus; upper surface of manus with array of 6 or more discrete spines; occlusal surface of fixed finger with row of strong spines on outer edge and numerous smaller spines on flat, platform-like surface.

Description: Chelipeds isochelous, variable in size, manus higher than long; fingers short, stout, finely dentate.

Proximal margin of manus nearly straight, perpendicular to long axis; articulation with carpus barely visible on outer surface and lying almost entirely on inner surface of manus. Outer surface of manus uniformly convex, surface granular. Upper surface convex upward, narrow, with about six prominent upward-directed spines which are more prominently developed on smaller specimen. Inner surface somewhat compressed dorsally and most strongly inflated at mid-height; propodus/carpus articulation broadest at mid-height, about 40% length of manus; inner surface with finely granular, terraced ridges in lower third, diminishing

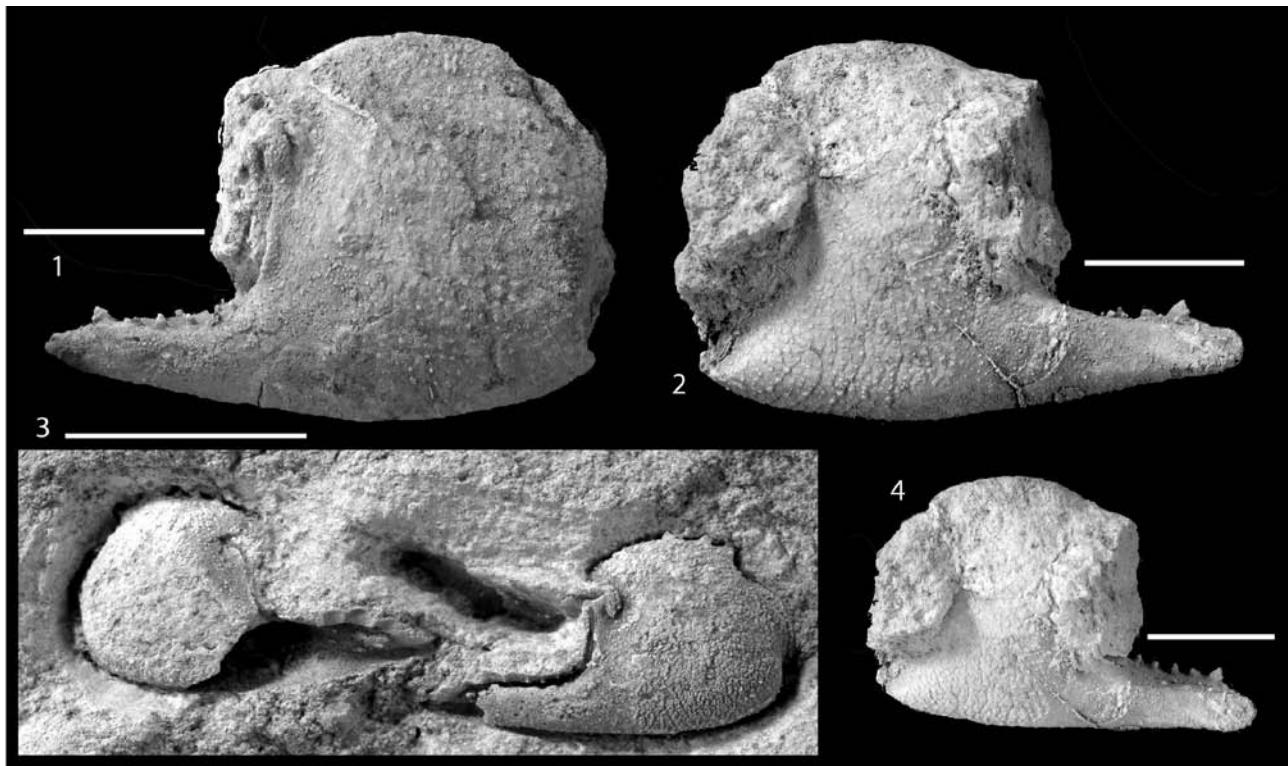


Fig. 2. *Orhomalus spinosus* new species. 1, 2, 4, paratype, LPBIIart177, chela, outer surface (1), inner surface (2), and oblique view of inner surface showing denticles on occlusal surface of fixed finger (4); 3, holotype, LPBIIart176, anterior view of both chelae, showing isochelous nature. Scale bars = 1 cm.

upward. Lower surface weakly convex, broadly rounded transversely, with granular surface.

Fixed finger about 40% total length of propodus; lower margin nearly straight; inner and outer surfaces very finely granular, occlusal surface a broad plate bearing row of more than 5 relatively long, sharp denticles along the outer margin and 12 or more finer, sharp denticles on the platform surface.

Propodus/dactylus articulation large; form of dactylus poorly preserved and not clear.

Measurements: Measurements, in millimeters, of LPBIIart177: length of propodus, 33.8; length of manus, 21.6; height of manus, 23.1. Length of propodus of right cheliped of LPBIIart176, 15.0; length of manus, 8.8; height of manus, 11.4. Length of propodus of left cheliped of LPBIIart176, 15.0; length of manus, 8.7; height of manus, 11.3.

Types: The holotype (LPBIIart176) consisting of right and left chelipeds, and the paratype, LPBIIart177, consisting of a single propodus, are deposited in the Paleontology Collection, University of Bucharest, Romania. The specimens were collected by A. Bărbulescu, Department of Geology and Geophysics, University of Bucharest.

Etymology: The trivial name alludes to the unique spinose upper margin of the manus, one of the features that serves to distinguish the species from all others.

Occurrence: The specimens were collected from Jurassic rocks in central Dobrogea, Romania. The holotype, LPBIIart176, was collected from the Tichilestilor Valley and the paratype, LPBIIart177, was collected from the Casimcei Valley.

Age: Early Callovian, late Middle Jurassic.

Discussion: The new species differs from all others in bearing about 6 distinct, sharp spines on the upper surface of the manus and by having two distinctly different sizes of denticles on the broad platform of the fixed finger. Although other species bear numerous denticles on the occlusal surface, most are more stout and none exhibit two distinctly different sizes of denticles arrayed such that the outer surface bears larger denticles and the inner region has only smaller, more delicate tubercles.

Infraorder Brachyura Latreille, 1802

Section Podotremata Guinot, 1977

Superfamily Homolodromioidea Alcock, 1900

Family Prosopidae von Meyer, 1860

Genus *Planoprosopon* Schweitzer, Feldmann, and Lazăr, 2007

Type species: *Prosopon heydeni* von Meyer, 1857, by original designation.

Geologic range: Jurassic (Oxfordian).

* ***Planoprosopon heydeni* (von Meyer, 1857)**

Occurrence: Gura Dobrogei, on a hill side, Lat. 44°28'00.1"N, Long. 28°28'58.4"E.

Material: LPBIIart0148 and 0149.

Family Goniodromitidae Beurlen, 1932

Genus *Goniodromites* Reuss, 1858

Type species: *Goniodromites bidentatum* Reuss, 1859.

Geologic range: Jurassic–Late Cretaceous (Cenomanian) (Schweitzer



Fig. 3. Family Goniodromitidae. 1, *Goniodromites aliquantulus* Schweitzer, Feldmann, and Lazăr, 2007, LPBIIIart004; 2, *Pithonotus rusticum* Patrulius, 1966, LPBIIIart005; 3, *Goniodromites serratus* Beurlen, 1929, LPBIIIart003; 4, *Goniodromites aliquantulus*, LPBIIIart006. Scale bars = 1 cm..

and Feldmann, in 2007).

**Goniodromites aliquantulus* Schweitzer, Feldmann, and Lazăr, 2007

(Fig. 3.1, 3.4)

Occurrence and material: Gura Dobrogei, on a hillside, Lat. 44°28'00.1"N, Long. 28°28'58.4"E (holotype, LPBIIIart0150). V. Cechirgelei, Stinca, Topalu, Dobrogea (LPBIIIart004). V. Casimcei, S. Cheia, Dobrogea (LPBIIIart006).

Age: Oxfordian (early Late Jurassic).

Collectors: The holotype was collected by Schweitzer et al. (2007), and the other specimens were collected by A. Bărbulescu.

Comments: The additional specimens housed in the collections of the University extend the geographic range of *Goniodromites aliquantulus* to localities other than the type locality in Dobrogea but do not extend the geologic range of the species. The two additional specimens are labeled as *Pithonotus* sp. and *P. marginatum* respectively on the original labels.

**Goniodromites serratus* Beurlen, 1929

(Fig. 3.3)

Occurrence and material: LPBIIIart003, Veriga, Dobrogea (upper Oxfordian).

Collector: A. Bărbulescu.

Comments: The specimen is referred to *Pithonotus marginatum* on the original label. It is herein referred to *Goniodromites serratus* based upon its possession of a subhepatic swelling and carapace that is markedly wider anteriorly and that narrows posteriorly, both of which species of *Pithonotus* lack. Other species of *Goniodromites* have been previously reported from Romania (Patrulius, 1966; Muștiu and Bădăluță, 1971; Feldmann et al., 2006; Schweitzer et al., 2007), but this is the first notice of *G. serratus* from Romania.

**Goniodromites* sp. indet.

Occurrence and material: Gura Dobrogei, on a hillside, Lat. 44°28'00.1"N, Long. 28°28'58.4"E (LPBIIIart0151) and Lat. 44°28'0.03"N, Long. 28°28'59.0"E (LPBIIIart0152); Cheia Valley, Lat. 44°30'3.5"N, Long. 28°25'26.2"E (LPBIIIart0145–046); Cheia Valley, Lat. 44°30'1.4"N, Long. 28°25'33.7"E (LPBIIIart028–030, 042); Cheia Valley, Lat. 44°30'8.9"N, Long. 28°25'30.9"E (LPBIIIart031–033, 043–044, 047).

Comments: Some of the specimens were originally referred to Forms A, B, or C (Feldmann et al., 2006); others were simply referred to *Goniodromites* sp. (Schweitzer et al., 2007). Herein, we refer all of the undetermined species of *Goniodromites* to species indeterminate.

Genus *Pithonotus* von Meyer, 1842

Type species: *Pithonotus marginatum* von Meyer, 1842, by original designation.

Geologic range: Jurassic (Schweitzer and Feldmann, 2008 [imprint 2007]).

**Pithonotus rusticum* Patrulius, 1966

(Fig. 3.2)

Pithonotus rusticum Patrulius, 1966, p. 511, pl. 31, figs. 17, 18.

Occurrence and material: LPBIIIart005, collected from Atirnați, Dobrogea, Romania.

Collector: A. Bărbulescu.

Age: Jurassic (Upper Oxfordian).

Comments: Mme. Bărbulescu referred the specimen to *Pithonotus rusticum* on the label, and that is probably the best placement for it. It is certainly a member of *Pithonotus*, based upon its possession of a long rostrum with margins oriented at a high angle to the axis; carapace with nearly parallel lateral margins that do not narrow appreciably posteriorly; and absence of a subhepatic region. These characters are diagnostic for *Pithonotus* and distinguish it from the closely related *Goniodromites* Schweitzer and Feldmann, 2008 [imprint 2007]. Species level placement for the specimen is a bit more problematic. It is not a member of *Pithonotus marginatum*, because it does not narrow at all

posteriorly as does *P. marginatum*. *Pithonotus simplex* (von Meyer, 1837) and *Pithonotus obtusum* (von Meyer, 1857) each have very short rostra whereas the Romanian specimen has a long, well-developed rostrum. *Pithonotus aequilatum* (von Meyer, 1857) has a nearly straight cervical groove and a markedly concave posterior margin, both of which the Romanian specimen lacks. *Pithonotus rusticum* was described as being weakly ornamented, markedly convex longitudinally, and with a well-developed rostrum (Patrulius, 1966), all of which are exhibited on specimen LPBIIIart005. Thus, this seems to be the most parsimonious placement for it. The holotype of *P. rusticum* was reported as deposited in the collections of the Institut Géologique de Bucarest (No. 2589). A paratype was deposited in the Jagiellonian University collections (127P2/1) (Patrulius, 1966).

* *Pithonotus* sp. *sensu lato*

Occurrence and material: Cheia Valley, Lat. 44°30'1.4"N, Long. 28°25'33.7"E (LPBIIIart041).

Comments: The specimen was referred to *Pithonotus* sp. due to its incomplete nature. Further examination of type material within the Goniodromitidae and the Prosopidae indicates that the specimen might be better referred to *Tanidromites* Schweitzer and Feldmann 2008 [imprint 2007].

* Indeterminate Homolodromioidea

Occurrence and material: Cheia Valley, Lat. 44°30'3.5"N, Long. 28°25'26.2"E (LPBIIIart048–049); Cheia Valley, Lat. 44°30'1.4"N, Long. 28°25'33.7"E (LPBIIIart050); Gura Dobrogei, Lat. 44°28'0.03"N, Long. 28°28'59.0"E (LPBIIIart0154).

Comments: The Cheia Valley specimens are composed of chelae that were not associated with dorsal carapace material (Feldmann et al., 2006). One indeterminate carapace was collected from Gura Dobrogei (Schweitzer et al., 2007).

Superfamily Dromioidea de Haan, 1833

Family Dynomenidae Ortmann, 1892

Genus *Cycloprospon* Lörenthey in Lörenthey and Beurlen, 1929

Type species: *Cycloprospon typicum* Lörenthey in Lörenthey and Beurlen, 1929.

Geologic range: Late Jurassic (Glaessner, 1929; Schweitzer et al., 2007).

**Cycloprospon dobrogea* Feldmann, Schweitzer, and Lazăr, 2006

Occurrence and material: Gura Dobrogei, Lat. 44°28'1.2"N, Long. 28°28'23.4"E (LPBIIIart0153); Cheia Valley, Lat. 44°30'3.5"N, Long. 28°25'26.2"E (LPBIIIart0140, holotype); Cheia Valley, Lat. 44°30'1.4"N, Long. 28°25'33.7"E (LPBIIIart035–039, paratypes); Cheia Valley, Lat. 44°30'8.9"N, Long. 28°25'30.9"E (LPBIIIart034, paratype).

Section Eubrachyura de Saint Laurent, 1980

Subsection Raninoida de Haan, 1839

Superfamily Raninoidea de Haan, 1839

Family Raninidae de Haan, 1839

Genus *Lophoranina* Fabiani, 1910

Type species: *Ranina marestiana* König, 1825, by original designation.

Included species: *Lophoranina aculeata* (A. Milne Edwards, 1881); *L. albeshtensis* new species; *L. aldrovandi* (Ranzani, 1820); *L. bakerti* (A. Milne Edwards, 1872); *L. barroisi* (Brocchi, 1877); *L. bishopi* Squires and Demetrian, 1992; *L. bittneri* (Lörenthey, 1902); *L. cristaspina* Vega, Cosma et al., 2001; *L. georgiana* (Rathbun, 1935); *L. kemmelingi* Van Straelen, 1924; *L. laevifrons* (Bittner, 1875); *L. levantina* Lewy, 1977; *L. marestiana*; *L. maxima* Beschin et al., 2004; *L. persica* Withers, 1932; *L. porifera* Woodward, 1866; *L. precocia* Feldmann et al., 1996; *L. quinquespinosa* (Rathbun, 1945); *L. raynorae* Blow and Manning, 1996; *L. rossi* Blow and Manning, 1996; *L. soembaensis* Van Straelen, 1938; *L. straeleni* Via, 1959; *L. tchihatcheffi* (A. Milne Edwards, 1866); *L. toyosimai* Yabe and Sugiyama, 1935.

Diagnosis: The genus has been recently emended and diagnosed by Feldmann and Schweitzer (2007).

Discussion: The genus has been recently discussed in terms of its composition and sexual dimorphism (Feldmann and Schweitzer, 2007). It is a speciose genus, best known from Eocene rocks of the Tethys; as an example, seven species are currently reported from Eocene rocks of Italy alone (De Angeli and Garassino, 2006). It has been suggested that at least some of these species may represent sexual dimorphs (Feldmann and Schweitzer, 2007).

The specimens in the University of Bucharest collection were referred to *Ranina* sp. or *Ranina aldrovandi*, which is now considered to be a species of *Lophoranina* (Glaessner, 1929; De Angeli and Garassino, 2006). Whereas the specimens are clearly referable to *Lophoranina* based upon their possession of spinose, terraced ridges on the dorsal carapace, they are not members of *L. aldrovandi*. *Lophoranina aldrovandi* is a poorly known species, originally described in the early nineteenth century and not well illustrated (Desmarest, 1822; Fabiani, 1910). The illustrations that are extant indicate an ovate species, and the description indicates that the terraces intersect and anastomose posteriorly. Fabiani's (1910) description also includes details of tubercles and granules on the dorsal carapace. The Romanian specimens have an ovate carapace and anastomosing terraces over nearly the entire dorsal carapace, different than most other species of the genus. In many species, such as the Cretaceous *L. precocia*, the terraces are parallel and non-intersecting over the entire dorsal carapace. In the younger species, the terraces tend to intersect and intertwine on the posterior one-third of the carapace (i.e., most of the Italian species). In addition, the anterolateral spines of the Romanian specimen are rather large for the genus; thus the new species described below is warranted.

Geologic range: Late Cretaceous–Eocene (Schweitzer et al., 2002).

* *Lophoranina albeshtensis* new species

(Fig. 4)

Diagnosis: Carapace ovate, especially broad at mid-length; anterolateral margin with two spines excluding outer-orbital spine, both spines triangular, directed forward, second spine larger, outer surface notably convex; remainder of lateral margin quite convex, then tapering to narrow posterior margin; terraces on dorsal carapace



Fig. 4. *Lophoranina albeshensis* new species, holotype, LPBIIIart007, unwhitened specimen. Scale bar = 1 cm.

surface intersecting and anastomosing over nearly entire dorsal carapace surface.

Description: Carapace longer than wide, length about 1.17 maximum width, widest about half the distance posteriorly on carapace; carapace surface ornamented with relatively robust, spined, terraces; dorsal carapace moderately vaulted transversely and longitudinally.

Front broken. Outer orbital spine triangular, directed forward, fronto-orbital width about 60 % maximum carapace width. Anterolateral margin with two spines excluding outer-orbital spine, both spines triangular, directed forward, second spine larger, outer surface notably convex; remainder of lateral margin quite convex, then tapering to narrow posterior margin.

Frontal area appearing to have been ornamented with short, scabrous granules. Branchiocardiac groove deep axially, defining lateral margins of urogastric region. Mesogastric and urogastric regions with parallel terraces; protogastric and hepatic regions with anastomosing terraces, especially complexly intertwined along urogastric region; terraces in branchial region also anastomosing, bases of spines on terraces especially clear posteriorly.

Manus of cheliped with short, discontinuous terraces oriented perpendicular to upper and lower margins.

Remainder of carapace, appendages, and ventral characteristics unknown.

Types: Holotype, LPBIIIart007; paratypes, LPBIIIart021–024, LPBIIIart169–171.

Etymology: The trivial name is derived from the type locality, Albești, Romania.

Occurrence: The holotype LPBIIIart007 and paratypes LPBIIIart023, LPBIIIart021, LPBIIIart022, LPBIIIart024 were collected from

Eocene rocks at Albești (Argeș), Romania. Paratype LPBIIIart169 was collected from Lat. 45°18'31.2"N, Long. 25°0'30.6"E, in a limestone quarry in Eocene rocks at Albești, near the cities of Campulung and Targoviste. Paratypes LPBIIIart 170 and LPBIIIart 171 were collected from an abandoned quarry near Albești, at Lat. 45°18'16.1" N, Long. 25°00'28.7"E.

Age: Eocene (Ypresian–Lutetian).

Discussion: As discussed above, the Romanian material differs from other species of the genus in possessing dorsal carapace terraces that anastomose and intersect over the entire surface of the carapace; large anterolateral spines; and a broadly ovate carapace. This combination of features is unique. Unfortunately, the specimens within the species are insufficiently preserved to determine their gender.

Genus *Notopocystes* McCoy, 1849

Type species: *Corystes stokesi* Mantell, 1844.

Geologic range: Cretaceous.

Notopocystes stokesi (Mantell, 1844)

Occurrence: Folkestone.

Material: KL/Ab/15.

Subsection Heterotremata Guinot, 1977

Superfamily Cancroidea Latreille, 1802

Family Cancridae Latreille, 1802

Genus *Lobocarcinus* Reuss, 1857

Type species: *Cancer paulinowurtembergensis* von Meyer, 1847.

Geologic range: Eocene–Miocene (Feldmann and Schweitzer, 2006).

?*Lobocarcinus* sp.

Occurrence: Unknown.

Material: LPBIIIart178.

Superfamily Carpilioidea Ortmann, 1893

Family Carpiliidae Ortmann, 1893

Genus *Palaeocarpilius* A. Milne Edwards, 1862

Type species: *Cancer macrochelus* Desmarest, 1822.

Geologic range: Eocene–Miocene (Karasawa and Schweitzer, 2006).

**Palaeocarpilius* sp.

(Fig. 5.1)

Occurrence: Cariera Răstoci (Jibou), Romania.

Collector: T. Neagu.

Material: LPBIIIart020, female.

Comments: In addition to the specimen housed at the University of Bucharest, several specimens are deposited in the collections of Cluj-Napoca University in north-central Romania. These specimens were all referred to *Palaeocarpilius macrochelus*. Specimen 20725 was collected at Gîrbau Hill in Transylvania; a male specimen simply numbered as #6 was collected near Cluj from a pit with Eocene nummulitic beds; and three specimens (21.160–162) were collected from upper Eocene reefs of Șuncata Mare, Bara Mare Basiu, Maramures

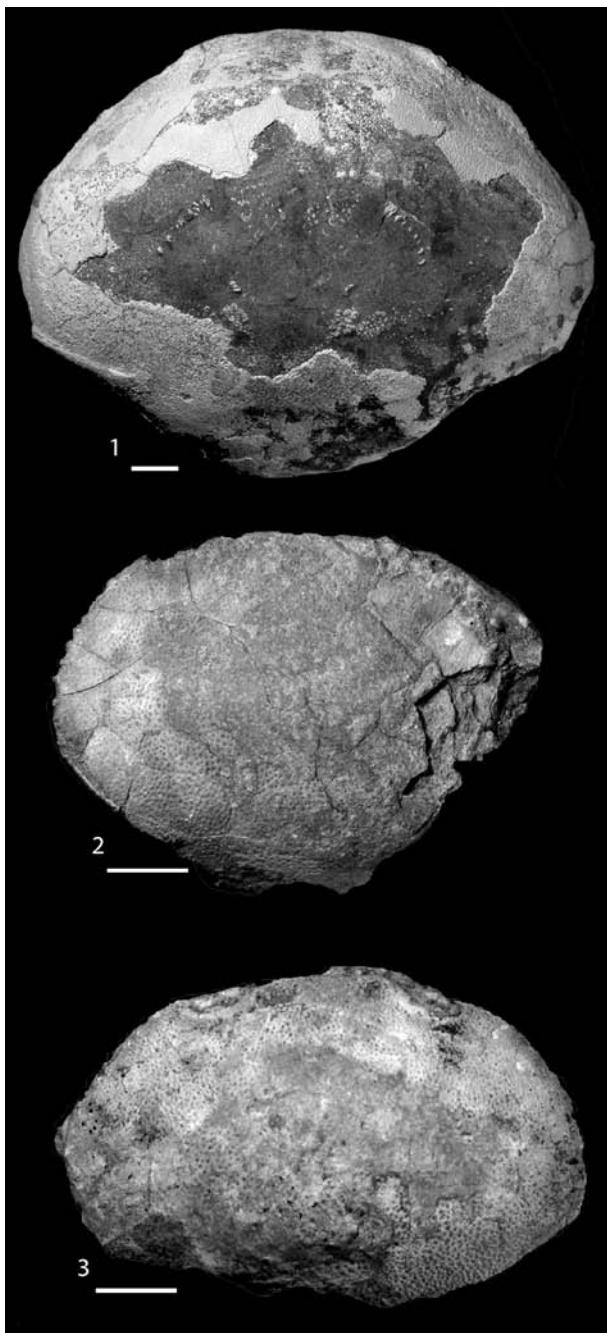


Fig. 5. Superfamily Carpilioidea. 1, *Palaeocarpilius* sp., LPBIIart020, unwhitened specimen; 2, 3, *Harpactocarcinus* sp., LPBIIart859, unwhitened specimens. Scale bars = 1 cm.

County, Buciumi Quarry, northern Romania.

Family Tumidocarcinidae Schweitzer, 2005

Genus *Pulalius* Schweitzer, Feldmann, Tucker, and Berglund, 2000
Type species: Zanthopsis vulgaris Rathbun, 1926.
Geologic range: Eocene–early Miocene (Schweitzer et al., 2000).

Pulalius sp.

Occurrence: Labeled as Pliocene of Oregon, but probably Eocene–Oligocene, as that is the primary range of the genus (Schweitzer et al.,

2000).

Material: One unnumbered specimen; specimens of *Pulalius vulgaris* (Rathbun, 1926) are extremely common in Washington, USA, and are widely available in rock shops and for trade.

Family Zanthopsidae Vía, 1959

Genus *Zanthopsis* McCoy, 1849

Type species: Cancer leachii Desmarest, 1822.

Geologic range: Paleocene–Miocene (Karasawa and Schweitzer, 2006).

Zanthopsis leachi (Desmarest, 1822)

Occurrence: Chapfery, England.

Age: Early Eocene.

Material: No. 283.

Genus *Harpactocarcinus* A. Milne Edwards, 1862

Type species: Cancer punctulatus Desmarest, 1822.

Geologic range: Eocene (Schweitzer et al., 2005; 2007).

* *Harpactocarcinus* sp.

(Fig. 5.2, 5.3)

Occurrence: Vararino (probably Italy).

Age: Lower Lutetian (Eocene).

Material: Nr. 859.

Comments: In addition to the specimen housed in the University of Bucharest, three specimens are deposited in the collection of Cluj-Napoca University. Specimen #16718, a female, was originally referred to *Palaeocarpilius* but is clearly a species of *Harpactocarcinus*; it was collected from northwestern Transylvania at Lunca Ilvei, in Barcotului Valley, Bistrița, Năsăud County. Two other unnumbered female specimens at Cluj-Napoca University were collected from the Buda Marls, Buresti Valley, near Rupea, northwest Brașov County.

Superfamily Portunoidea Rafinesque, 1815

Family Portunidae Rafinesque, 1815 sensu lato

* “*Portunus*” *oligocenicus* Paucă, 1929

(Fig. 6)

Occurrence and material: Fieni, near Campulung and Targoviste, Romania (CP/0644/6F, CP/0642/F, CP/0641/F, CP/0645/F, CP/0644/4F, No. IIIart017, plus three specimens with no number); Sușlănești (Argeș) (No. IIIart012); Buciumeni (Dambovița) (No. IIIart018).

Age: Oligocene.

Collectors: E. Barbu, P. Constantin.

Comments: The species was originally described by Paucă (1929) for compression specimens collected in association with fish and other fossils at Suslănești and referred to *Portunus*, a common and typical swimming crab with paddle-like fifth pereiopods. Paucă (1929) also described *Portunus musceli* from the same locality as *P. oligocenicus*; it is probable that the two species are synonymous. The holotypes of both species were reported to be deposited in the collections of the Geological Survey in Bucharest (Paucă, 1929). Similar

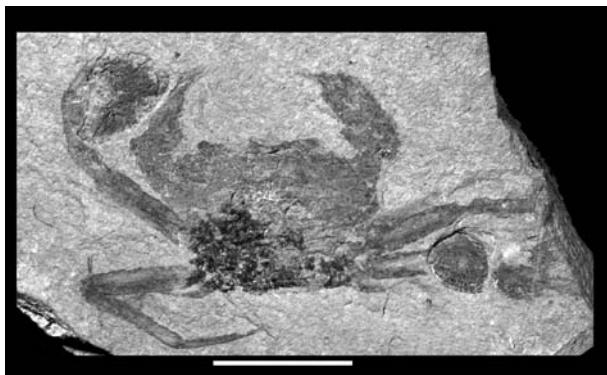


Fig. 6. "*Portunus*" *oligocenicus* Paucă, 1929, LPBIIIart017, unwhitened, compressed specimen showing typical preservation for this species. Large circular structure on right side of specimen in area of third and fourth pereiopods is a fish scale. Scale bar = 1 cm.

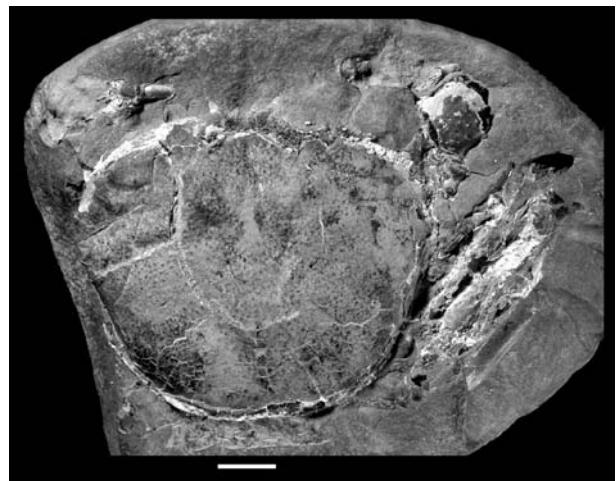


Fig. 7. *Coeloma macoveii* Lăzărescu, 1959, holotype, LPBIIIart019, unwhitened specimen. Scale bar = 1 cm.

compression specimens are known from early Miocene localities in Russia (Smirnov, 1929) that have recently been referred to the genus *Liocarcinus* (Garassino and Novati, 2001), which is not referable to the Portunidae sensu stricto (Karasawa et al., 2008). The specimens housed at the University of Bucharest indicate that *Portunus* may not be the most appropriate generic placement for the Romania species either. The Romanian specimens exhibit two orbital fissures, typical of most portunooids. There are at least five anterolateral spines and no more than six on the specimens examined; the carapace is not much wider than long; the male abdomen exhibits keels on somites three and four; and the dactyl of pereiopod five is ovate. These features suggest placement in the Portunoidea but not necessarily in *Portunus*. For now, we questionably refer the species to *Portunus* until the type material can be examined, perhaps with camera lucida, to determine the most parsimonious family and generic placement.

Family Mathildellidae Karasawa and Kato, 2003

Genus *Coeloma* A. Milne-Edwards, 1865

Type species: *Coeloma vigil* A. Milne-Edwards, 1865.

Included species: See Karasawa et al. (2008) for current list.

Geologic range: The genus sensu lato ranges from Eocene to Miocene rocks (Glaessner, 1969).

Comments: *Coeloma* has long been recognized as being in need of revision. Several subgenera exist (Glaessner, 1969; Polkowsky, 2005), and some of these probably require elevation to generic status. Evaluation of the genus is ongoing (RMF and CES); preliminary analysis suggests that *Coeloma macoveii* most likely belongs to *Coeloma* sensu stricto. In order to facilitate the reevaluation of species of the genus, we herein redescribe *C. macoveii* and illustrate the type specimens housed in the University of Bucharest collection.

* *Coeloma macoveii* Lăzărescu, 1959

(Fig. 7)

Diagnosis: Carapace about as wide as long, widest at position of third anterolateral spine including outer orbital spine; orbits very

long, sinuous; initially rimmed, concave; followed distally by open notch which is followed distally by weakly concave, serrate segment; terminating in a sharp, triangular outer-orbital spine; epigastric regions longer than wide, weakly inflated; protogastric regions short, about as long as wide, more inflated distally than axially. Chelae appearing to have been isochelous or weakly heterochelous. Male sternite 4 directed anterolaterally, with weak groove at fusion of episternal projection of sternite 3 with sternite 4. Sternal sutures 4/5 and 5/6 incomplete. Sternite 5 directed nearly laterally, sternite 6 directed slightly posterolaterally. Sternite 8 much reduced in size.

Emendation to description: Carapace about as wide as long, widest at position of third anterolateral spine including outer orbital spine; surface granular overall, regions moderately defined; weakly vaulted transversely, moderately vaulted longitudinally.

Front with four well-developed spines, middle two directed forward, outer pair directed anterolaterally; front slightly downturned. Orbita very long, sinuous; initially rimmed, concave; followed distally by open notch which is followed distally by weakly concave, serrate segment; terminating in a sharp, triangular outer-orbital spine.

Anterolateral margin short, with three spines excluding outer-orbital spine; first spine largest, long stout, directed anterolaterally; second spine smallest, short triangular; third spine circular in cross-section, directed almost laterally. Posterolateral margin long, about twice as long as anterolateral margin, initially nearly straight, becoming weakly convex; very weak posterolateral reentrants at posterior corner; posterior margin rimmed, very slightly concave.

Epigastric regions longer than wide, weakly inflated; protogastric regions short, about as long as wide, more inflated laterally than axially; mesogastric region with long anterior process, widened posteriorly with convex posterior margin; metagastric region weakly inflated, narrowing distally; urogastric region depressed below level of metagastric and cardiac regions, with concave margins; cardiac region with spherically inflated anterior end, with long posterior process; intestinal region poorly defined.

Hepatic region short, ornamented with small, inflated nodes. Epibranchial region arcuate, extending from last anterolateral spine axially, arcing anteriorly, then arcing posteriorly and axially and terminating alongside urogastric region. Remainder of branchial regions undifferentiated, moderately inflated.

Chelae appearing to have been isochelous or weakly heterochelous. Carpus of chela ornamented with large tubercles and forward-directed spine on distal upper corner. Walking legs long and slender.

Female sternum broad and ovate.

Male sternite three smooth, with shallow grooves between sternites 3 and 4, notched at margin between sternites 3 and 4. Male sternite 4 directed anterolaterally, with weak groove at fusion of episternal projection of sternite 3 with sternite 4. Sternal sutures 4/5 and 5/6 incomplete. Sternite 5 directed nearly laterally, sternite 6 directed slightly posterolaterally. Sternite 8 much reduced in size.

Occurrence: Poiana Bleuchii-Dej., northwest Transylvania, Valea Foraule, faciesul stratelor de Baba.

Age: Miocene.

Material: LPBIIIart019 (holotype); LPBIIIart002 (a specimen lot containing a paratype and hypotypes).

Comments: Lăzărescu (1959) described the species and provided an analysis of biometrics and other aspects of the new species. We provide here an expanded description emphasizing ventral aspects of the carapace that are now considered important for classification of brachyurans.

In addition to the specimens of *Coeloma macoveii* housed in the University of Bucharest collections, the Cluj-Napoca collection contains a rather poorly preserved specimen of *C. taunicum* (#9172) from Breckenheim, Germany.

Order Isopoda Latreille, 1817

Family Idoteidae Leach, 1813

Subfamily Mesidoteinae Racovitza and Sevastos, 1910

Genus *Proidotea* Racovitza and Sevastos, 1910

Type species: *Proidotea haugi* Racovitza and Sevastos, 1910.

Geologic range: Oligocene.

* *Proidotea haugi* Racovitza and Sevastos, 1910

(Fig. 8)

Occurrence: Băltătești (No. 240), Piatra Neamț (No. 2516).

Age: Oligocene.

Material: No. 240, 2516.

Comments: The type material was reported as having been deposited in the Musée de l'école militaire de Jassy (Iași) (Romania) under the number 424, collected from a hill near Băltătești, near Neamț, Romania (Racovitza and Sevastos, 1910). It is unknown if the type is still extant.

Family Archaeoniscidae Haack, 1918

?Genus *Archaeoniscus* H. Milne-Edwards, 1843

?*Archaeoniscus brodiei* H. Milne-Edwards, 1843

Occurrence: Chilmark, England.

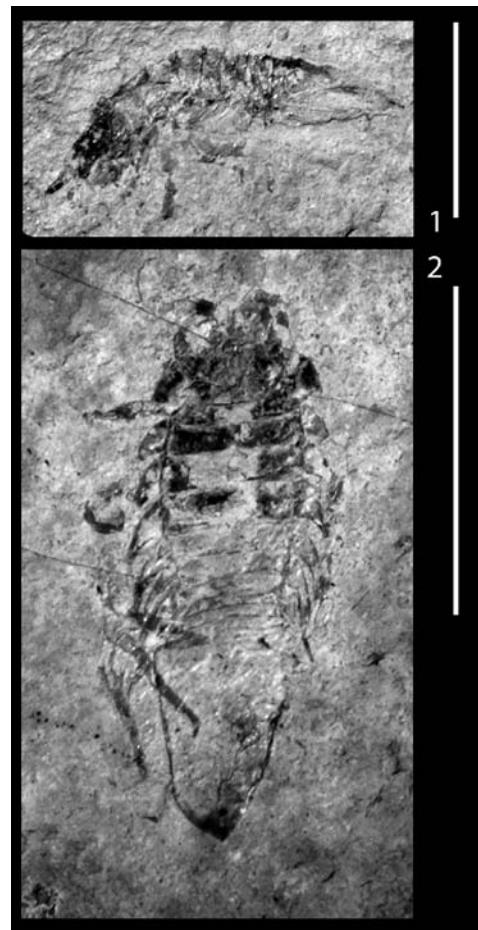


Fig. 8. *Proidotea haugi* Racovitza and Sevastos, 1910. 1, LPBIIIart240, unwhitened, compressed specimen; 2, LPBIIIart2516, compressed, unwhitened specimen. Scale bar = 1 cm.

Age: Early Cretaceous (Purbeckian).

Material: No. 2387, composed of three specimens arrayed in two trays.

Comments: The specimens are labeled as *Achiniscus breria*; they are clearly isopods and are labeled as having been collected from the Purbeck of England. It is most likely that the specimens are in fact *Archaeoniscus brodiei* and that the label name is misspelled. That species has been long known from the Purbeck Limestone Group, occurrences of which were summarized recently (Ross and Vannier, 2002).

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