

## Decapod crustaceans from the Oligocene of the Ligure Piemontese Basin, northern Italy

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### Abstract

Lithologically, the decapod-bearing levels of Rupelian (Oligocene) age in the Ligure Piemontese Basin, are characterized by an alternation of greyish blue marls with nodular elements and silt-rich, occasionally sandy, marls. The fossil studied for the present note have been collected mainly from pebbles or nodules which were eroded out of the higher levels exposed of this sedimentary complex, referred to as the 'Formazione di Molare'. These levels overlie the 'Formazioni continentali delle Breccie di Costa Cravara e Pianfolco', studied by Charrier et al. (1964) and dated as Early Rupelian. The levels yielding brachyuran fossils were attributed by Allasinaz (1987) to the transition between the 'Formazione di Molare' and the overlying 'Marne di Rigoroso', and by Bianco (1985) and Balossino & Bianco (1986) to the biozone of the foraminifer *Operculina complanata* (De France).

### Introduction

Studies of decapod crustaceans of the Ligure Piemontese Basin started with Sismonda (1846, 1861), who recorded the occurrence of brachyurans in the Miocene of Torino hill. Later followed Michelotti (1861), Ristori (1886, 1888) and Crema (1895), who described additional discoveries. For levels exposed at Sassello, Santa Giustina, Fornaci and Dego, Ristori (1889) recorded the following species: *Palaeocarpilius macrochelus* (Desmarest), *Portunus convexus* (Ristori), *Coeloma vigil* A. Milne Edwards, *Ranina speciosa* (von Münster), *R. aldrovandi* (Ronzani)?, *Callianassa canavari* Ristori, fragments of *Hoploparia* sp., some claws assignable to the genera *Eriphia*, *Grapsus*, *Callianassa*, and *Pagurus*, and established the genus *Mursiopsis*, with type

species *M. postulosus*. Subsequently, new material housed in the collections of the Museo civico at Ovada and the Museo regionale di Scienze naturali at Torino, was studied by Allasinaz (1987), who described *Calappilia mainii* Allasinaz, *C. vicetina* Fabiani, *Calappa* sp. and *Portunus monspeliensis* (A. Milne Edwards). The most recent additions include *Cherpiocarcinus rostratus* Marangon & De Angeli (Fig. 1/1) and *Calappilia verrucosa* A. Milne Edwards (Fig. 1/2) from Cherpione (Pianfolco) (see Marangon & De Angeli, 1997; De Angeli & Marangon, in press) and *Paralbunea galantensis* from Contrà Galanti (Cassinelle) (see De Angeli & Marangon, 2001).

### The faunas

Currently, our knowledge of the crab fauna from the Ligure Piemontese Basin enables a comparison with Oligocene faunas from elsewhere in southern Europe. The genus *Calappilia* is represented by three species: *C. verrucosa* correlates with the Rupelian of Biarritz (France) and *C. vicetina*, confined to the Oligocene of Vicenza (NE Italy) where coeval deposits of lagoonal origin are known which contain several *Coeloma vigil* and various portunid species.

*Portunus convexus* (Fig. 1/3) was based on the type specimen only, and external mould of a carapace, of which wax and clay casts were produced. This means that the species is comparatively poorly known, not all of the distinguishing features having been preserved. Although it is not our intention in

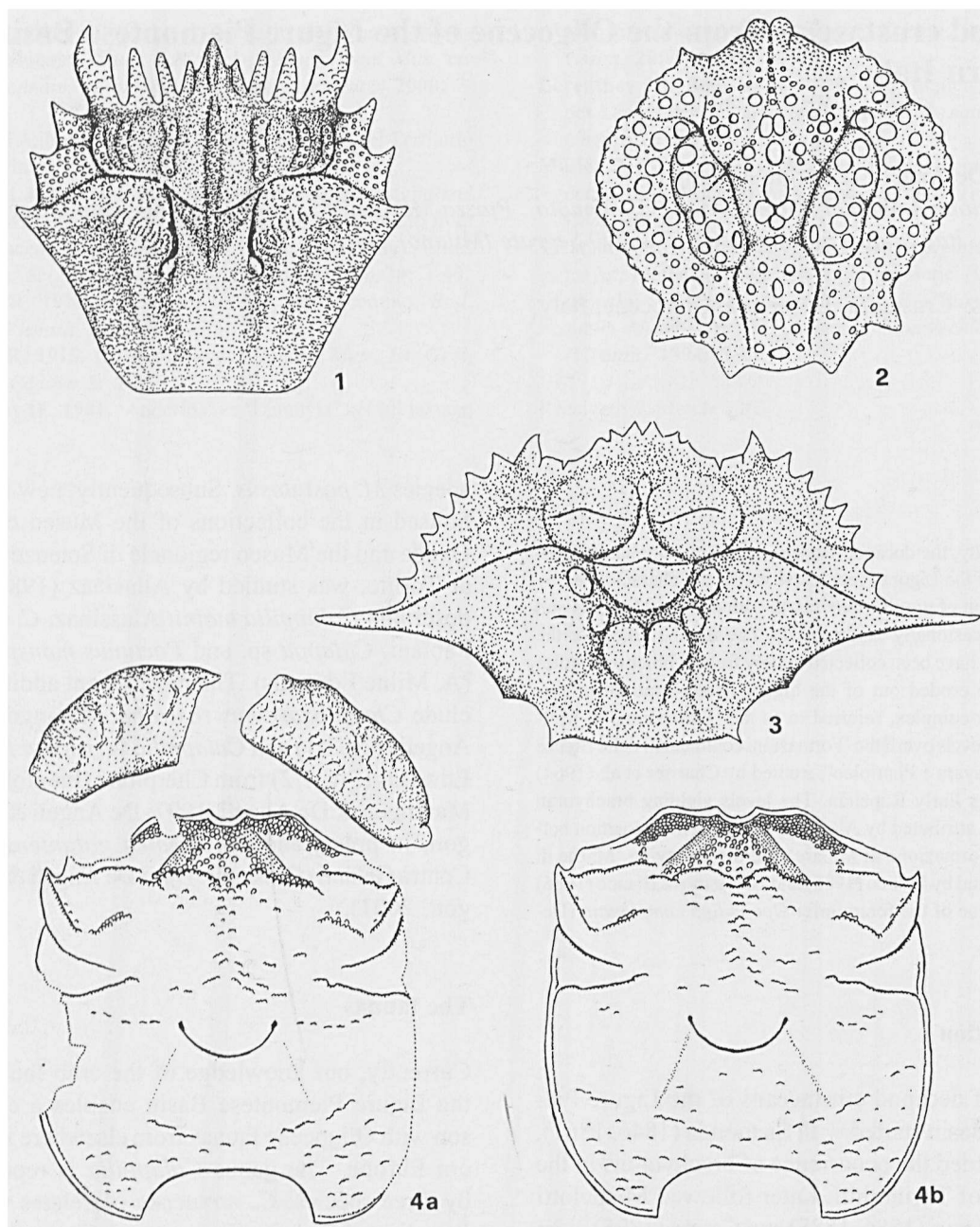


Fig. 1. Crabs from the Ligure Piemontese Basin: 1 – *Cherpiocarcinus rostratus* Marangon & De Angeli, carapace reconstruction (x1.8); 2 – *Calappilia verrucosa* A. Milne Edwards, carapace reconstruction (x2.4); 3 – *Portunus convexus* (Ristori), carapace reconstruction (0.9); 4 – *Zygopa galantensis* (De Angeli & Marangon), carapace and pereopod I (holotype) in dorsal view (a) and carapace reconstruction (b) (x3.4).

the present note to discuss this species in detail, we do wish to note the presence of a curved spine on both sides of the posterior carapace margin. Allasinaz (1987) did not observe these spines in

samples available at that time. The presence of *P. monspeliensis* in the Rupelian of the Ligure Piemontese Basin is uncertain; Allasinaz noted that samples attributed to that species might belong to

it or to a subspecies similar, ancestral species. *Ranina speciosa* occurs in the Cenozoic of Germany (between Osnabrück and Kassel) and in the Lower Miocene of Bassano del'Grappa (Vicenza) and of Monfumo (Treviso). In carapace shape, this species is closely similar to *R. bouilleana* A. Milne Edwards from the Rupelian of Biarritz; on ornament, these species may be distinguished. *Palaeocarpilius macrochelus* is widely distributed geographically, having been recorded from France to India, in rocks of Eocene and Oligocene age.

Ristori (1889) erected the genus *Mursiopsis*, but failed to present a detailed diagnosis, which he compared with *Mursia* and *Calappilia*. Glaessner (1969) listed Ristori's taxon, but did not note defining characteristics. Allasinaz (1987) was the first to point out the affinities of *Mursiopsis*, distinguishing it from *Mursia* on the basis of the more marked trilobed nature of the carapace and the different form and disposition of the ornament and from *Calappilia* on the basis of convex post-lateral borders and the presence of a few short teeth. Carapace shape in *Cherpiocarcinus rostratus* did not provide data for comparisons with extant taxa. Affinities were noted with the Necrocarcininae, in particular with *Orithopsis bonneyi* Carter from the Cenomanian of England. *Paralbunea galantensis* was based on a single specimen from the Rupelian of Galanti (Cassinelle, Alessandria). This species has a carapace which is wider than long, with a narrow front, very small rostrum (almost absent), a poorly developed lateral spine on the ocular center, a sinuous anterior margin, lacking spines, and with a setal field present as two narrow, oblique bands behind the ocular sinus. The dorsal surface has few transverse, grained furrows, the cervical furrow is deepened medially, and with a divergent branchial-cardiac groove, a very concave posterior margin, and pereopod I of comparable dimensions, with carpus with rounded margin, lacking a dorsal crest. These features confirm assignment to the genus *Paralbunea*.

A re-examination and better preparation of the carapace margins of the type specimen has now revealed a hepatic spine, and this has led to a new reconstruction (Fig. 1/4), and a transfer to the genus *Zygopa* (De Angeli & Marangon, in press). This genus contains the extant *Z. michaelis* Holthuis

(Florida, Netherlands Antilles, Surinam) and *Z. nortoni* Serène & Umali (Philippines and New Caledonia). In the world wide review of fossil and Recent Albuneidae and Blepharipodidae, Boyko (2002) presented detailed descriptions and illustrations of all known species and clear diagnoses of families and genera. He also discussed the features of *Albunea lutetiana* Beschin & De Angeli from the Middle Eocene of Vicenza, including it in the new genus *Italialbunea*. In view of this, we think it advisable to present here a list of genera and species of the superfamily Hippoidea from the fossil record:

#### Superfamily Hippoidea Latreille

##### Family Blepharipodidae Boyko

###### Genus *Lophomastix* Benedict

*L. antiqua* Schweitzer & Boyko (Eocene, Washington, USA)

##### Family Albuneidae Weber

###### Genus *Albunea* Weber

*A. asymmetrica* (Müller) (Miocene, Hungary)

*A. hahnae* Blow & Manning (Middle Eocene, South Carolina, USA)

*A. cuisiana* Beschin & De Angeli (Lower-Middle Eocene, Italy)

*A. sp.* (see Morris, 1993) (Pleistocene, Jamaica)

###### Genus *Italialbunea* Boyko

*I. lutetiana* (Beschinn & De Angeli) (Middle Eocene, Italy)

###### Genus *Praealbunea* Fraaije

*P. rickorum* Fraaije (Maastrichtian, the Netherlands)

###### Genus *Zygopa* Holthuis

*Z. galantensis* (De Angeli & Marangon) (Early Oligocene, Italy)

For correlations with occurrences elsewhere in Europe, the brachyurans from the Ligure Piemontese Basin, in particular the genera *Coeloma*, *Palaeocarpilius*, *Calappilia*, *Ranina* and *Portunus* are all widely distributed geographically and this may be due to a better genetic adaptation to cope with adverse conditions, related to environment rather than to climate.

Other crustaceans appear restricted to certain levels. Endemic in the Ligure Piemontese Basin, and occurring in lagoonal strata, characterized by a high

supply of freshwater and several plant remains carried by numerous streams, are *Mursiopsis postulosus*, *Z. galantensis* and *Cherpiocarcinus rostratus*.

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