

## Short Communication

# Report of brachyuran crabs (Crustacea, Decapoda) from the Pliocene of Borgomanero, Novara (Piedmont, NW Italy)

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**Abstract** - Some brachyuran crabs from the Pliocene of a new outcrop nearby Borgomanero (Novara, Piedmont, NW Italy) are reported. This study allows us to recognize a peculiar brachyuran crabs assemblage including: *Macropipus* cf. *M. tuberculatus* Prestandrea, 1833 (Polybiidae Ortmann, 1893), first report for this species from the Pliocene fossil record, and an indeterminate representative of *Mursia* Leach in Desmarest, 1822 (Calappidae De Haan, 1833), genus never recorded previously in the Mediterranean basin. Finally, a single chela is referred to *Calappa* sp. (Calappidae De Haan, 1833).

**Key words:** Decapoda, Brachyura, Pliocene, Piedmont, NW Italy.

**Riassunto** - Nuovi crostacei brachiuri (Crustacea, Decapoda) del Pliocene di Borgomanero, Novara (Piemonte, NO Italia).

Viene segnalata la presenza di alcuni nuovi brachiuri (Crustacea, Decapoda), da una nuova località del Pliocene presso Borgomanero (Novara, Piemonte, Italia nord-occidentale). Lo studio ha permesso di riconoscere una particolare associazione di crostacei brachiuri che include *Macropipus* cf. *M. tuberculatus* Prestandrea, 1833 (Polybiidae Ortmann, 1893), prima segnalazione del genere nel record fossile del Pliocene, e di un indeterminato rappresentante di *Mursia* Leach in Desmarest, 1822 (Calappidae De Haan, 1833), genere mai segnalato prima nel bacino del Mediterraneo. Infine una singola chela è stata attribuita a *Calappa* sp. (Calappidae De Haan, 1833).

**Parole chiave:** Decapoda, Brachyura, Pliocene, Piemonte, Italia nordoccidentale.

## INTRODUCTION

The studied specimens were collected along a small natural excavation produced by a seasonal creek running along the side of the Piedmont Prealpi Mountains nearby Borgomanero (Novara, NW Italy) (45°43'13"N, 8°16'28"E). Here, a short lens of fossiliferous fine gray, sandy clays about three meters thick crops out from the covering woodland. Decapod remains are quite rare and usually fragmentary or too poorly preserved to allow a systematic assignment. The associated fauna includes mainly mollusks, some corals, and bryozoans. Among the peculiar mollusk faunal assemblage, not studied yet, the presence of the uncommon fossil and extant *Patella caerulea* Linnaeus, 1758 (Eogastropoda, Patellidae) is remarkable, preserving also traces of the original color (Fig. 1). The species is poorly reported in the Pliocene of Italy with two different forms, *Patella caerulea stellata* and *P. caerulea subplana* having antitropical distribution from mesolittoral to coastal environments, indicating the presence of hard substrates. They are more commonly reported in Italy from Pleistocene deposits (Forlì pers. comm., 2015). Unfortunately it is not possible to know if the *Patella* specimens come from the same layer preserving the studied specimens, or if it was simply washed from the uppermost overlying layers of the section. As for other deposits along the Northern Italy Prealpi Mountains, the original Pliocene deposits were strongly eroded by glacial activity and subsequently washed by the alluvial events during the Pleistocene. Therefore, usually only some small strips of the deposits at the lowermost limit of the circalittoral Pliocene paleo-Mediterranean Sea environment are preserved. The studied fossiliferous locality has never been previously reported in the paleontological record. Only Baretto & Sacco (1885), Parona (1886, 1903), and Garassino *et al.* (2004) reported some Pliocene fossiliferous localities, cropping out around the Borgosesia area, Gozzano village, and near the south west coast of the Orta Lake, located some kilometers northern of the new locality along the northern border of the Pliocene paleo Adriatic Gulf.

The studied specimens are herein generically assigned to the Pliocene *s. l.*, based on the geographic proximity and sedimentological affinities with correlated layers and paleontological evidences, supported by the molluscan associated fauna, including *Cymatium doderleini* (D'Ancona), *Distorsio (Rhysema) tortuosa* (Borson), *Eo-*

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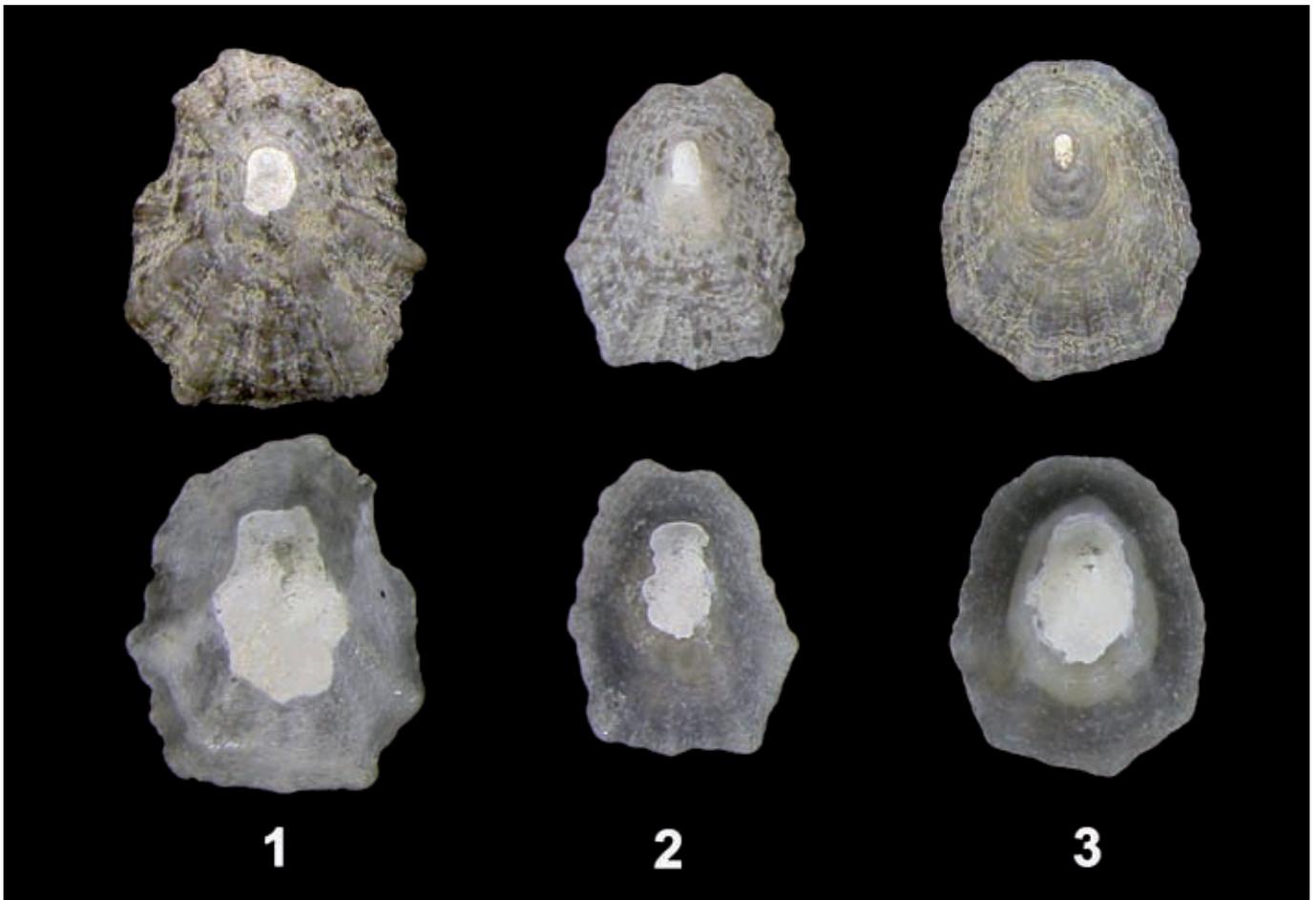


Fig. 1 - *Patella caerulea* Linnaeus, 1758; specimens from the Borgomanero outcrop in dorsal and ventral views (1 – H: 16.7 mm; 2 – H: 13.8 mm; 3 – H: 15 mm).

*cypraea* (*Apiocypraea*) *parvoastensis* (Sacco), *Gyrineum* (*Aspa*) *marginatum* (Martini), *Hastula* (*H.*) *farinesi* (Fontannes), *Isognomon* cf. *I. maxillatus* (Lamarck), and *Venus exentrica* (Agassiz), all species limited to the early Pliocene (Damarco pers. comm., 2017). The knowledge of the Pliocene decapod faunas from Piedmont was increased by different authors during these last years (for complete list see: Pasini & Garassino, 2015a, b; Pasini *et al.*, 2016). Therefore, this new report results to be a further important step in the general knowledge on the presence and distribution of the fossil decapod taxa in the western Padanian Gulf and in the Pliocene Mediterranean basin. The peculiar brachyuran assemblage of Borgomanero includes: *Macropipus* cf. *M. tuberculatus* (Roux, 1830) herein reported for the first time from the Pliocene fossil record, *Mursia* sp. herein reported for the first time in the Mediterranean basin. Finally one specimen is referred to *Calappa* sp.

Due to the delicate nature of the thin cuticle and incoherence of the sandy matrix, the specimens were fixed with a film of polyvinyl acetate solution for study and preservation. The specimens are housed in the paleontological collections of the Museo di Storia Naturale di Milano (MSNM) and Museo Paleontologico “Giulio Maini” di Ovada, Alessandria (MPOM).

#### Abbreviations

lcxp: carapace length; wcxp: carapace width.

#### SYSTEMATIC PALAEOLOGY

Section Eubrachyura de Saint Laurent, 1980  
 Subsection Heterotremata Guinot, 1977  
 Superfamily Calappoidea De Haan, 1883  
 Family Calappidae De Haan, 1833

#### Genus *Calappa* Weber, 1795

#### *Calappa* sp. (Fig. 2)

**Material:** One poorly preserved left chela in lateral view (MPOM 797).

**Description:** Subtriangular wide flat palm narrowing posteriorly with preserved fixed finger; stout wide and triangular fixed finger, upward-directed tip; occlusal margin with at least seven triangular, wide, and short teeth similar in size.

**Discussion.** Two characters of the chela, such the subtriangular shape, flattened and wide anteriorly and the short, stout, and triangular fixed finger, with upward-



Fig. 2 - *Calappa* sp., MPOM 797 (x 6).

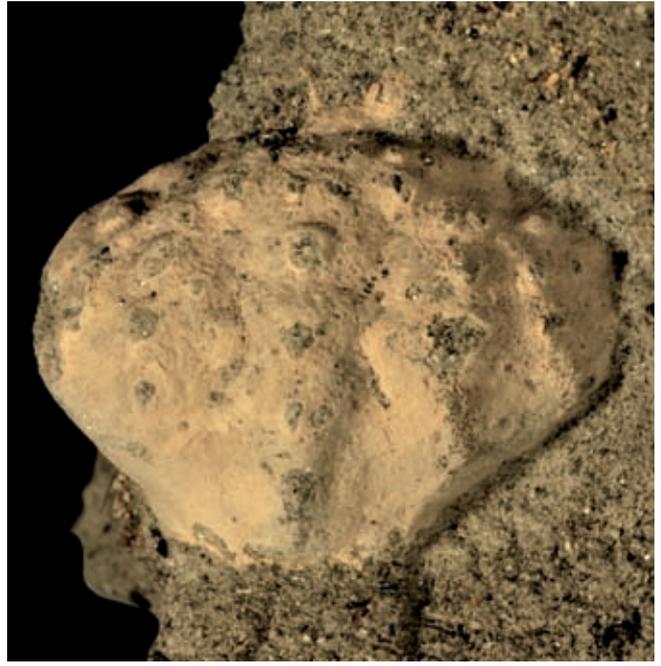


Fig. 3 - *Mursia* sp., MSNM i28549 (x 5).

directed tip and occlusal triangular teeth margin allow us to ascribe the studied specimen to *Calappa* Weber, 1759 without specific assignment due to its incompleteness.

### Genus *Mursia* Leach in Desmarest, 1822

#### *Mursia* sp. (Fig. 3)

**Material and measurements:** One carapace in dorsal view (MSNM i28549 – lcxp: 12 mm; wxcp: 15 mm).

**Description:** Carapace small, ovate distinctly vaulted transversely with five ridges of tubercles, wider than long, with maximum width in middle portion; convex anterolateral margins with several spaced tubercles or blunt teeth, arcuate anteriorly to the level of cardiac region; posterolateral margins strongly narrowed posteriorly, with straight narrow posterior margin; narrow frontal margin protruding anteriorly, poorly preserved; rounded small orbits forward directed; main dorsal regions marked by grooves; gastric regions defined by deep grooves, separated axially from branchial regions; grooves with some sparsely unequal tubercles; branchial regions with two additional shallow longitudinal grooves in each branchial region, the most lateral ones less deep; rounded tuberculate subparallel longitudinal ridges presents among the grooves; medial ridge stronger, bearing four-five large well-developed single tubercles arranged longitudinally and two pairs of transverse paired tubercles on the frontal region; similar arrangement of single less prominent tubercles decreasing posteriorly, present on the two shorter lateral branchial ridges.

**Discussion.** The studied specimen is herein referred to *Mursia* Leach in Desmarest, 1822 based upon the shape and ornamentation of the carapace, five dorsal ridges of

tubercles, and narrow posterior margin. One peculiar difference with the majority of extant and fossil species of *Mursia* is the lack of one lateral spine (more or less developed) and reduced carapace ornamentation, though these characters are shared with *M. aspina* Schweitzer & Feldmann, 2000 from the late Eocene of Washington, USA (Schweitzer & Feldmann, 2000: 236, 237, Figs. 5.3-6, 7). However, it is not possible to verify on the studied specimen if the lateral spine is really absent, broken or simply worn due to the badly preservation.

The presence of *Mursia* is herein reported for the first time from the Pliocene Mediterranean basin.

Superfamily Portunoidea Rafinesque, 1815

Family Polybiidae Ortmann, 1893

Subfamily Polybiinae Ortmann, 1893

### Genus *Macropipus* Prestandrea, 1833

#### *Macropipus* cf. *M. tuberculatus* (Roux, 1830) (Fig. 4)

**Material and measurements:** One incomplete carapace in dorsal view (MPOM 798).

**Description:** small suboval carapace, wider than long, whole dorsal surface coarsely granulate with tubercles often carinate; elevated dorsal regions defined by grooves; front with three distinct sharp teeth anteriorly directed, median tooth more projected than lateral ones; wide ovoid orbits, wide, about  $\frac{1}{2}$  of the frontal margin; granulate dorsal orbital margins with a V shaped incision; anterolateral margin convex, with some spaced pointed teeth slightly curved anteriorly, poorly preserved (more than three, possibly 5?); posterolateral and posterior margin poorly preserved, probably straight.



Fig. 4 - *Macropipus* cf. *M. tuberculatus* (Roux, 1830), MPOM 798 (x 6).

**Discussion.** Though the lateral and posterior margins are poorly preserved, the studied specimen shares some diagnostic characters distinctive with *Macropipus tuberculatus* (Roux, 1830), such as the “...dorsal carapace coarsely granulate with tubercles often carinate; elevated dorsal regions; front with three alternate teeth frontally directed with median tooth more projected than laterals ones; granulate dorsal orbital margins with a V shaped incision and the anterolateral margin convex, with spaced pointed (5) teeth...” (Koch & Ďuriš, 2016: 124). Due to the poor preservation, we prudentially compare the specimen with *M. tuberculatus* (Roux, 1830). This is the first record for this species in the fossil record, dating back to the Pliocene its presence in the Mediterranean Sea. Though Secrétan (1975) reported *M. ovalipes* from the middle Eocene of Monte Bolca (Verona, N Italy), the only representative for the genus known to date, its systematic assignment would need a critical review. The extant *M. tuberculatus* is distributed from the Eastern and N Atlantic to the Mediterranean Sea in sandy and clayey substrates, ranging from less than one meter (occasionally) to nearly 800 meters deep (Zariquiey Álvarez, 1968; d’Udekem d’Acoz, 1999).

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