

Short communications

Ethusa sp. (Decapoda, Brachyura, Ethusidae) from the Pliocene of Valduggia (Vercelli, Piedmont, NW Italy)

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Abstract - *Ethusa* sp. (Decapoda, Brachyura, Ethusidae) from Valduggia (Vercelli, Piedmont, NW Italy) is here reported for the first time from the Pliocene of Italy. This new finding enlarges our knowledge on the distribution and stratigraphic range of this genus in the paleo-Mediterranean basin.

Key words: Decapoda, Brachyura, Ethusidae, Pliocene, Piedmont, Italy.

Riassunto - *Ethusa* sp. (Decapoda, Brachyura, Ethusidae) nel Pliocene di Valduggia (Vercelli, Piemonte, Italia nordoccidentale).

Il genere *Ethusa* Roux, 1830 (Decapoda, Brachyura, Ethusidae), rinvenuto in Valduggia (Vercelli, Piemonte, Italia nordoccidentale) viene segnalato per la prima volta nel Pliocene italiano, ampliando le conoscenze sulla distribuzione geografica e stratigrafica di questo genere nel bacino paleo-Mediterraneo.

Parole chiave: Decapoda, Brachyura, Ethusidae, Pliocene, Piemonte, Italia.

INTRODUCTION

Ethusa Roux, 1830 included 43 extant species (Ng *et al.*, 2008) that are found widespread usually in shallow environments, whereas it is only poorly reported in the fossil record and restricted to the Cenozoic. According to Schweitzer *et al.* (2010) and De Angeli *et al.* (2009) just two species are known to date from Italy, *Ethusa berica* De Angeli & Beschin, 2008 (early Eocene, Vicenza) and *E. popognensis* De Angeli, Garassino & Pasini, 2009 (late Miocene, Livorno). Since the only species reported to date from the worldwide Pliocene is *Ethusa chibai* Karasawa, 1993 (early Pliocene, Japan), the studied specimen represents the first record for the genus from the Pliocene

of Italy and the paleo-Mediterranean basin. The studied specimen was collected in locality Formigosa, nearby the Valduggia village (45°43'29,61N 8°17'26,04E), located in the Valsesia Valley on the southern Prealpi Mountains, in the Vercelli Province (Piedmont, NW Italy). Here a seasonal creek crosses a Pliocene marginal marine lithographic sequence, including well-laminated and stratified clay-sands preserving a peculiar decapod crab ichnofacies (Pasini *et al.*, 2016). This sequence is overlapped by laminated yellow-grey beds, preserving a fossil assemblage including the studied specimen, irregular echinoids, vegetal remains, and some very rare small gastropod shells (Pasini, pers. comm., 2015) (Fig. 1). Without detailed stratigraphic data, the studied specimen is referred to the Pliocene *sensu lato*, as reported by Carraro (1992). The specimen is preserved in a block of grey sandy clay including some complete, slightly compressed dorso-ventrally, indeterminate irregular echinoids. Due to their delicate nature, the sandy matrix was fixed with a film of polyvinyl acetate for study and preservation. The speci-



Fig. 1 - Laminated yellow-grey beds, preserving a fossil assemblage including the studied specimen, irregular echinoids, and plant remains.

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Received: 1 October 2015

Accepted for publication: 1 March 2016

men is housed in the paleontological collections of the Museo di Storia Naturale di Milano (MSNM).

Abbreviations - lcxp: carapace length; wcxp: carapace width.

SYSTEMATIC PALAEOLOGY

Section Eubrachyura de Saint Laurent, 1980

Subsection Heterotremata Guinot, 1977

Superfamily Dorippoidea MacLeay, 1838

Family Ethusidae Guinot, 1977

Genus *Ethusa* Roux, 1830

Type species: *Cancer mascarone* Herbst, 1785, subsequent designation by Fowler (1912).

Fossil species: *Ethusa berica* De Angeli & Beschin, 2008; *E. chibai* Karasawa, 1993; *E. evae* Müller & Collins, 1991; *E. mascarone* (Herbst, 1785); *E. octospinosa* Müller, 1991; *E. popognensis* De Angeli, Garassino & Pasini, 2009.

Ethusa sp. (Fig. 2)

Material and measurements: One complete carapace (MSNM i28302 – lcxp: 10 mm; wcxp: 10 mm).

Description: Carapace slightly convex transversely, longitudinally ovate, as long as wide, wider posteriorly; wide orbital frontal margin poorly preserved, with traces of strong triangular extraorbital teeth; anterolateral margins elongate and divergent; convex posterolateral margins converging posteriorly; posterior margin wide, concave laterally, nearly straight medially; dorsal regions distinct, well defined by grooves; suboval cardiac region; intestinal region depressed; hepatic regions separated from branchial regions by cervical groove; a suboval depression close to the depression of the cervical groove; branchial regions wide, crossed transversely by two parallel and curved branchial grooves forming two distinct ridges; dorsal regions uniformly covered by thin granulations or tubercles.



Fig. 2 - *Ethusa* sp., MSNM i28302, carapace in dorsal view (x 5).

DISCUSSION

The studied specimen shows the diagnostic characters of the extant and fossil representatives of *Ethusa*, having a pear-shaped carapace, wider posteriorly; dorsal regions well defined by marked grooves, and developed branchial regions crossed transversely by two branchial grooves forming two ridges. We compared the studied specimen with the closest Italian species: *E. popognensis* (late Miocene, Livorno, N Italy) shows a carapace with more uniform distribution and thin granulations along all the dorsal carapace and a less concave posterior margin whereas *E. berica* (early Oligocene, Vicenza, NE Italy) has carapace longer and smooth with extraorbital teeth outward directed. Moreover, *E. evae* (late Eocene, Hungary) has notably wider and more subsquare carapace and *E. octospinosa* (middle Miocene, Hungary) has moderately deep grooves with dorsal carapace quite smooth. The only other Pliocene species, *E. chibai*, differs in having a longer carapace and a smoother dorsal carapace surface and shallow brachio-cardiac grooves. Finally, the extant and probably fossil *E. mascarone* seems to have usually shallow brachio-cardiac grooves and stronger granulations on the dorsal carapace. Unfortunately the poorly preserved orbito-frontal margin does not allow a specific assignment of the studied specimen. This report is, however, important because is the first report from the Pliocene paleo-Mediterranean basin bridging the gap among the other fossil Mediterranean species and the extant and fossil *E. mascarone*.

Acknowledgements

We wish to thank Giorgio Faglia (Serravalle Sesia, NO), for useful information on the Valduggia outcrop.

REFERENCES

- Carraro F., 1992 – Evoluzione Plio-Quaternaria. In: Guide Geologiche Regionali (3) - Le Alpi dal Monte Bianco al Lago Maggiore. BE-Ma (Ed.), 82-91.
- De Angeli A., Garassino A. & Pasini G., 2009 – New reports of anomurans and brachyurans from the Cenozoic of Tuscany (Italy). *Atti della Società italiana di Scienze naturali e del Museo civico di Storia naturale in Milano*, 150 (2): 163-198.
- Fowler H. W., 1912 – The Crustacea of New Jersey. *Reports of the New Jersey Museum*, 1911: 29-650.
- Ng P. K. L., Guinot D. & Dane P. J. F., 2008 – Systema Brachyurorum part I. An annotated checklist of extant brachyuran crabs of the world. *The Raffles Bulletin of Zoology*, suppl. 17: 1-286.
- Pasini G., Baldanza A., Gallo L. M., Garassino A. & Karasawa H., 2016 – Anomuran and brachyuran trackways and resting trace from the Pliocene of Valduggia (Piedmont, NW Italy): environmental, behavioural, and taphonomic implications. *Natural History Sciences. Atti della Società italiana di Scienze naturali e del Museo civico di Storia naturale in Milano*, 3 (1): 35-48. DOI: 10.4081/nhs.2016.281
- Schweitzer C. E., Feldmann R. M., Garassino A., Karasawa H. & Schweigert G., 2010 – Systematic list of fossil decapod crustacean species. *Crustaceana Monographs*, 10: 1-222.