Short communication

A pinnotheroid pea crab (Decapoda, Brachyura, Pinnotheridae), from the early Pliocene of Cassine (Alessandria, Piemonte, NW Italy)

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Abstract - A pinnotheroid pea crab (Pinnotheridae De Haan, 1833), is here reported from the Zanclean (early Pliocene) clays of a quarry located S-SW of Cassine (Alessandria, Piemonte, NW Italy). Though the studied specimen cannot be assigned to any genus within the Pinnotherinae (Pinnotheridae De Haan, 1833), it is the first record from the Pliocene of Italy and paleo-Adriatic Gulf, increasing the knowledge of the presence and fossil distribution of this family in the Mediterranean area.

Key words: Decapoda, Brachyura, Pinnotheridae, Pliocene, Piemonte, NW Italy.

Riassunto - Un crostaceo pinnoteride (Decapoda, Brachyura, Pinnotheridae) del Pliocene inferiore di Cassine (Alessandria, Piemonte, Italia nordoccidentale).

Viene descritto un crostaceo pinnoteride (Pinnotheridae De Haan, 1833) delle argille dello Zancleano (Pliocene inferiore) proveniente da una cava situata a sud sud-ovest di Cassine (Alessandria, Piemonte, Italia settentrionale). Anche se l'esemplare studiato non può essere attributo a nessun genere della sottofamiglia Pinnotherinae (Pinnotheridae De Haan, 1833), risulta essere la prima segnalazione nel Pliocene italiano e nel Golfo paleo Adriatico e in Italia, ampliando le scarse conoscenze sulla presenza fossile e distribuzione della famiglia all'interno dell'area mediterranea.

Parole chiave: Decapoda, Brachyura, Pinnotheridae, Pliocene, Piemonte, Italia settentrionale.

INTRODUCTION

The studied specimen was collected along a natural landslide in an active quarry located S-SW of Cassine (Alessandria, Piemonte, NW Italy) (44°45'3.24"N, 8°31'44.04"E). Here grey, unbedded silty clay belonging to the Argille Azzurre (ex Argille di Lugagnano) (Boni & Casnedi, 1970) dated to Zanclean (early Pliocene) crops out (Pedriali & Robba, 2005). The fossiliferous clay preserves a rich associated marine fauna, including mainly mollusks, echinoids, and rare plant remains (for additional information see Robba, 1990). Based on the scarce available data, the studied specimen is assigned to the Zanclean (early Pliocene). The previous decapod record from Cassine includes one unstudied specimen, figured by Damarco (2009: Fig. 326), and ascribed to *Cancer* cf. *C. sismondae* [sic] (= *Lobocarcinus* cf. *L. sismondae*) (Cancrinidae Latreille, 1802), housed in the Paleontological Museum "Giulio Maini" of Ovada (Alessandria, Piemonte). Later Pasini & Garassino (2013) reported *Bathypluma plioceni-ca* Garassino, Pasini & Marini, 2012 (Retroplumidae Gill, 1894), *Monodaeus bortolottii* Delle Cave, 1988 (Xanthidae MacLeay, 1838), and some poorly preserved small carapaces tentatively ascribed to *Goneplax rhomboides* (Linnaeus, 1758) (Goneplacidae MacLeay, 1838).

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MATERIALS AND METHODS

One small carapace in dorsal view, three-dimensionally preserved within a small fragment of grey silty clay. The specimen is housed in the palaeontological collections of the Museo di Storia Naturale di Milano (MSNM).

Abbreviations

lcxp: carapace length;
P1-P5: pereiopods 1-5;
wcxp: carapace width.

SYSTEMATIC PALAEONTOLOGY

Section Eubrachyura de Saint Laurent, 1980
Subsection Heterotremata Guinot, 1977
Superfamily Pinnotheroidea De Haan, 1833
Family Pinnotheridae De Haan, 1833
Subfamily Pinnotherinae De Haan, 1833

Genus and sp. indet.
Fig. 1

Material and measurements: one poorly preserved carapace, slightly compressed transversally (MSNM i29211 – lcxp: 5 mm; wcxp: 5 mm).

Fig. 1 - MSNM i29211, carapace in dorsal view (x 13).

Description. Smooth subtrapezoidal carapace, as long as wide; carapace convex dorsally, more inflated posteriorly; shoulders of carapace rounded; straight narrow front weakly produced medially; orbits ?very small, poorly preserved; anterolateral margins slightly converging frontally, posterolateral margins short, diverging posteriorly, with a rounded concave indentation at level of the P5 insertion; posterior margin nearly straight; carapace regions undefined, but with a short transverse gastro-cardiac groove.

Discussion. Davie (2002) provided the following diagnosis for the Pinnotheridae De Haan, 1833, briefly describing the carapace characters: "*Carapace typically more or less round or transversally oval often poorly calcified especially in commensal females; anterolateral margins smooth or minutely toothed; front narrow, orbits and eyes very small."* Though the present list includes some ambiguous genera into Pinnotherinae De Haan, 1833 (see Ng *et al* 2008: 253; Palacios Theil *et al*. 2016, for full discussion), Sakai (1976) provided a diagnosis for the subfamily mainly based on the pleonal appendages, not typically useful in fossil comparisons, reporting the carapace simply as *"not appreciably broader than long, typically more or less circular and rounded"*.

Though the studied specimen does not preserve the pleonal appendages, some dorsal characters, such as the small size and typical subrounded shape of the smooth carapace, more inflated posteriorly, short straight front poorly produced medially, and ?very small orbits, support its assignment tentatively to the Pinnotherinae De Haan, 1833. Unfortunately, the absence of other important diagnostic distinctive characters of the cephalic and pleonal appendages does not allow us to make a closer systematic assignation.

Pinnotherinae includes several extant and fossil genera (see Ng *et al*., 2008: 248-251) of small, endosymbiotic pea crabs, mainly living commensally with shells, tests, on tubes of bivalve mollusks, ascidians, holothurians and polichaete worms (Davie, 2002). Two extant species have been recognized and widely accepted from the Mediterranean Sea, including the Northern Adriatic Sea (Becker & Turkay, 2010: 1556), *Nepinnotheres pinnotheres* (Linnaeus, 1758) and *Pinnotheres pisum* (Linnaeus, 1767), mainly infesting selected species of bivalves. Both show generic affinities with the smooth carapace shape of the studied specimen, but differing mainly in the absence of the transverse short groove and the bilobate front in *N. pinnotheres*. Unfortunately, no fossil records of the subfamily have been recorded from the Pliocene Mediterranean area to date.

This record, the first for a representative of the pinnotherid pea crabs from the Pliocene of the Italian paleo Mediterranean area, considerably increases the sparse knowledge about the fossil distribution of the family.

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