

Fig. 10 - Cfr. *Longichela orobica* n. gen. n. sp., n. cat. MSNB 8200 antennal region, photo and reconstruction (x 2,7)

Thoracic appendages. The 3rd maxilliped is short and it is possible to see the four terminal articula getting proximally stronger. All these articula are spineless. The third pair of pereiopods (see Fig. 11) is well preserved: the carpus is elongated; the propodus is strong and expanded; the index and the dactylus are rather thin; the latter is bent at its distal extremity and it is longer than the index. Only fragments of the pereiopods IV-V are preserved.

Abdominal appendages. The pleopods are not preserved.

#### Observations

The morphological features that can be observed in our specimen are not many but, even so, they allow a comparison with the genus *Longichela* n. gen. and the ascription - even though with some reservations - to the species *L. orobica* n. sp.. Common features with *Longichela* n. gen. are: the general shape of the body, the subrectangular carapace, the presence of a hepatic spine, the third pair of pereiopods with elongated merus, carpus and propodus with very elongated chelae, and finally the abdominal IV-V somites with backward protruded posterior pleural margin.

The differences of our specimen with the other specimens belonging to *L. orobica* n. sp. concern the size of the rostrum, which is much more elongated than in *L. orobica* n. sp. and the higher number of suprarostrals teeth, as far as it is possible to discern from its preservation state. Since it is a unique specimen, the systematic ascription cannot be more certain than the one represented by the comparison with the species *L. orobica* n. sp..

#### Genus *Satyrus* nov.

Derivation nominis: from the ancient Latin word *satyrus* = satiro

Type species: *Satyrus cristatus* n. sp.

Description: coinciding with that of the type species

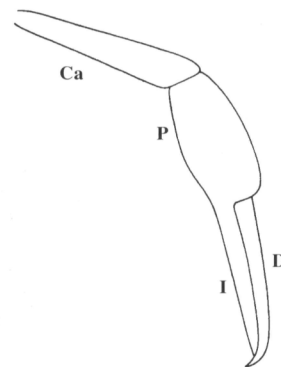


Fig. 11 - Cfr. *Longichela orobica* n. gen. n. sp., n. cat. MSNB 8198 third pereiopod, photo and reconstruction (x 3)

#### *Satyrus cristatus* n. sp.

Tab. I: fig. 4 - Tab. II: figs. 1, 2

Derivation nominis: from the crest-like rostrum

Holotype: MSNB 8190

Paratypes: MSNB 8240; 8248; 8299

Type locality: Ponte Giurino, Imagna Valley (Bergamo)

Geological age: U. Norian (?) - L. Rhaetian (?)

Diagnosis: subrectangular carapace which shrinks slightly anteriorly; short rostrum with a saw-toothed upper margin; carapace with an antennal and an hepatic spines; elongated scaphocerite with a pointed distal extremity; short and spineless 3rd maxilliped; pereiopods I-III with elongated merus and carpus and with a long and thin propodus; rectangular and increasingly longer I-V abdominal somites; rectangular and very elongated VI somite; triangular telson with a pointed distal extremity.

Material: 9 complete specimens are ascribed to the new species: they are small sized, with a length ranging between 3.2 and 5.2 cm.

MSNB 8190, 8240, 7790, 8245, 8248, 8299, 8338, 8341, 8350

Description: it is an elongated small penaeid (the biggest specimen, MSNB 8338, has a maximum length of 5.2 cm), with a thin and completely smooth exoskeleton.

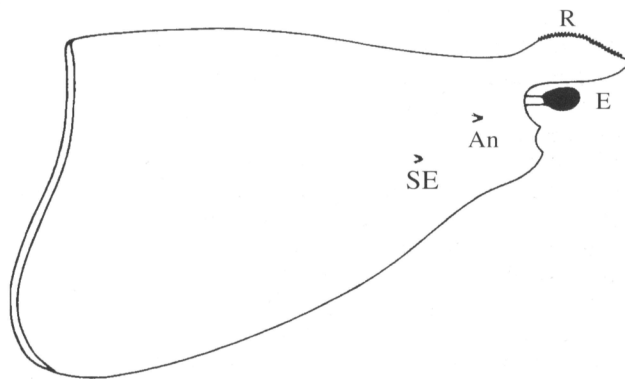


Fig. 12 - *Satyrus cristatus* n. gen. n. sp., carapace reconstruction, line drawing

**Carapace.** The carapace (see Fig. 12), which is preserved in all specimens in lateral view, has a subrectangular shape and shrinks slightly anteriorly. The dorsal margin is straight. The posterior margin has a sinuous trend: it is concave in the upper third and then backward protuded in the lower third, thus creating a slight convexity. The posterior margin is delimited by a marginal carina clearly visible in the specimens MSNB 8240 and 8299. The ventral margin is bent. The dorsal margin stretches in a rostrum that can be clearly observed in the specimens MSNB 8190, 7790, 8248, 8341, 8299, 8245, 8240. The rostrum is short, with a slightly saw-toothed upper margin that bends upwards by creating a marked hump. Under the rostrum there is a small and shallow ocular incision, whose inferior part is delimited by an antennal angle. The bad preservation state of the surface of the carapace does not allow to identify grooves or carinas. It is nonetheless possible to observe in two specimens (MSNB 8240, 8245) an antennal and an hepatic spines.

**Abdomen.** It is well preserved in all the specimens. The somites have a rectangular shape in lateral view, and an increasing length from the first to the third one. The pleurae of the first three somites have a straight trend. The posterior margins of the IV-V are backward protuded. The VI somite is extremely elongated and its length is twice the width. The telson is very elongated with a pointed distal extremity and it is as long as the VI somite. The uropods are badly preserved in all the specimens, therefore it is impossible to detect the presence of a diaeresis on the exopodite.

**Cephalic appendages.** Their reconstruction is based particularly on the specimens MSNB 8240, 8245, 8299, 7790, 8190. The eye is ovoidal. The antennae still preserve the scaphocerite, rather elongated and with a pointed distal extremity, and the carpoperite with the two long multiarticulated flagella.

**Thoracic appendages.** The 3rd maxilliped is preserved in some specimens (MSNB 8240, 8190, 8299). It is possible to observe only its three distal elements, dactylus, propodus and carpus, all of the same width; none of these elements has spines. The five pairs of pereopods can be observed in five specimens (MSNB 8190, 8240, 8299, 8338, 8248). The first three pairs of pereopods are increasingly longer from first to third, and are all chelate; merus and carpus are very elongated, and all chelae are almost equal in length and in strength. The pereopods IV-V are very elongated and have a terminal dactylus (MSNB 8248, 8338) (see Fig. 13).

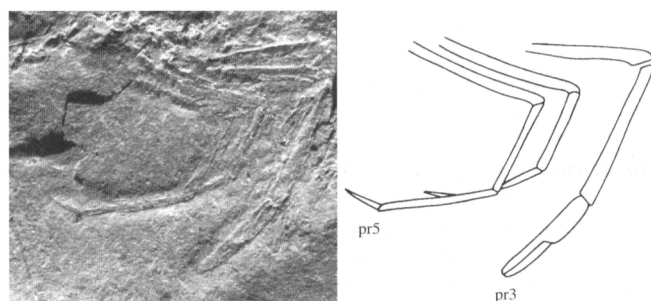


Fig. 13 - *Satyris cristatus* n. gen. n. sp., n. cat. MSNB 8248 III-V pair of pereopods, photo and reconstruction (x 3)

**Abdominal appendages.** The five pairs of pleopods are preserved in six specimens (MSNB 8240, 8299, 8338, 8350, 8248, 7790). They have a subrectangular sympodite articulated to two long multiarticulate flagella. In some specimens (MSNB 8248, 8190) the

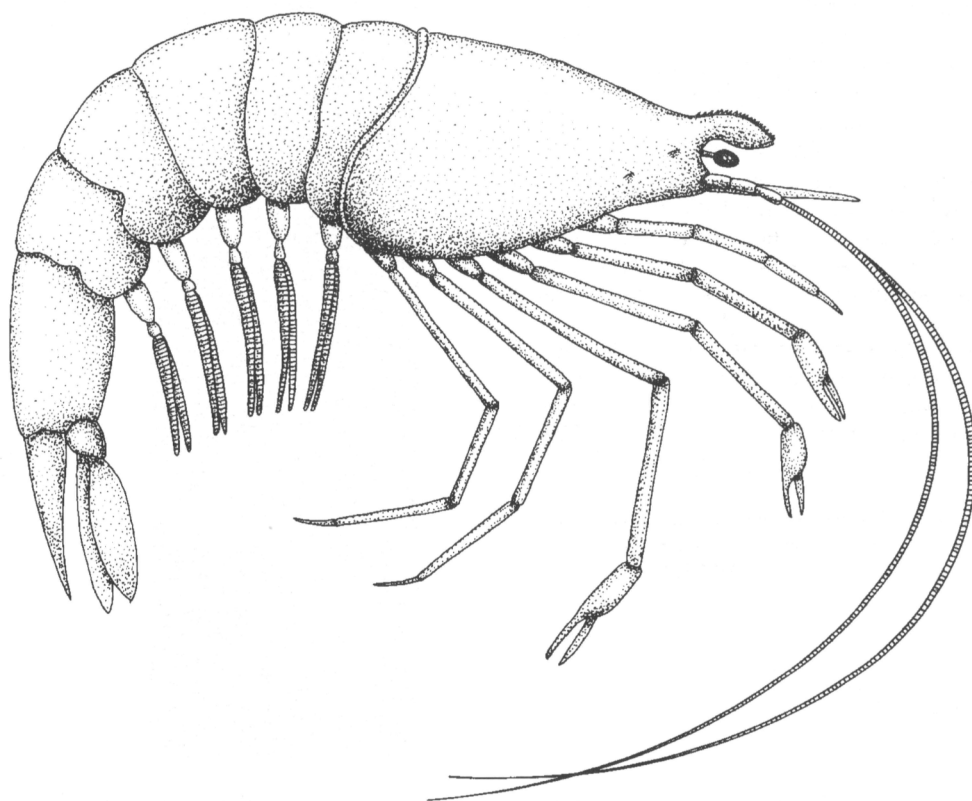


Fig. 14 - *Satyris cristatus* n. gen. n. sp., reconstruction

flagella, due to their particular length, tend to overlap to the last pair of pereiopods, thus giving the erroneous impression that the fifth pereiopod is multiarticulate.

#### Observations

The genus *Satyris* n. gen. (see Fig. 14) differs from *Longichela* n. gen. from the same outcrop in the structure of the rostrum, which is shorter in *S.* and with a saw-toothed suprarostal margin, and lacks the postrostral teeth; in the third pair of pereiopods which have less developed chelae; besides in *L.* chelae are of growing length. The pleopods have very elongated flagella, while in *L.* they are less developed; the telson is triangular with pointed distal extremity, whereas in *L.* it is a little shorter and with a bifid point.

As *Longichela* n. gen., also *Satyris* n. gen. shows some affinities with the genus *Antrimpos* Münster, 1839 - general shape of the body, subrectangular carapace, abdominal somites with rounded pleurae - but some of its features are different from the type species *A. speciosus* Münster, 1839: the structure of the rostrum, whose anterior and posterior teeth are not distinguished; the lack of the subrostral tooth; the presence on the carapace of the antennal and hepatic spines, lacking in the species of Münster; the pleopods with very elongated flagella.

#### Indeterminate Penaeid

Tab. II: fig. 3

Material: MSNB 7779

Description. It is a small elongated penaeid (the specimen has a maximum length of 3.2 cm), with a thin and smooth exoskeleton.

Carapace. The carapace (see Fig. 15), visible in lateral view, has a subrectangular shape and shrinks slightly anteriorly. The dorsal margin has a straight trend. The posterior margin has a straight trend and it is markedly backward protuded, thus partly covering the first abdominal somite. The ventral margin is bent and has a thin marginal carina. The dorsal margin stretches into a long rostrum, which is pointed at the distal extremity and supplied with three suprarostal teeth in the anterior third. The subrostral teeth are lacking. At the base of the rostrum there is also a very big tooth. Below the rostrum there is a narrow and shallow ocular incision delimited by an antennal angle. No grooves can be observed.

Abdomen. The abdomen is well preserved. The I-III rectangular somites are increasingly longer and have sinuous pleural margins. The somites IV-V have a backward protruded pleural posterior margin. The VI

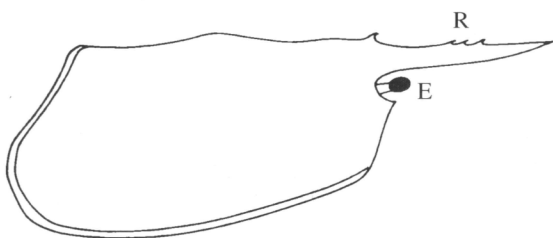


Fig. 15 - Indeterminate penaeid, carapace reconstruction, line drawing, based on specimen MSNB 7779

rectangular somite is more elongated than the others. The telson and the uropods are badly preserved, but it is possible to observe that the uropods are about 1/3 longer than the telson.

Cephalic appendages. The eye is ovoidal. Of the antennae it is preserved the scaphocerite which has an elongated shape and a pointed distal extremity; the scaphocerite is longer than the rostrum.

Thoracic appendages. There are fragments of the five pairs of pereiopods, which do not allow the observation of chelate elements.

Abdominal appendages. Only fragments of the multiarticulated flagella of the five pairs of pleopods are visible.

#### Observations

The specimen is different from the other penaeids of the deposit because of certain features of the carapace, like the rostrum, which is straight with few (three) suprarostal teeth plus an epigastric tooth, a slight mediodorsal hump on the carapace and a narrow ocular incision. Owing the few features that can be observed on the single available specimen, it is difficult to satisfactorily characterize this form; that is why we prefer to leave it indeterminate.

#### Genus *Palaedusa* Pinna, 1974

*Palaedusa* cfr. *longipes* Pinna, 1974

Material: MSNB 7737, 8314

The material in our possession is quite poor: it consists of just two extremely fragmentary specimens of which only the extremely elongated chelae of the third pair of pereiopods are satisfactorily preserved (see Fig.

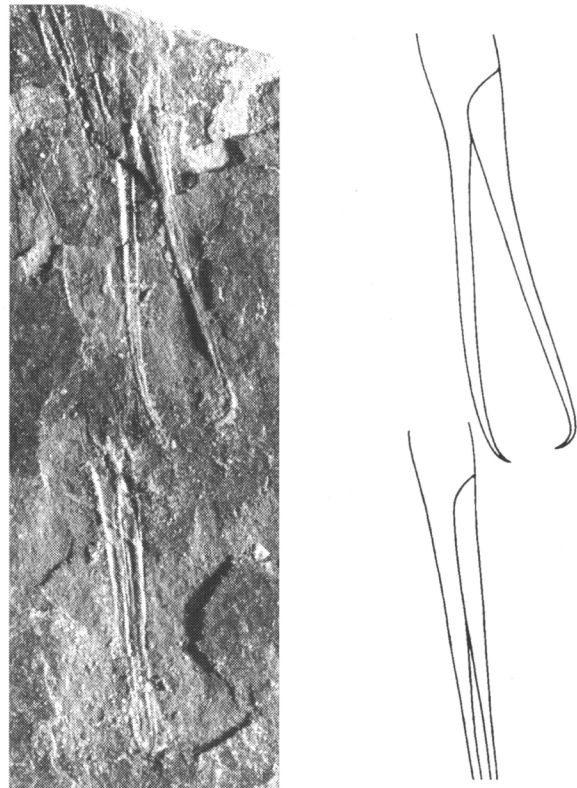


Fig. 16 - *Palaedusa longipes* Pinna, 1974, n. cat. MSNB 7737 third pair of pereiopods, photo and reconstruction (x 5)

16). The chelae have a thin and very elongated dactylus and fixed finger, which have both the same length and are hook-shaped at the distal extremity. This kind of chelae is distinctive of the genus *Palaeodus* Pinna, 1974, typical of the slightly older Norian eusinic basins of the Pre-Alps, of which we only know the species *P. longipes* Pinna, 1974 from the Calcare di Zorzino Fm. of Lombardy. From a morphological point of view the chelae of Ponte Giurino are identical to those described by Pinna for *P. longipes* of the Norian of Cene (Bergamo Province). Therefore we ascribe the above mentioned fragments to the species of Pinna, even though with some reservations, due to the fragmentary nature of the specimens in our possession.

#### Penaeid, genus and species indet.

Material: five incomplete specimens, with a length ranging between 4 and 5 cm.

MSNB 7718, 7723, 7762, 7778

MSNM i10753

All specimens lack cephalic, thoracic and abdominal appendages, of which just very poor fragments are preserved; so the description is limited to carapace and the abdomen.

The carapace is half the abdomen in length and of the same height; it is completely smooth, lacking any ornamentation. The abdomen bends with an acute angle between the III and the IV somite; the VI somite is extremely elongated, twice the width in length. The uropods are 1/3 longer than the telson (see Fig. 17).

#### Observations

The form strongly resembles the genus *Bombur* Münster, 1839, in which the author included the species *B. complicatus* and *B. angustus*, based on some badly preserved specimens of small natantian decapods from the Kimmeridgian of Solnhofen. In 1858 Bronn described the new species *B. aonis* on some specimens from the Carnian of Raibl (NE Italy). In 1864 Opper invalidated the species of Solnhofen, since he considered the material as too badly preserved for an adequate attribution.

Later on Van Straelen, 1925 stated that the general morphology of the body was clear enough to maintain a distinction between *Bombur* (with the single species *B. complicatus*) and the other Solnhofen natantians.

According to Förster, 1967 the specimens ascribed to *B. complicatus* and *B. angustus* must be considered as juvenile specimens of species that can be ascribed both to the genus *Antrimpos* Münster, 1839 and to the Caridean genus *Hefriga* Münster, 1839. Following Förster, 1967, Glaessner (1969, p. R626) put forward the hypothesis that the specimens ascribed to *B. aonis* Bronn, 1858 could actually be young specimens of *Antrimpos* Münster, 1839. In this case, the genus *Bombur* Münster, 1839 should be partly synonymous of *Hefriga* Münster, 1839 and partly of *Antrimpos* Münster, 1839.

Our specimens are well characterized with respect to the other forms of natantian decapods of the deposit of Ponte Giurino because of the general morphology of the body, and particularly the different shape of the carapace and the remarkable elongation of the VI abdominal somite with respect to total length of the abdomen.

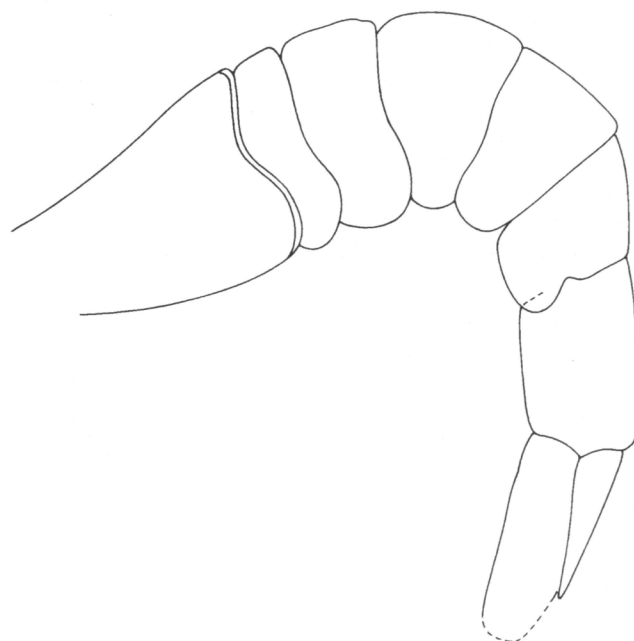


Fig. 17 - Penaeid, genus and species indet., n. cat. MSNM i10753, photo and reconstruction (x 4)

The size of our specimens lead us to think that they are not juvenile forms of other natantians, since they are completely different from the individuals of the same size belonging to the other species of natantians of the deposit; as the genus *Bombur* is no more available to include our form, we prefer to leave them indeterminate until new and more complete specimens will be available to formalize a new generic and specific entity.

Infraorder Caridea Dana, 1852

Family indet.

Genus *Pinnacaris* nov.

Derivatio nominis: dedicated to Prof. Giovanni Pinna, who firstly described Caridean decapods from Triassic rocks

Type Species: *Pinnacaris dentata* n. sp.

Description: coinciding with that of the type species.