

PAOLO FONTANA (\*)

A NEW ITALIAN SPECIES  
OF THE GENUS *EMBLA* LATREILLE, 1825  
(*Insecta Embiidina*)

ABSTRACT - FONTANA P., 2001 - A new Italian species of the genus *Embla* Latreille, 1825 (*Insecta Embiidina*)

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*Embla girolamii* n. sp., collected in Italy along Thyrrhenian coast, near Viareggio (Tuscany), in sandy habitats is described and illustrated. The new species is well characterised within the genus, in comparison with other Mediterranean species, for the structure of the left cercus, the process of the left hemitergite of 10<sup>th</sup> segment and the left paraproct. The adult male of the new species is apterous and living individuals of both sexes are mahogany-brown.

KEY WORDS - *Insecta, Embiidina, Embla.*

RIASSUNTO - FONTANA P., 2001 - Una nuova specie italiana del genere *Embla* Latreille, 1825 (*Insecta Embiidina*).

L'Autore descrive *Embla girolamii* n. sp., raccolta in Italia, sulla costa tirrenica presso Viareggio (Toscana), in ambiente di retroduna. La nuova specie risulta ben caratterizzata in seno al genere ed in particolare rispetto alle specie mediterranee, per la conformazione del cerco sinistro, del processo dell'emitergite sinistro del decimo segmento e del paraprocto sinistro. Il maschio adulto della nuova specie è attero e da vivo è di colore mogano, come la femmina.

PAROLE CHIAVE - *Insecta, Embiidina, Embla.*

## INTRODUCTION

Since 1995 I have collected under stones or near roots of grasses, several species of Embiidina. Most specimens were nymphs and in some

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(\*) Dipartimento di Agronomia Ambientale e Produzioni Vegetali - Entomologia, Università di Padova.

cases, after rearing, I obtained adults. After my first observations and the successful rearing, the peculiarity of this order of Insects induced me to deepen my knowledge and to review published literature. That concerning Italian species is not rich and is practically restricted to the articles published by Renzo Stefani, who described three of the five Italian species (FAILLA *et al.*, 1994), and to the monograph about European and Mediterranean species by ROSS (1966). After, no additional species of the order have been described in the Mediterranean basin and any new report about Italian species has been published.

I was able to determine that some specimens probably represent a new species of the genus *Embia* Latreille, 1825. Encouraged by E. S. Ross (2000, personal communication), who confirmed the identity of the new species and provided me with all the information concerning mounting and drawing techniques, I decided to describe it. The material of the new species, collected in 1997 near Viareggio (Tuscany, Italy), consists only of one adult male, two adult females and two nymphs.

## METHODS

The specimens were cleared in 10% KOH and mounted on slides in Canada balsam (Fig. 4 A,B). Nomenclature of anatomical structures follows ROSS (1966 and 2000).

## DESCRIPTION

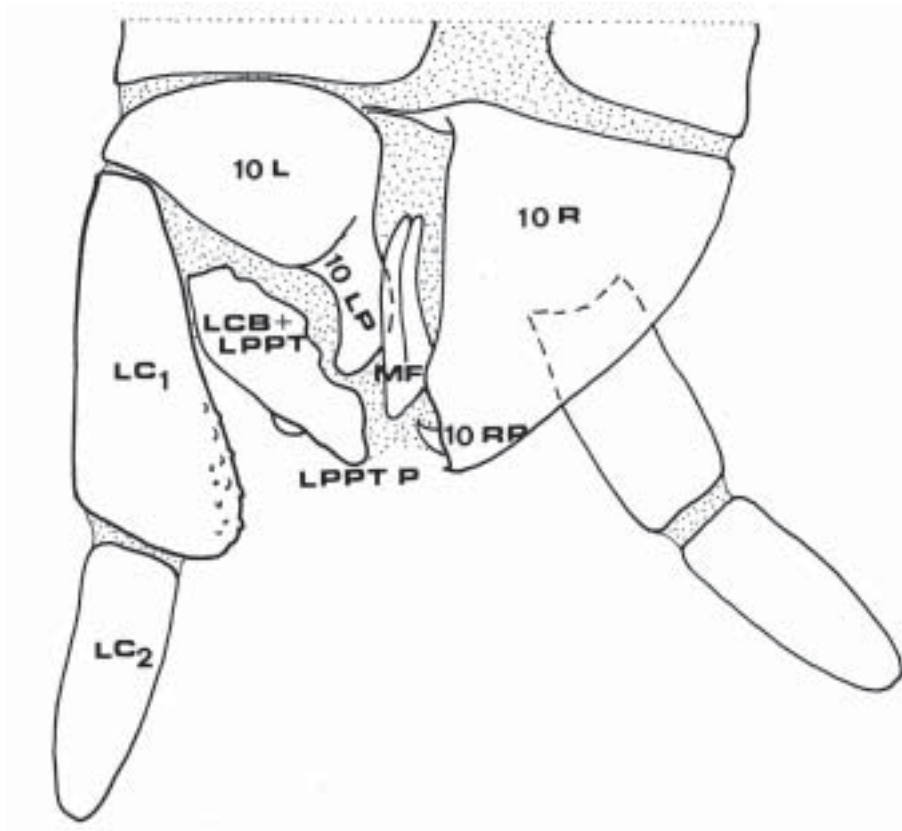
### *Embia girolamii* n. sp.

*Type material*: Male holotype on slide, female allotype on slide and 1 female paratype in alcohol, are preserved in the Paolo Fontana private collection, Isola Vicentina, Vicenza (Italy).

*Type data*: ITALY, Tuscany (Lucca), Nature Reserve «La Lecciona», Viareggio, Marina di Levante, 29.XI.1997 (nymphs become adults after rearing and sampled in 17.XII.1997), leg. and rearing P. Fontana.

*Description of holotype (male)*. Living appearance: medium size, apterous, living specimen uniformly mahogany-brown with clear hairs (Fig. 2).

Mounted specimen (Fig. 4 A): Cranium sub-hexagonal, elongate, lacking of dorsal pattern (Fig. 5A). Antennae (incomplete) dark brown with apex of each antennal segment colourless. First antennal segment



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|-----------------------|--|
| <b>10 L</b>           | : left hemitergite of tenth segment.                 |
| <b>10 LP</b>          | : process of left hemitergite of tenth segment.      |
| <b>10 R</b>           | : right hemitergite of tenth segment.                |
| <b>10 RP</b>          | : process of right hemitergite of tenth segment.     |
| <b>MF</b>             | : median flap of right hemitergite of tenth segment. |
| <b>LCB</b>            | : left cercus-basipodites.                           |
| <b>LPPT</b>           | : left paraproct.                                    |
| <b>LPPT P</b>         | : process of left paraproct.                         |
| <b>LC<sub>1</sub></b> | : basal segment of left cercus.                      |
| <b>LC<sub>2</sub></b> | : apical segment of left cercus.                     |

Fig. 1. Nomenclature of the morphological characteristic of mounted specimens according Ross (1966 and 2000).

clearly larger than the following and shorter than the third one. Third antennal segment twice as long as the second one. Eyes very small, not projecting (Fig. 5A). Labium with anterior margin largely rounded and apical half darker than basal half. Submentum rectangular, with largely concave anterior margin (Fig. 5D). Mandibles elongate with three teeth on the left mandible (Fig. 5B) and two on the right one (Fig. 5C). Maxilla with lacinia light brown, thin and sharp and characterised by two apical teeth; galea colourless and widened in its apical half (Fig. 5E).

Terminalia (Fig. 6A) with caudal margin of left hemitergite of tenth segment (10 L) almost straight. Left process (10 LP) very short, stout and scarcely tapered and slightly out-curved, with apex broadly rounded (Fig. 6C). Right hemitergite (10 R) large. Right process (10 RP) pointed inward yet visible from above (Fig. 6 A, E). Median flap (MF) short, well-sclerotized and darkly pigmented. Left paraproct (LCB + LPPT) large, well-sclerotized and darkly pigmented except for the apex that is membranous and bears some small setae; process of left paraproct (LPPT P) short and stout, with a large rounded sub-apical dilatation in the outer-inferior margin (Fig. 6D). Basal segment of left cercus (LC<sub>1</sub>) with inner side straight, scarcely and gradually expanded to the apex that is densely echinulate (Fig. 6B). Apical segment of left cercus (LC<sub>2</sub>) subconical, 0,42 time long as LC<sub>1</sub>. Left and right cerci with long hairs, longer than cercus diameter; LC1 with hairs only in outer side. Hind basitarsus, with one papilla (as usual in *Embia*) scarcely projecting (Fig. 6F).

Dimensions (on slide): body length 9,79 mm; head 1,56 mm long and 1,2 mm wide.

*Female.* Resembling male but larger (Fig. 4B).

Dimensions (on slide): body length 12,39 mm; head 1,72 mm long and 1,44 mm wide.

*Derivatio nominis.* The species is named after Professor Vincenzo Girolami (University of Padua), who awakened my passion for entomology with his excellent lectures on general entomology.

#### HABITAT

*Embia girolamii* n. sp. lives in sandy habitats behind the dunes (Fig. 3). The type locality is located on the northern border of the «Parco Regionale Migliarino, S. Rossore, Massaciuccoli», Tuscany, and in the Nature Reserve named «La Lecciona». The habitat of *E. girolamii* has been intensively investigated but specimens were collected only in the



Fig. 2. *Embia girolamii* n. sp., male: ITALY, Tuscany (Lucca), Nature Reserve «La Lecciona», Viareggio, Marina di Levante, 29.XI.1997 (nymphs become adults after rearing and sampled in 17.XII.1997), photo P. Fontana.



Fig. 3. Habitat of *Embia girolamii* n. sp., ITALY, Tuscany (Lucca), Nature Reserve «La Lecciona», Viareggio, Marina di Levante, 29.IX.2000, photo P. Fontana.

narrow band of dense, low grasses vegetation, growing on a sandy-organic soil, immediately behind the first row of bushes and little trees living on the top of the low coastal dune, about 50 m from the sea shore and 20-30 m from the coastal pinewood. Very few aged nymphs were collected, in November 1997, inside little silk galleries on basal part of grasses tufts and under little stones (always near grasses roots). Only 1-2 nymphs of the species were collected on each tufts and the silk galleries were very weak. *E. girolamii* has a peculiar life cycle. The adults of the new species are present in late Autumn while most of the Mediterranean species become adult during spring. *E. ramburi* is also present in the type locality of *E. girolamii* but the life cycle of the first species is completely different. Small nymphs of *E. ramburi* have been collected in November 2000 and March 2001, but they become adults only in May 2001.

#### AFFINITIES

*Embia girolamii* n. sp. seems to be closely related to *E. ramburi* Rimsky-Korsakow, 1905, but differing in its the short almost truncate left process (10 LP) and the basal segment of left cercus (LC<sub>1</sub>). In *E. girolamii* the left process (10 LP) is broader and more scarcely tapered and the shape of the process of left paraprot (LPPT P) is completely different and more complex than in *E. ramburi*. Moreover both species have apterous males but *E. girolamii* is uniformly mahogany-brown while *E. ramburi* is jet-black. Furthermore, the different life cycles of *E. girolamii* and *E. ramburi* confirm the identity of the two species. Because *E. girolamii* is known only from a few specimens and only from the type locality (Fig. 7), the biogeographical significance and origin of the new species cannot be determined at present.

#### CONCLUSION

Previously three genera including five species of Embiidina (*Embia ramburi* Rimsky-Korsakow 1905, *Embia nuragica* Stefani 1953, *Embia tyrrhenica* 1953, *Cleomia guareschii* Stefani 1953 and *Haploembia solieri* Rambur 1842) have been recorded from Italy (FAILLA et al., 1994). Main contributions to the knowledge of the Italian embiids were by STEFANI (1953) who published several articles about the biology of some Mediterranean species and described most of the Italian species. At present





Fig. 4. (A, B) Holotype (A) and Allotype (B) of *Embia girolamii* n. sp.: ITALY, Tuscany (Lucca), Nature Reserve «La Lecciona», Viareggio, Marina di Levante, 29.XI.1997 (nymphs become adults after rearing and sampled in 17.XII.1997); mounted specimens, photo P. Fontana.

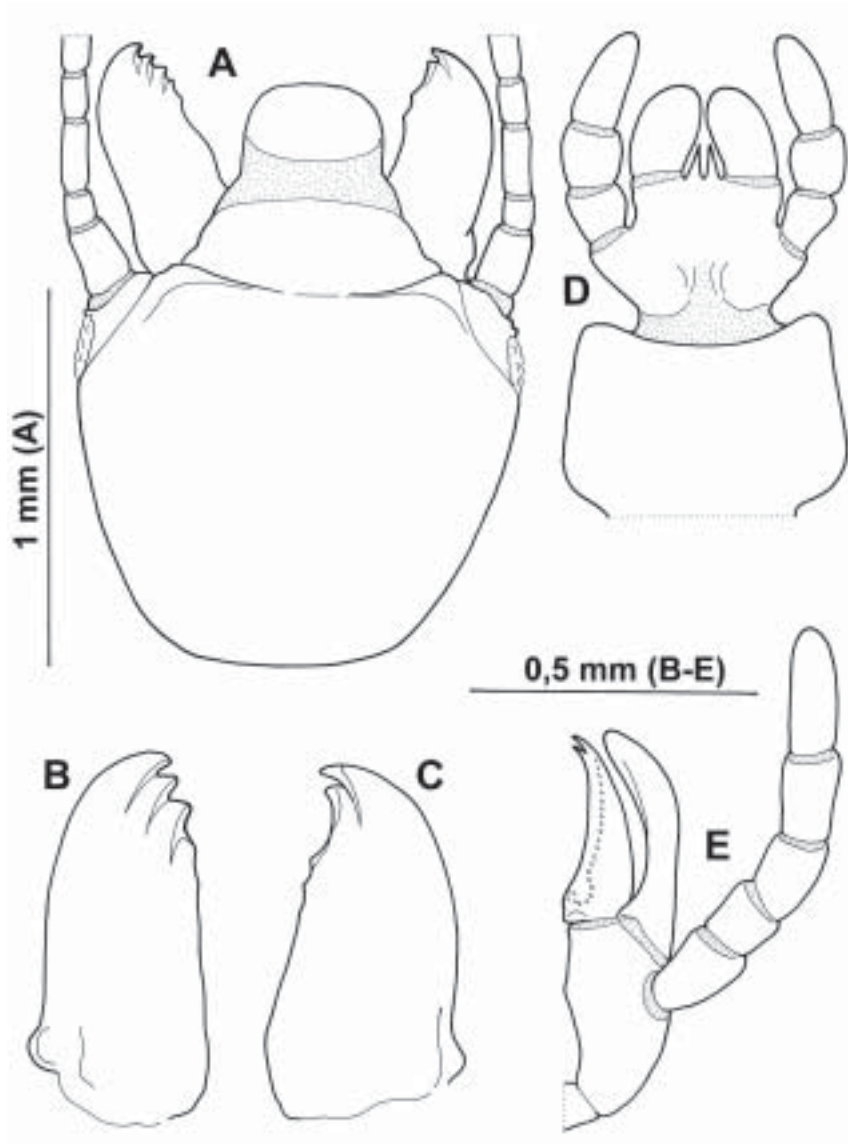


Fig. 5 (A-E). Holotype of *Embia girolanii* n. sp. A: head. B,C: left and right mandible, from above. D: labium. E: Maxilla. Author's drawings (hairs omitted).



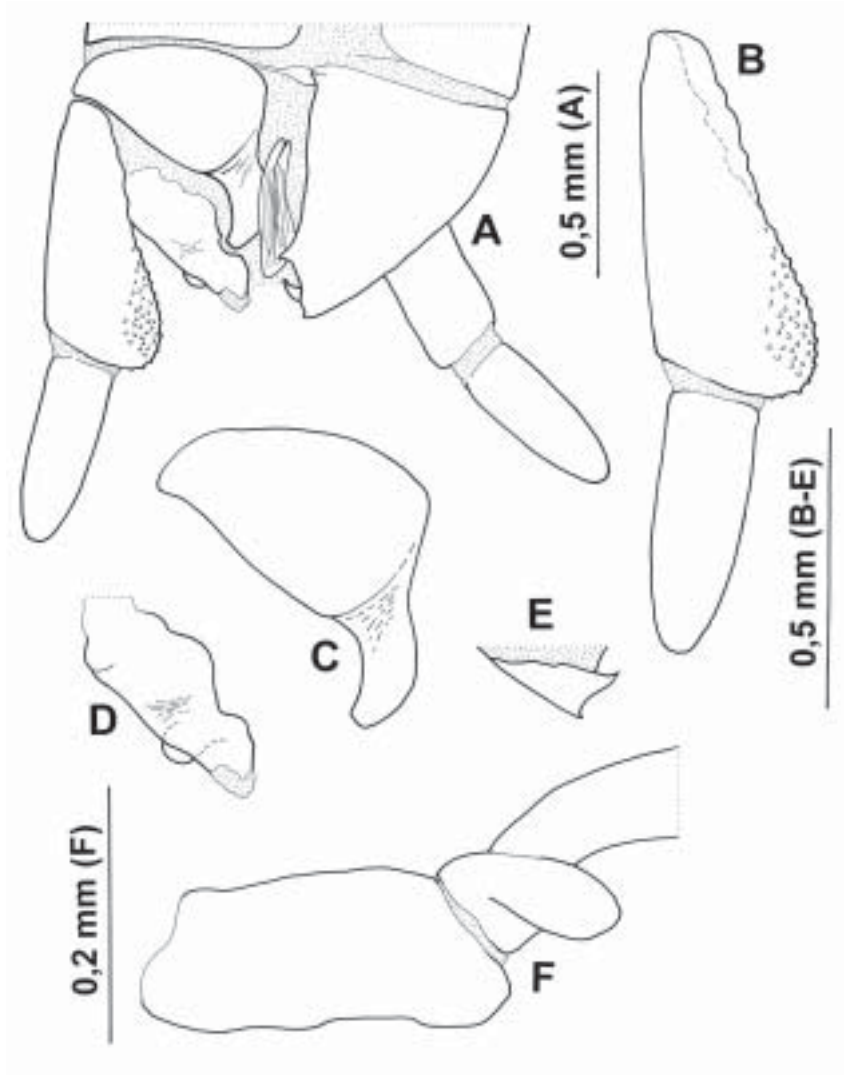


Fig. 6 (A-E). Holotype of *Embia girolamii* n. sp. A: terminalia from above. B: left cercus (LC+LC<sub>2</sub>). C: left hemitergite of tenth segment (10 L). D: process of left paraproct (LPPT P). E: process of right hemitergite of tenth segment (10LP) from venter. F: right hind basitarsus. Author's drawings (hairs omitted).



Fig. 7 - Type locality of *Embia girolamii* sp. n., ITALY, Tuscany (Lucca), Nature Reserve «La Lecciona», Viareggio, Marina di Levante.

the distribution of these species is not well known and only few localities are listed for each one. In fact, embiidids are scarcely studied in European and Mediterranean habitats and the discovery of a new species of *Embia* in Italy, 48 years after the last Italian described taxa, cannot be considered an extraordinary event and shows that increasing research about this order of Insects will probably yield further new species. During 1982 and 1984 E. S. Ross conducted extensive embiidid collecting trips in the Mediterranean region, especially in North Africa, and hope to soon report his discoveries (E. S. Ross, 2000, personal communication).

A secondary goal of this article is to restore interest in this order of Insects. Fortunately Embiidids are very easily collected and rearing, preserving, mounting and studying techniques are simple.

#### ACKNOWLEDGEMENTS

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Indirizzo dell'autore:

Dr. Paolo Fontana, Dipartimento di Agronomia Ambientale e Produzioni Vegetali,  
Gruppo Entomologia. Università di Padova, AGRIPOLIS - Via Romea, 16,  
I-35020 Legnaro (Padova), Italia; e-mail: paolo.Fontana@unipd.it

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