

SPIXIANA	5	1	1-6	München, 1. März 1982	ISSN 0341-8391
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Epimyrma bernardi n. sp., a new parasitic ant*

(Hymenoptera, Formicidae)

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Abstract

Description of *E. bernardi*, a parasitic ant of *Leptothorax gredosi*, from Iberian Peninsula. – This new species is characterised both in females and workers, by the nearly absent sculpture. Workers have a superficial promesonotal suture and in dorsal view something like a small scutellum appears, but without definite sutures. By general features this species falls near *E. goesswaldi* Menozzi and *E. ravouxi* (André). *E. bernardi* queens seem not to kill the *Leptothorax* queen.

Introduction

Epimyrma Emery, 1915 contains till now 11 taxa described as distinct species, but KUTTER (1973) suggests the possibility of several being the same species.

The fact of being social parasitic species and that, according to present knowledge, populations are found very locally and rare, suggests that inbreeding may be responsible of minor differences between conspecific populations. Surely the state is complicated by the fact that the three castes are known only for 3 species; others are known only by workers and queens (3), queens and males (1) and the rest by just one caste. During a collection trip at Sierra de Gredos (Avila, Spain) in summer 1979 appeared this new species whose description is given following the standard of CAGNIANT (1968).

I am grateful to Dr. C. Baroni Urbani from Natural History Museum of Basel and to Dr. Besuchet from Natural History Museum of Genf for permission to study Santschi's and Kutter's collections and Forel's collection. Also I should like to thank Dr. H. Cagniant from Université Paul Sabatier (Toulouse) for checking *E. bernardi* with his *E. algeriana*. I am indebted to Mr. F. Español, former director of Museu de Zoologia de Barcelona for translation of Arnoldi's russian text.

Epimyrma bernardi n. sp.

Holotype: one alated female. Length 3.02 mm; gracility index 6.05; head length/h. width 1.20; scape length/head width 0.85; thorax width/head width 1; thorax length/t. width 1.7; petiole length/p. height 0.66; pet. length/pet. width 1.23; postpet. width/postp. length 2; postpet. height/postpet. length 2. From Sierra de Gredos (Avila), mixed wood of pine and oak at 1400 m; eclosed in laboratory culture 15 september 1979

* This species is named after Prof. F. Bernard (Nice, France) to whom it is dedicated.

from colony collected 22–23 July 1979. Social parasite of *Leptothorax gredosi* Espadaler & Collingwood. In my collection.

Paratypes: 9 workers, 4 dealated females; same place as holotype. One worker sent to Dr. Cagniant; one female at the Natural History Museum of Geneva; one worker at the Zoologische Staatssammlung München; one worker at the Department of Zoology of the Universitat Autònoma of Barcelona. The rest in my collection.

Worker (Fig. 1.5; table 1)

Length: 2.52–2.70 mm

Gracility index: 6.3–6.7

General colouring brownish yellow. Head, last antennal segment (slightly) and back of first tergite light brown; rest of the body yellowish. Pilosity as in *Leptothorax*.

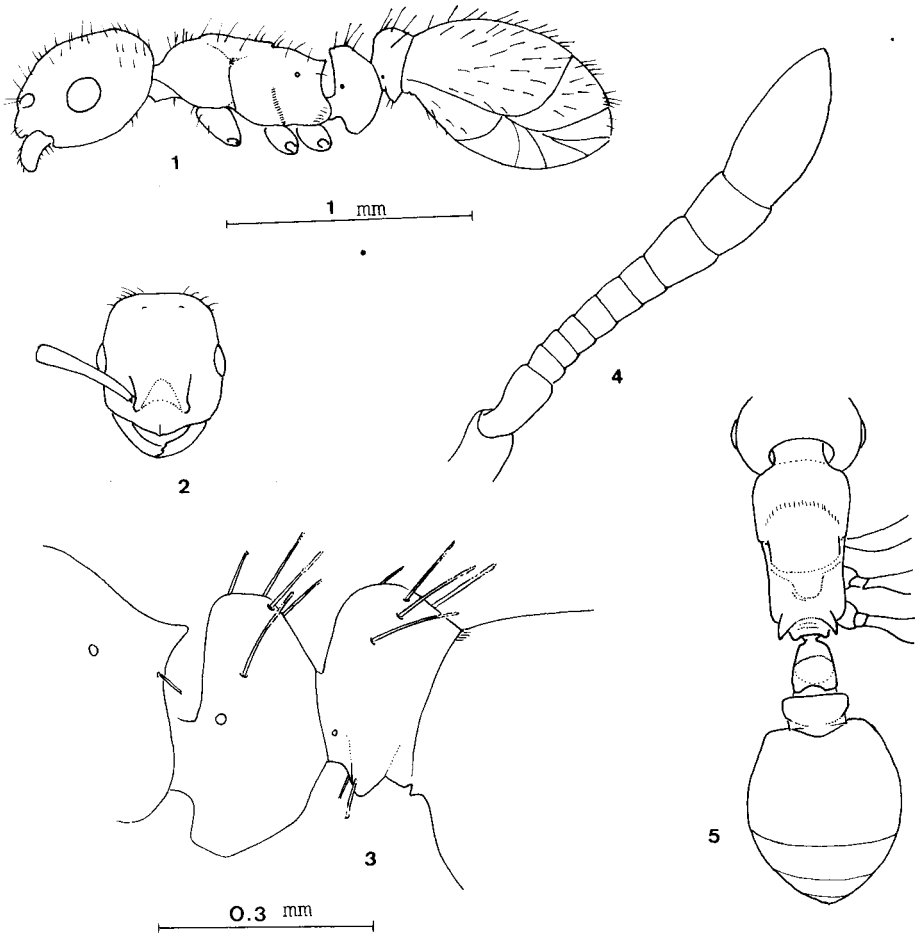


Fig. 1–5: *Epimyrma bernardi*. Worker. Side view (1); head, dorsal view (2); petiole and postpetiole, side view (3); funiculus (4); dorsal view (5).

Table 1. Measures of *E. bernardi*. Minimum, mean and maximum values found in 7 workers and 5 females. l.: length; w.: width; h.: height

	Workers	Females
Total l.	2.52 - 2.61 - 2.70	3.02 - 3.09 - 3.20
Gracility index (Total l./thorax w.)	6.31 - 6.53 - 6.75	6.15 - 6.19 - 6.40
Head l./head w.	1.20 - 1.25 - 1.30	1.19 - 1.21 - 1.25
Scape l./head w.	0.85 - 0.87 - 0.90	0.80 - 0.82 - 0.87
Thorax w./head w.	0.80 - 0.80 - 0.82	0.95 - 0.97 - 1.00
Thorax l./thorax w.	1.56 - 1.66 - 1.75	1.70 - 1.72 - 1.75
Petiole l./pet.h.	0.53 - 0.54 - 0.57	0.60 - 0.62 - 0.66
Petiole l./pet. w.	1.14 - 1.15 - 1.21	1.23 - 1.29 - 1.42
Postp.w./post. l.	1.83 - 1.94 - 2.00	1.83 - 1.94 - 2.00
Postp. h./post. l.	1.91 - 1.98 - 2.00	2.00

Mandibles narrow, with external and internal margin nearly parallel, shining, without microsculpture apart from hair insertion points. Three or four teeth, the apical greatly developed, subapical much lesser and one or two basal very slightly developed.

Head longer than wide; occipital corners rounded and occipital margin straight. Clypeus shining with a short carina in the anterior half that in some cases develops a small tip at the anterior margin. Frontal area greatly developed, smooth and shining. Head brilliant and almost completely smooth: some very subtle longitudinal striae at the genae; frons with a coriaceous to reticulate microsculpture very poorly developed. Eyes well developed; in five workers the posterior ocelli are indicated. Antennae of 11 segments; antennal club of 3, longer than the rest of funiculus. Scape not reaching occiput.

Maxillary palps of 4 segments; labial palps of 2 segments. Thorax with antero-lateral angles well developed. Profil slightly convex. Promesonotal furrow indicated; mesoepinotal furrow well developed. In dorsal view two angles develop at the postero-lateral margins of mesonotum; between mesonotum and epinotum exists a small median zone that remembers a reduced scutellum but without true sutures. Dorsal surface of pronotum smooth and shining. Epinotum superficially coriaceous, still brilliant and with several poorly developed lateral striae. Spines broad (Buschinger index: 1.33).

Petiole high, not pedunculated. In profil view, the anterior face meets the dorsal face at a nearly right angle; anterior face slightly concave. Angle of dorsal and posterior face rounded, of some 120°. Smooth and shining. Subpetiolar process strongly developed, with an anterior lobe.

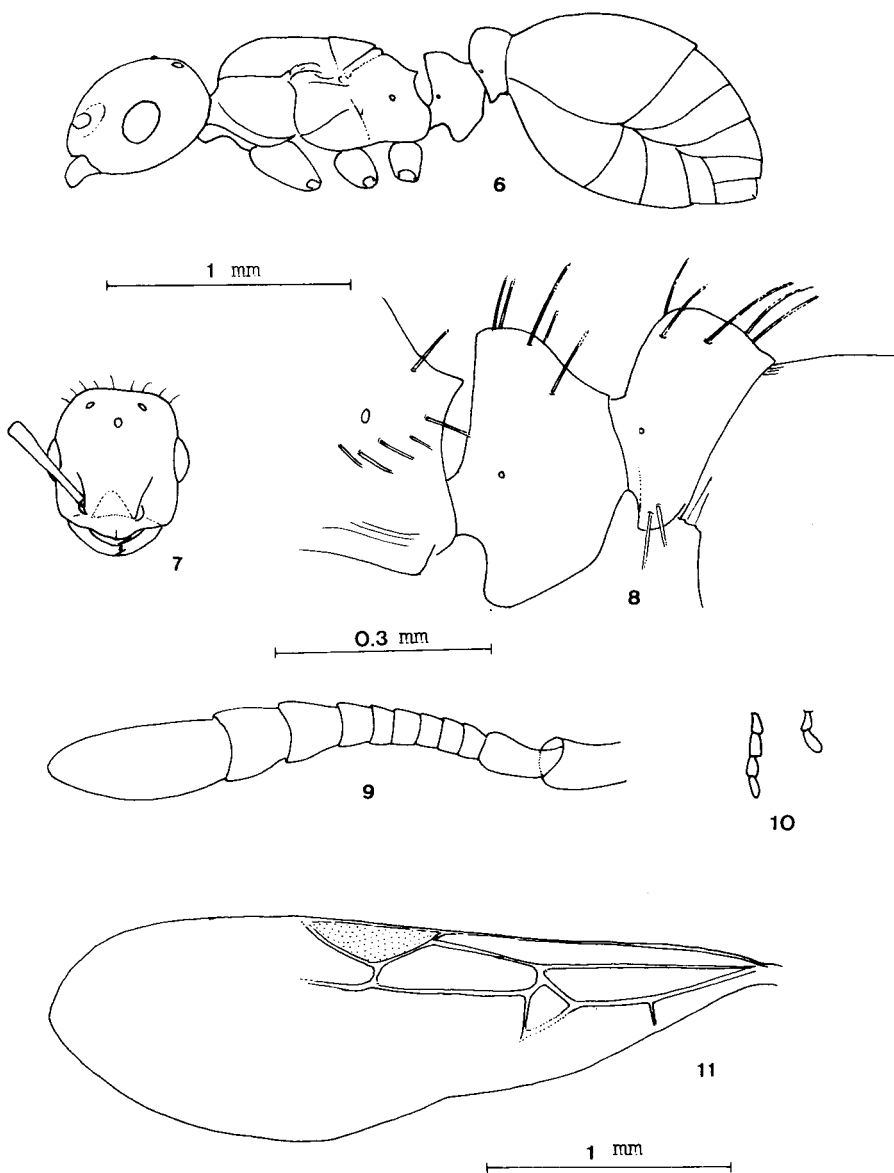


Fig. 6–11. *Epimyrma bernardi*. Female. Side view, pilosity omitted (6); head, dorsal view (7); petiole and postpetiole, side view (8); funiculus (9); maxillary and labial palps (10); fore wing (11)

Width of postpetiole double than length; smooth and shining. Sharply pointed inferior process. Pilosity: 0.125 mm
 Gaster smooth and shining.

Female (Fig. 6-11; table 1)

Length: 3.02-3.20 mm

Gracility index: 6.0-6.4

General colouring yellowish brown. Darker zones are similar to the worker. Posterior half of scutum, scutellum, meso- and metapleurae brown. The tendency, compared with workers, is towards a general darkening.

Head relatively shorter than in workers but still longer than wide. Clypeus as in workers. Mandibles with 3 teeth: strong apical, much less developed subapical and a very small basal. Ocelli well developed. Scape shorter than in workers, reaching the level of posterior ocelli. Maxillary palps of 4 and labial of 2 segments.

Cephalic microsculpture slightly more developed than in workers, though still brilliant and generally smooth. Thorax narrower than the head. Several very fine longitudinal striae at the posterior half of scutum. Disc of scutellum smooth and shining. Epinotum with transversal and lateral rugae, always poorly developed.

Wings transparent with hyaline venation. Pterostigma white. Radial cell nearly absent; cubital closed, elongated; discoidal cell almost completely closed. Length: 3 mm

Pronotum vertical in side view; visible in dorsal view, specially the antero-lateral rounded angles. Epinotum in side view with the two faces equal in length. Spines as in workers. Dorsal face of petiole node shorter than in workers, curving backwards without angle. Subpetiolar process strongly developed with a rounded anterior lobe, a bit more pointed than in workers. Width of postpetiole double than length; inferior tooth pointed.

Gaster smooth and shining.

Systematic position

We have compared our species with material deposited in the Forel collection (*E. foreli* Menozzi, *E. krausse* Emery), Santschi collection (*E. foreli*, *E. vandeli* Santschi, *E. goesswaldi* Menozzi, *E. stumperi* Kutter) and Kutter collection (*E. krausse*, *E. ravoux* [André], *E. stumperi*, *E. goesswaldi*), all labeled as types, cotypes or from the type locality. *E. bernardi* differs from this 6 species mainly in 1) sculpture, 2) pilosity and 3) thoracic outline.

Dr. Cagniant compared our material with *E. algeriana* Cagniant and confirmed the specific distinctness (per. comm.). The other 4 species we have compared with original descriptions and with remarks given in the work of MENOZZI (1931) and KUTTER (1973).

From *E. corsica* (Emery) differs by thoracic outline, frontal furrow, colour and size. From *E. zalesky* Sadil differs by size, colour and sculpture. From *E. tamarae* Arnoldi by petiole node configuration, epinotal spines, mandibles, pilosity and ocular size. Finally, *E. africana* Bernard differentiates from *E. bernardi* by the hairy antennal fossa.

Also, we must not forget the tendency (though not strict) of *Epimyrma* species to show host specificity and that *E. bernardi* parasites a distinct *Leptothorax*.

According to KUTTER's way to characterize *Epimyrma* species the our would be represented as follows:

Characteristic	A	B	C	D	E	F	G	H	J	K
(females)	2	3	5	7	10	14	-	21	24	26

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In feature G (sculpture), *E. bernardi* falls out of the limits of variability owing to the near complete absence of sculpture. Apart from this, the general aspect is that of *E. goesswaldi* and *E. ravouxi*.

We found 4 parasitized *Leptothorax* societies of some 30 studied. Nests were under stones and individuals of both *Leptothorax* and *Epimyrma* were grouped between leaves.

The composition was as follows:

1. Two workers *Epimyrma* with many workers and alated queens of *Leptothorax*.
2. One dealated *Epimyrma* queen with many workers and one dealated queen of *Leptothorax*.
3. Three dealated queens and four workers of *Epimyrma* with many workers, queens and males of *Leptothorax*.
4. Three *Epimyrma* workers with many *Leptothorax* workers.

We can not confirm the absence of *Leptothorax* mother queen in nests 1, 3 and 4 but the presence of abundant sexuals of *Leptothorax* and the dealated queen of nest 2, allow us to suppose the *E. bernardi* does not kill the queen of *Leptothorax*.

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Angenommen am 3.4.1981