

## SECOND FOSSIL ORIBATID MITE FROM THE SPANISH LOWER CRETACEOUS AMBER.

*Eupterotegaeus bitranslamellatus* n. sp.  
(ACARIFORMES, ORIBATIDA, CEPHEIDAE)

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ACARIFORMES  
ORIBATIDS, CEPHEIDAE  
LOWER CRETACEOUS  
AMBER, ÁLAVA, SPAIN  
NEW SPECIES

**SUMMARY:** A new species belonging to the family Cepheidae Berlese, 1896, *Eupterotegaeus bitranslamellatus* n. sp., is described from Spanish Lower Cretaceous. The fossil is preserved in a piece of amber found near Peñacerrada (province of Álava, North of Spain).

ACARIENS  
ORIBATIDA, CEPHEIDAE  
CRÉTACÉ INFÉRIEUR  
AMBRE, ÁLAVA, ESPAGNE  
NOUVELLE ESPÈCE

**RÉSUMÉ :** Les auteurs décrivent d'Espagne *Eupterotegaeus bitranslamellatus* n. sp., une nouvelle espèce de Cepheidae Berlese, 1896 du Crétacé Inférieur. Cette nouvelle espèce est conservée dans un échantillon d'ambre provenant d'un gisement proche de Peñacerrada (Province d'Álava, Nord de l'Espagne).

### INTRODUCTION

The Lower Cretaceous amber near Peñacerrada (Alava, northern Spain), was recently discovered (ALONSO *et al.* 2000). It is believed to be of Middle Albian-Upper Aptian age, about 113 million-year-old. Its chemical composition suggests that it is of Araucarian origin (ALONSO *et al. op.cit.*). To date, approximately 1500 organic inclusions have been recorded although only few pieces have been described including a new oribatid mite (ARILLO & SUBÍAS, 2000).

The fossil record of oribatid mites is scarce but they appear for the first time as old as in the Middle Devonian (380 Ma) of Gilboa, New York (NORTON *et al.* 1988). A complete list of Paleozoic and Mesozoic fossil oribatids is given in ARILLO & SUBÍAS (*op. cit.*).

To date the genus *Eupterotegaeus* Berlese, 1916 was unknown as fossil.

### MATERIAL AND METHODS

The piece of amber (5.5 × 4.4 × 1.1 mm) was embedded in artificial resin Epotek 301 prior to trimming and polishing (in a piece sized 12.5 × 9.6 × 1.1 mm) as described in CORRAL *et al.* (1999). The fossil was examined using an Olympus BX50 microscope and the drawings were made with the aid of a camera lucida. The studied material is housed in the Museo de Ciencias Naturales de Alava, Vitoria (Alava, Spain). The specimen is very well preserved, being possible to study delicate structures such as leg chaetotaxy. The body has a slight deformity due to an axial torsion.

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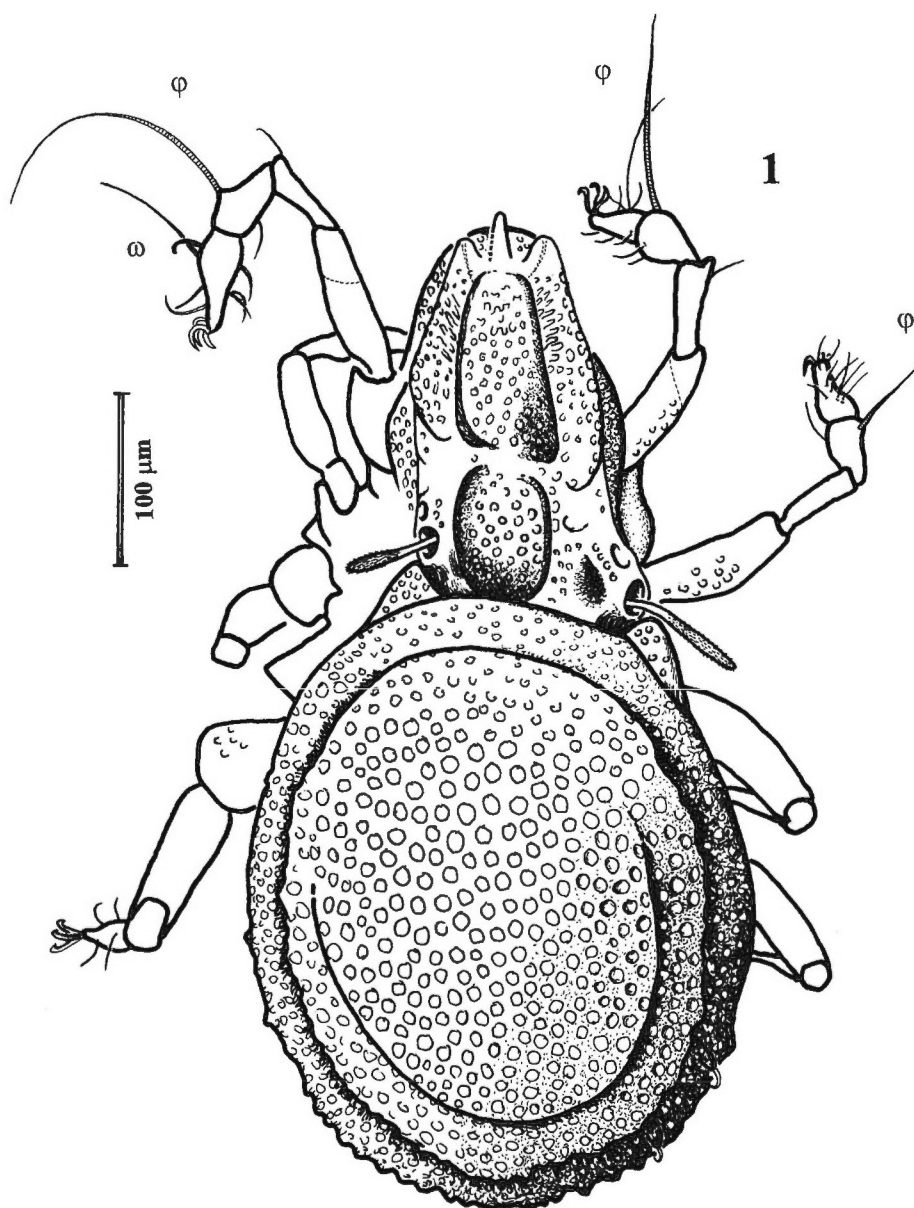


Fig. 1: *Eupterotegaeus bitranslamellatus* n. sp. — Dorsal view.

***Eupterotegaeus bitranslamellatus* n.sp. (Fig. 1)**

Studied material: Holotype MCNA-9943. The specimen is slightly distorted surely due to fossilization processes. The rostral region is partially hidden by a possible lepidopterous wing scale. A second specimen MCNA-10052 is probably conspecific but is poorly preserved and is not described.

Measurements: 576 μm long x 297 μm wide.

Integument. Well sclerotized, reddish brown.

Prodorsum. Rostrum rounded. Lamellar, interlamellar and exobothridial setae are not visible (probably not preserved) but the alveoli of the lamellar setae are visible. Lamellae are of nearly equal width throughout lying over lateral margins of the prodorsum and with rounded cusps, barely reaching rostral margin. Two different translamellar structures present; the first is extended between lamellae at level of the middle of lamellae and is interrupted medially; the

second is near the cusp with a translamellar spine extending anteriorly beyond the rostrum for a short distance. Bothridia prominent and vase-shaped. The sensillus has a smooth tail tapered to a slightly swollen, finely setose head. All the prodorsum (including lamellae) shows areolated surface structure which becomes irregular on the inner margin of the lamellae.

Notogaster round, slightly scalloped mainly in its posterior and lateral margins; numerous circular pits in integument with a regular distribution; anterolateral humeral processes projected forwards to the level of bothridia. Two short smooth setae are preserved in the right posterior margin of the notogaster each borne on a raised tubercle.

Ventral side is not visible due to the presence of turbidity in the amber and several fractures.

The legs are tridactylous. Best view is of leg I where several setae (see fig. 1) are preserved, mainly some solenidia from tibiae I and II.

*Derivatio nominis*: specific epithet is after the double translamellar structure.

## DISCUSSION

The inclusion of *E. bitranslamellatus* in the genus *Eupterotegaeus* is justified by general shape of the body, including humeral processes projected forwards, the marginal notogastral setae, the convex notogaster with circumgastral sulcus, the prominent bothridia and the presence of a translamellar spine which extends beyond rostral margin.

<i>Eupterotegaeus armatus</i> Aoki, 1969	Japan
† <i>Eupterotegaeus bitranslamellatus</i> Arillo & Subías n. sp.	Spain
<i>Eupterotegaeus dentatus</i> Sitnikova, 1979	South America
<i>Eupterotegaeus flavus</i> (Ewing, 1918)	USA
<i>Eupterotegaeus nasalis</i> Sitnikova, 1979	South America
<i>Eupterotegaeus ornatissimus</i> (Berlese, 1908)	Holarctic
<i>Eupterotegaeus pseudosculptus</i> (Coggi, 1900)	Italy
<i>Eupterotegaeus rhaphosus</i> Higgins & Wooley, 1968	USA
<i>Eupterotegaeus rostratus</i> Higgins & Woolley, 1963	USA
<i>Eupterotegaeus spinatus</i> Higgins & Woolley, 1963	USA
<i>Eupterotegaeus steinbocki</i> (Mihelcic, 1958)	Austria

TABLE 1: Distribution of the genus *Eupterotegaeus*

The genus *Eupterotegaeus* has actually an Holarctic distribution with a probable Laurasian origin. To date species included in *Eupterotegaeus* and their distribution are given in Table 1:

*E. bitranslamellatus* is clearly distinguishable from any species belonging to the genus by having two translamellar processes, since all extant species lack the basal translamella. The sensillus, weakly swollen, seems to be the plesiomorphic state of the genus and only *E. armatus* has an apomorphic fan-shaped sensillus. The lamellae are longer in all extant species, extending beyond the rostrum, but the cusps in *E. armatus*, *E. ornatissimus*, *E. dentatus*, *E. hasalis* and *E. steinbocki* (probably a synonym of *E. armatus*) have inner spines which are absent in the new species. American species, *E. flavus*, *E. hamphosus* and *E. rostratus* lack the translamellar spine. Preserved notogastral setae are marginal as it occurs in all the species of this genus. Circular pits is a common notogastral sculpture in *Eupterotegaeus* species although *E. pseudosculptus* (considered by some authors as a synonym of *E. ornatissimus*) and *E. spinatus* have a reticulated sculpture.

Little is known about extant *Eupterotegaeus* species biology, but they appear associated with logs, mosses and litter of different forests, (*E. ornatissimus* is found in *Quercus*, *Pinus*, *Betula*, *Castanea* and *Fagus* forest and *E. armatus* was found in a soil sample from *Tsuga*, *Abies* and *Betula* forest).

The presence of an extant oribatid genus in the Lower Cretaceous is not surprising, SHIVED & WALLWORK (1978) described a fossil *Hydrozetes* Berlese, 1902 from the Lower Jurassic of Sweden. Evolution of oribatids must have been rather conservative (possibly due to their soil habits) as demonstrate by geographic distribution of many taxa.

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