

# Fossil Tachyine Beetles from Mexican and Baltic Amber

With notes on a new synonymy of an extant group (Col, Carabidae)

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## Abstract

Two new species and one new genus are described and placed within the Tribe Tachyini. A discussion of hypothetical relationships is given

for these species. And, a synonymy among names applied to extant groups of tachyines is pointed out and corrected.

## Introduction

During a current study of the tachyine beetles, I had the privilege of examining two fossil specimens, one from the Baltic Amber deposits (courtesy of S. G. Larsson, Zoological Museum, Copenhagen) and the other from the Chiapas Amber deposits (courtesy of J. H. Peck, University of California, Berkeley). Both are described in detail here and placed within the Tachyini in accordance with my unpublished results of a world reclassification of the group. In so doing, I have had to discuss a synonymy of an extant group uncovered in this larger study. My purpose in publishing this information now is to allow those interested in only fossils to have the information readily available and not buried in a long monograph, but further remarks concerning these fossils will be made in that monograph.

## Baltic amber

### Genus *Tarsitachys* new genus

*Type species.* - *Tarsitachys bilobus* new species, here designated.

*Description.* - Color piceous. Anterior tibia weakly, but obliquely notched laterally at apex with a short stout spine at proximal corner of notch. Tarsi with two elongate basal articles, third and fourth articles strongly bilobed, last article stout with non-denticulate claws. Eighth stria impressed behind middle only. Sternum VI of female with four setae in a row parallel with hind edge of sternum. (Further details presented below.)

*Notes.* - The single known female representing this remarkably unique genus is in a chip of Baltic Amber (early Oligocene) and is in very poor condition due to air bubbles. Despite the difficulties in observing many technical characteristics seen in other extant members of tachyines I will be describing in a later paper, I have described and named this species because of its remarkable tarsi. I believe enough characteristics are visible, however, to justify this description and even allow some speculation on its relationships. This only has been undertaken in conjunction with the larger study mentioned above.

### *Tarsitachys bilobus* new species (Figs. 1, 2, 4)

*Type specimen.* - The holotype female (fig. 4) is part of the amber collection in the Zoological Museum, Copenhagen, and is labelled "J. Flavensgaard, March 21, 1961, CARABIDAE."

*Description.* - Small-sized tachyine beetle, about 1.3 mm total length. Color piceous, although perhaps changed somewhat due to embedding, shiny. Microsculpture apparently absent, but only a small spot of the right elytron remains visible. Head characteristically tachyine in all aspects observable: antennal scape robust, article 2 about equal in length with 3; palpi with last article subulate; two supra-orbital setae over each eye; mentum apparently bifoveate, but poorly preserved. Prothorax transverse, slightly narrowed behind with obtuse hind angles, basal transverse impression deep, two pair of lateral setae, the anterior

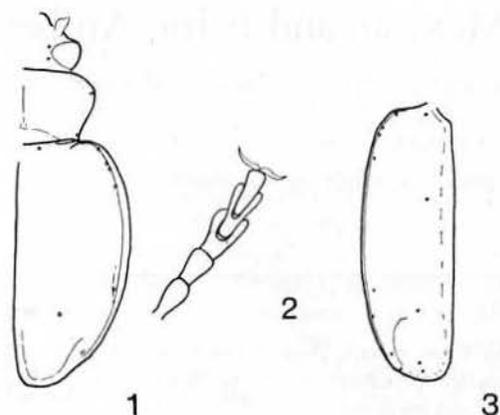


Fig. 1. *Tarsitachys bilobus* n.sp. Dorsal aspect showing partial chaetotaxy. - Fig. 2. Front right tarsus of same, dorsal aspect. - Fig. 3. *Polyderis antiqua* n.sp. Diagrammatic illustration of left elytron showing chaetotaxy and recurrent groove.

pair about middle, the posterior pair at the hind angles, sides slightly reflexed; anterior tibia with very short, oblique notch laterally at apex with a single stout spine at the proximal corner of the notch; tarsi (fig. 2) with two basal tarsal articles very long, followed by two short bilobed articles, and finally a short robust article with non-denticulate claws, tarsal setae not visible. Pterothorax with elytra poorly preserved, but some characteristics observable, form subconvex and broad with explanate sides and prominent humeri; margin not setose, rounded and continuous medially to level of stria 5 at humerus; stria 8 well impressed behind middle, absent before middle; fixed setae mostly obliterated except as in fig. 1; apex partially truncate; mesonotum apparently fully winged, because no reduction is present in ventral thoracic sclerites; tarsi as described above. Abdomen mostly obliterated, but segments II and III as in extant species, that is fused without much trace of suture; sternum VI with four setae in a row which parallel apical margin of sternum. Female stylus a long arcuate blade apparently with two small spines, one on each side near base.

*Notes.* - Two clues suggest to me that this tachyine represents an extinct lineage of arboreal beetles. One, the fact that the beetle is embedded in Amber, and that the elytra are closed with the flight wings tucked away. This in itself is only suggestive of the possibility

that the beetle became stuck in the resin by walking and not flying, and most likely walking somewhere on a tree or its trunk. Secondly, and certainly much more substantially, the third and fourth tarsal articles are strongly bilobed much the same as numerous arboreal beetles have them today. These articles in extant beetles are covered beneath by a "spongy" pubescence, but this cannot be determined in this specimen. The fact that no extant tachyine has tarsi anywhere nearly similar, indicates to me the early extinction of this group.

### Mexican amber

Genus *Polyderis* Motschulsky, 1862

*Polyderis antiqua* new species (Figs. 3, 5)

*Type specimen.* - The holotype female (fig. 5) is part of the Chiapas Amber collection housed in the University of California Paleontological Museum at Berkeley and is labelled #12974/B-7456. Accompanying data; purchased in Chiapas Area and dated as Upper Oligocene or Lower Miocene (Peck, *in litt.*).

*Description.* - Small-sized tachyine beetle, about 1.3 mm total length. Color piceous, but see above. Microsculpture not observable due to orientation. Head characteristically tachyine; antennae moniliform; palpi with last article subulate; two supraorbital setae over each eye; mentum bifoveate, foveae large and separated by one's diameter; eyes small with large facets. Prothorax transverse, convex; basal transverse impression deep, details not observable; prosternum sparsely setigerous; anterior tibia with very deep notch laterally at apex; claws simple. Pterothorax with elytra long and subdepressed, apex broadly rounded (fig. 3); chaetotaxy as in fig. 3; striae absent, disc apparently glabrous; plica absent; wings long and exposed; humeral margin minutely setulose. Abdomen with segments II and III connate; sternum VI with four setae, the medial pair anterior to lateral pair. Genitalia unknown.

*Notes.* - The single known specimen of this species is hardly different from extant species now living in cloud forests of eastern Mexico (Tamps.) and other Neotropical and Nearctic species I have studied. The only exception is the lack of overall dorsal pubescence or scattered setae (short). The resemblance to *Polyderis capito* (Bates) of the West Indies is great. For further details see Erwin (MS).



Fig. 4. Photograph of *Tarsitachys bilobus* n.sp., holotype, *in situ* in amber chip, dorsal and ventral view. Photo: L. Erdős. – Fig. 5. Photograph of *Polyderis antiqua* n.sp., holotype, *in situ* in amber chip. Photo: L. Erdős.

## Notes on a New Synonymy

In 1918, Casey described the genus *Paratachys* (1918: 174) with the type designated as *Paratachys austinus* Casey (1918: 174) from Texas. Another species, *P. colonicus* Casey (1918: 174) is also included. I have examined the types of these species in the National Museum of Natural History (Washington, D.C.) and find them to be a special New World lineage of *Eotachys* Jeannel (1941: 426). Several other new species (Erwin, MS) are also in this group. Jeannel overlooked Casey's genus and erected *Eotachys* for the *fasciatus* group (= *triangularis* group) of Andrewes (1925: 340) with the type *Elaphrus bistriatus* Duftschmidt (1812: 205) of Europe. My current study of tachyine beetles shows that this group is world wide in distribution and extremely rich in species in the New World tropics. Because of possible relationships of the Baltic Amber specimen described here, I must point out this synonymy in order to discuss relationships properly, therefore *Paratachys* Casey (= *Eotachys* Jeannel) NEW SYNONYMY.

## Notes on fossil-extant tachyine relationships

The Mexican Amber specimen represents a species of *Polyderis*, an extant group of tachyine beetles world-wide in distribution. The similarity of characteristics with present species in the same area shows that externally, at least, characteristics have hardly changed in 30 million years.

On the other hand, the Baltic Amber specimen represents a species that must certainly be

of an extinct group. No extant species have tarsi remotely similar to the fossil's. The most important characteristic which might serve as a clue to indicate relationship is obscure, due to air bubbles, and I must make two or three hypotheses. If the mentum is bifoveate as I think it is, the specimen is no doubt an early off-shoot of the *Paratachys-Tachys* stock. If the mentum is not bifoveate, the specimen must represent some relative of the *Elaphropus* complex. Of course, a third possibility (but I doubt it) is that an entire lineage has become extinct which would have its relatives near the split of the *Bembidion-Tachys* (*sensu lat.*) ancestral stock!

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