A NEW SPECIES OF FOSSIL PELLOBUNUS FROM DOMINICAN REPUBLIC AMBER
(ARACHNIDA: OPILIONES: PHALANGODIDAE)

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ABSTRACT

Pellobunus proavus, new species, is described from a single specimen in Dominican Republic amber. The new species is from the lower early Miocene to late Oligocene and is the first fossil member of the suborder Laniatores to be described from the New World.

RESUMEN

Pellobunus proavus, nueva especie, es descrito de un ejemplar preservado en ámbar de la República Dominicana. La nueva especie vivió desde el Mioceno inferior hasta el Oligoceno superior, y es el primer fósil de Laniatores descrito del Nuevo Mundo.

INTRODUCTION

Fossils of harvestmen are not commonly encountered and are generally in unsatisfactory condition for description. To date only a single species of the suborder Laniatores has been described from a fossil and only recent species of the suborder Cyphophthalmi are known. The majority of fossil opilionids known belong to the suborder Palpatores. Fossils identified only to the order Opiliones are also known from the upper Cretaceous of France (Schlüter, 1978) and from Tertiary amber of the Dominican Republic (Schlee and Göckner, 1978).

Palpatores are known from four described species in two families from the Paleozoic and an undescribed species from the Mesozoic (Cokendolpher and Cokendolpher, 1982). Fossils of Palpatores are numerous in Tertiary sediments. Haupt (1956) described Trogulus longipes (Trogulidae) from an Eocene slate-coal bed at Neumark-West, German Democratic Republic. Oligoellipsis aquatilis (Phalangiidae) was described from the Oligocene of Romania by Ciobanu (1977). Specimens of Oligocene age are also known from Baltic amber and the Florissant Formation of U.S.A. The three species from the Florissant Formation were reviewed by Cokendolpher and Cokendolpher (1982). In addition to the 15 species described from Baltic amber (Scudder, 1891; Roewer, 1939; Petrunkevitch, 1955; Stargel, 1976), 26 undetermined specimens of Phalangiidae and a single Nemastoma sp. (Nemastomatidae) are reported by Larsson (1978). The only recorded fossil of Quaternary age is a Phlangium sp. (Phalangiidae) from Italy (Mastororill, 1965).

The single fossil Laniatores thus far described is from Baltic amber and is probably a member of the Phalangodinae of the Phalan-
godidae (Cokendolpher and Cokendolpher, 1982). A second fossil Laniatores will be described in the present contribution. It too is from amber (Dominican Republic) and is a member of the Samoinae (Phalangodidae).

**Dominican Republic ambers**

The ages of Dominican Republic ambers are uncertain. Schlee and Glöckner (1978) list the ambers as Oligocene in age (about 35 million years old), but more recent studies by Lambert, Frye, and Poinar (1985) reveal that ambers from several localities in the Dominican Republic differ in age. These latter authors speculate that the ambers in their study ranged in ages between 5 and 40 million years. Baroni-Urbani and Saunders (1982) estimate the minimum age of amber from the mines north of Santiago to be 20-23 million years (lower early Miocene).

The Dominican Republic ambers have the richest fossil arachnid fauna of any known amber deposit. Six orders of arachnid (Acarina, Amblypygi, Araneae, Opiliones, Pseudoscorpiones, and Scorpiones) have been reported from these ambers (Schawaller, 1980; 1982a; 1982b; 1982c; Baroni-Urbani and Saunders, 1982; and citations contained therein). Although the existence of opilionids in these ambers has been established by Schlee and Glöckner (1978), no species have been described or illustrated. Unfortunately, their specimens (collection of Staatlichen Museums für Naturkunde Stuttgart) were not available for the present study. I am informed (Schawaller, pers. comm. 1982) that their material includes specimens of Laniatores.

**Materials and Methods**

The single specimen in amber was loaned to the author by Mr. Jacob Brodzinsky (Amberica, Inc., Santo Domingo, Dominican Republic), who later sold the piece to its present owner, the Smithsonian Institution. The raw amber passed through several hands before it was purchased by Mr. Brodzinsky, and therefore the original site from which the amber was dug is uncertain. It is probably from the Santiago area (Brodzinsky, pers. comm.).

The amber was not reworked for this study and was examined while it was immersed first in olive oil and then in 95% aqueous glycerol. These media reduce interference by surface imperfections. The sample was illuminated by two halogen light sources which were rotated to a position in which interference of flows in the amber was minimal. The amber was immersed in oil for Figure 2, but not for Figure 1. Some details were not evident except with transmitted light, whereas other details were only seen with reflected light. The cabochon containing the harvestman (Fig. 1) also contains parts of a juvenile spider (Salticidae).

**Systematics**

**Pellobunus** Banks, 1905


**Type species.** *Pellobunus insularis* Banks, 1905, by original designation.

**Diagnosis.** Ocular tubercle low, rounded, removed from anterior margin of cephalothorax. Dorsum of five areas, first without median line; all areas as well as free tergites and sternites unarmored. Spiracles partially concealed. Tarsal segments: 4, 6, 5, 5 or 6. Leg I distitarsi with two segments, leg II distitarsi with 3 segments. Metatarsi not divided into astragali and calcanei, III enlarged in males in the form of a spindle. Tarsi III and IV with scopulae; claws arising individually, simple. Penis club-shaped with series of stout spines distally (Silhavy, 1979: Fig. 54; Goodnight and Goodnight, 1983: Fig. 105).

**Pellobunus proavus**, new species Figs. 1-9

**Type.** Female holotype from Dominican Republic amber (probably from near Santiago) of lower early Miocene to Oligocene age; Amberica, Inc. no. 5230; deposited in the Department of Entomology, National Museum of Natural History, Smithsonian Institution.

**Etymology.** The specific epithet means an ancestor or forefather.

**Diagnosis.** In addition to being the only
known fossil species in the genus, *P. proavus* differs from all congeners by having the palpal tibiae strongly concave ventrally (Fig. 9) (weakly concave to flat in other species) and by lacking spines on mesal margins of palpal patellae and tibiae. Recent *Pellobunus* species have one mesal spine on the palpal patella and two mesal spines on mesal margin of the palpal tibiae (Goodnight and Goodnight, 1983: Fig. 104; Šilhavý, 1979; Figs. 53, 57). The tarsal scopulae on *P. insularis* (from Costa Rica) and *P. proavus* are not as dense as those on *P. haitiensis*.

**Description.**—Body total length 2.03 mm, greatest width 1.45 mm, maximum height 1.16 mm; cephalothorax length 0.69 mm; ocular tubercle length 0.33 mm, width 0.40 mm, height 0.11 mm; diameter of eye 0.07 mm; distance of ocular tubercle from anterior edge of cephalothorax 0.10 mm; cheliceral segment lengths 0.69 mm (basal piece), 0.42 mm (distal piece); other lengths as in Table 1.

Dorsum of body covered with large rounded tubercles, anterior margin of cephalothorax smooth (Figs. 2, 3). Openings to ozopores and spiracles undetected, obscured by medium. Bubbles also obscure mouth parts, sternum, and genital operculum. Sternites II-IX finely granulate to smooth; II and III with few small rounded tubercles on posterior margins, IV-VII with row of 25-30 small rounded tubercles along posterior margin of each segment, VIII and IX with scattered small rounded tubercles. Anal plate with about 20 large rounded tubercles similar to those on free tergites. Chelicerae not noticeably enlarged, covered with few setae; fingers with sharp pointed teeth. Pedipalps (Fig. 9) covered with scattered small setae; femur ventrally flattened with spine ventromesally and 2 spines ventrally; patella lacking spines; tibia concave ventrally with 2 spines ventrolaterally, lateral margin extend-
FIGURES 3-8. Female holotype of *Pellobunus proavus*. 3. Dorsal aspect of body; 4. Dorsal aspect of leg I tarsus and part of metatarsus; 5. Lateral aspect of leg II tarsus and part of metatarsus; 6. Lateral aspect of leg III tarsus and part of metatarsus; 7. Lateral aspect of leg IV tarsus and part of metatarsus; 8. Ventral aspect of distal end of leg IV tarsus. Scale line = 1.0 mm for Fig. 3, 0.5 mm for Figs. 4-8.
TABLE 1.—Measurements of female holotype of *Pello bunus pro avus*, in mm. (? indicates segment was broken and length is not certain).

<table>
<thead>
<tr>
<th>Segment</th>
<th>Leg I</th>
<th>Leg II</th>
<th>Leg III</th>
<th>Leg IV</th>
<th>Palpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trochanter</td>
<td>0.16</td>
<td>0.19</td>
<td>0.20</td>
<td>0.24</td>
<td>?</td>
</tr>
<tr>
<td>Femur</td>
<td>0.79</td>
<td>1.29</td>
<td>1.00</td>
<td>1.56</td>
<td>0.75</td>
</tr>
<tr>
<td>Patella</td>
<td>0.36</td>
<td>0.56</td>
<td>0.27</td>
<td>0.47</td>
<td>0.31</td>
</tr>
<tr>
<td>Tibia</td>
<td>0.68</td>
<td>1.25</td>
<td>0.77</td>
<td>1.07</td>
<td>0.50</td>
</tr>
<tr>
<td>Metatarsus</td>
<td>0.67</td>
<td>1.21+?</td>
<td>1.25</td>
<td>1.73</td>
<td>——</td>
</tr>
<tr>
<td>Tarsus/claw</td>
<td>0.47</td>
<td>1.12</td>
<td>0.68</td>
<td>0.82</td>
<td>0.33/0.27</td>
</tr>
<tr>
<td>Totals</td>
<td>3.13</td>
<td>5.62+?</td>
<td>4.17</td>
<td>5.89</td>
<td>2.16+?</td>
</tr>
</tbody>
</table>

**Figure 9.** Pedipalp of female holotype of *Pello bunus pro avus*. A, Dorsolateral aspect; B, Dorsal aspect of femur; C, Dorsal aspect of patella; D, Dorsal aspect of tibia; E, Hypothesized cross-sectional aspect of tibia, arrow points dorsally; F, Dorsal aspect of tarsus; G, Hypothesized cross-sectional aspect of tarsus, arrow points dorsally. Scale line = 0.25 mm.
ed ventrally; tarsus with 2 mesal and lateral spines, slightly concave ventrally; tarsal claw long and smooth. Legs covered with few short setae; coxae IV with small pointed tubercles laterally; trochanters, femora, patellae, and tibiae with small pointed tubercles; all leg segments except coxae, tarsi, and metatarsi II finely imbricated (Figs. 3-7). Tarsal segments 4, 6, 5, 6; scopulae present on last segment of III, last four segments of IV; distitarsi I with 2 segments on one side, 3 on other; distitarsi II with 3 segments.

Remarks.-Only two other specimens of Pellobunus are known from Hispaniola. Pellobunus haitiensis is known from the female holotype collected at Moneville, Haiti and by a hitherto unreported female from the Dominican Republic: Province of Pedernales, S. end of Lago de Oviedo, 10 Dec. 1982, R. E. Woodruff, Florida State Collection of Arthropods.

Acknowledgments

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Literature Cited