New Ants (Hymenoptera, Formicidae) from Canadian Amber

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Abstract—A new genus and two new species, Estopinoma maculipn sp. nov. (Dolichoderinae) and Canopoma dentata gen. et sp. nov. (Ponerinae) from Canadian amber (Upper Cretaceous, Campanian; Medicine Hat, Alberta, Canada) are described.

INTRODUCTION

Until recently, all known Miocene Formicidae were assigned to extinct family Armanidae and subfamily Scyphomyrmecinae (Formicidae). Camponotus hylaeolatus Brandão et Martins-Neto, 1989 described on the basis of an incomplete imprints from the Lower Aptian of the Santana formation (Brazil) was assigned by the authors (Brandão et al., 1989) to the Myrmeci- nidae; a living subfamily endemic in Australia. However, original interpretation of the taxonomic position of this species was doubtful (Darling & Sharky, 1990; Grimaldi et al., 1997; Dlusky, 1998). Bismarckia divisa Grimaldi et Agosti, 1997, a putative member of living subfamily Ponerinae, recently found in amber from the White Oak locality (New Jersey, USA) was a great sensation. To date, fossil resins from New Jersey are dated Turonian. The earliest Scyphomyrmecinae were also described from the same resins.

A.P. Rasnitsyn examined the collection of Canadian amber in the Biosystematic Research Center (BRC) in Ottawa (Canada) and revealed two inclusions from the Medicine Hat locality (Alberta, Canada) collected by J. McAlpine and J. Marin collected and tentatively determined as the members of the family Formicidae. A thorough examination showed that they belonged to living subfamilies Dolichoderinae and Ponerinae. Until then, only one ant, Scyphomyrmex caudatensis Wil- son, 1985, had been described from Canadian amber (from the same locality, Medicine Hat). Originally, this species was described rather formally (based on the measurement only) and the figures did not show the characters typical of the Scyphomyrmecinae (Wilson, 1985). Moreover the holotype and the paratype most likely belong to different species (Dlusky and Fedoseeva, 1988). Fossil resins from the Medicine Hat locality were found in the coaly strata of the Foremost formation referred to as the Campanian. Within the Medicine Hat locality, the strata of this formation are directly overlain by brentonites of the Bearpaw Formation aged 72-73 Ma BP: consequently, the age of the coaly strata is 73-83 Ma BP (McAlpine and Martin, 1969).

SYSTEMATIC PALEONTOLOGY

Family Formicidae Latrille, 1802

Subfamily Dolichoderinae Forel, 1878

Estopinoma maculipn Dlusky, sp. nov.

Etymology. The species is named in honor of a Canadian paleontologist, J.P. McAlpine.

Holotype. BRC, no. CAS 1271, a well-preerved specimen of a worker; dorsally, the mesosoma and head are covered by a crack and various inclusions; Medicine Hat locality, Alberta, Canada; Upper Creta- ceous, Campanian, Foremost formation.

Description (fig. 1). A worker. The head is rectangular, with rounded occipital angles and weakly concave occipital edge. The head length is 1.25-fold greater than the width. The eyes are relatively large and located on the lateral sides of the head. The antennae are 12-segmented and geniculate. The scape only approaches the occipital edge. The mandibles are short and triangular. The pronotum is convex and separated from the mesonotum by a distinct suture. A detached scutellum is absent. The propodeum lacks teeth and spines. The middle and hind tibiae bear one thick (and, possibly, pointe) spur. The unguis are simple. The waist is single-segmented. The petiole lacks a scale. The odonon is compact and lacks a tergosternal fusion and a connection between the first and second segments. The posterior abdominal segment is conical. A stinger, acicdore, and corronule are absent. The body is smooth and weakly nital; the lateral sides bear fine shagreen scarity. All discernible body hairs lack projecting hairs.

Measurements. mm: (body) length 2.7, (head, excluding mandibles) 0.65, (head, width) 0.52, and (scape length) 0.53.

Comparison. The new species is similar to E. gracilis Dlusky, 1988 from Salkaliam amber (Paleo- ocene) in the most observed characteristics and is dis- tinguished from this species by thicker spurs of the middle and hind tibiae and by a wider head.

Remark. The genus Estopinoma is characterized by a complete set of pleistemorphic features typical of Dolichoderinae and is extremely similar to the genus...
Protrechina Wilson, 1985, characterized by a complete set of plesiomorphic features of Formicinae. These genera are distinguished from each other only by the presence (Protrechina) or absence (Eotapinoma) of a scale on the petiolar. In the Recent Fauna and in the fauna from Baltic amber (Late Eocene), the subfamilies Formicinae and Dolichoderinae are well differentiated, so that a particular species or genus can be easily referred to one of these subfamilies. However, in the Paleocene (Sukhailin amber) and in the Middle Eocene (Green River Formation, Arkansan amber), the boundary between these subfamilies is uncertain, so that it is always difficult to assign a new taxon to one of these subfamilies (Wilson, 1985; Dlussky, 1988).

Material. Holotype.

Subfamily Pomerinae Lepeletier, 1836
Genus Carapone Dlussky, gen. nov.
Etymology. From Canada and the genus Ponera.
Type species. C. dentata sp. nov.
Diagnosis. Worker. Head rectangular and flattened dorsoventrally (possibly, as a result of plastic deformation of amber), with distinctly rounded occipi-

Trochanter single-segmented. Hind tibia with two spurs, one of which is small and a second (smaller) simple. Uppers with one preapical tooth. Waist single-segmented, petiole narrowed posteriorly and distinctly isolated from abdomen. Tergites and sternites of first and second abdominal segments fused, distinct depression observed between these segments.

Comparison. Type species.

Composition. The new genus is similar to Protopone (Bluvsy, 1988 from Sakhalin amber (Pale-
scene) and is distinguished from the latter by the absence of a distinct club on the antenna and probably by longer maxillary palps. It is distinguished from all known members of the Ponerinae by the presence of occelli in the workers (whether or not worker Propopone possessed occelli and spines on the propodeum is uncertain).

Remarks. The genus Canapone is similar to the loosely specialized members of the tribe Poneum of the subfamily Ponerinae in the most observed features. The petiolar of the new genus is more specialized than those of the most primitive extant members of the Ponerinae belonging to the tribe Amblyoponini. At the same time, certain structural features of this ant (the presence of occelli in the workers, long six-segmented maxillary palps) make this genus similar to the subfamily Myrmecinae.

The structural details of the mandibles, clypeus, and lower labial palps remain an open question.

Canapone dentatus Dlusky, sp. nov.
Etymology. From Latin dentatus (toothed).

Holotype. BCRC, no. CAS 1156, a relatively well-preserved specimen of a worker (only the posterior abdominal segments are lost); the structure of the mandibles, clypeus, and metasoma is not visible; Medusa Hat locality, Alberta, Canada: Upper Cretacone, Campanian, Foremost formation.

Description (Fig. 2). A worker. The propodeum bears two pointed teeth curved upwards. The petiole is triangular in lateral view, the apex is rounded, and the anterior surface is weakly concave. The head and the metasoma are gently nutid and covered with fine shagreen surface sculpturing. The abdomen is smooth and nutid. The abdomen, upper surface of the head, and coxae are covered with sparse, long, curved, and projecting hairs; the scape and legs lack projecting hairs. The entire body lacks appressed pubescence.

Measurements. mm: (body length, judging by preserved parts) about 5. (metasoma length) 1.55; (head length) 1.33; and (scape length) 0.88.

Material. Holotype.

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