A new genus and species of Sphaeriusidae (Coleoptera, Myxophaga) from Lower Cretaceous Burmese amber

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Abstract: In the present work, Burmasporum rossi gen. et sp. nov. from Lower Cretaceous Burmese amber is described. It is the first fossil representative of the family Sphaeriusidae.

Key words: Burmese amber, Lower Cretaceous, Myxophaga, Sphaeriusidae.

Introduction

The suborder Myxophaga is poorly known in fossils. The species is the first fossil one of the family Sphaeriusidae Erichson, 1845 (= Microsporida Crotch, 1873), although the family was mentioned in the list of inclusions in Burmese amber deposited in the Natural History Museum in London (Rasnitzin & Ross 2000). The Myxophaga includes few families, each with a small number of Recent species. It is divided into the superfamilies Microsporoidea Crotch, 1873 and Lepiceroidea Hinton, 1936. The first fossil Myxophaga, Haplochelus georissoides, was described by Kirejtshuk & Poinar (2006) also from Burmese amber as a member of the palaeoendemic family Haplochelidae Kirejtshuk & Poinar, 2006 (Lepiceroidea). The species here described is the second Mesozoic representative of the suborder. More detailed information on this suborder in the fossil record can be obtained from the catalogue by Ponomarenko & Kirejtshuk (2008a). Nevertheless, this suborder is usually considered as a comparatively archaic group of the order. This viewpoint is supported by one fossil from the Lower Triassic Untuun location (Ponomarenko & Kirejtshuk 2008b). It has a small body size, as Recent members of the suborder, and is somewhat reminiscent of modern Hydroscaphidae species. The new genus here described is represented by the only species and, therefore, descriptions of it would considerably overlap with the description of species ("descriptio generica specifica").

Amber from Burma (Myanmar) occurs in lignitic seams in sandstone-limestone deposits in the Hukawng Valley. Palynomorphs obtained from the amber beds where the fossil piece originated have been assigned to the upper Albian (~110-100 Ma) (Cruickshank & Ko 2003). Nuclear magnetic resonance (NMR) spectra of amber samples taken from the same locality as the fossil indicated an araucarian (possibly Agathis) plant source (Kirejtshuk & Poinar 2006).

Material and methods

The material under consideration is deposited in the Natural History Museum in London. For study the usual optic equipment was used, in particular the stereomicroscope Leica MZ 16.0 in the Zoological Institute of Russian Academy of Sciences, St. Petersburg.
Suborder Myxophaga CROWSON, 1955
Family Sphaeriusidae ERICHSON, 1845
Genus Burmasporum gen.nov.

Type species: Burmasporum rossi sp.nov.

Diagnosis: The new genus differs from the Recent representatives of the genus Sphaerius WALTL, 1838 (= Microsporum KOLENATI, 1846) in the following peculiarities:

- comparatively larger, longer and more projecting head with longer anterior part of frons and longer mouthparts (particularly mandibles), and distinctly elongate eyes (not transverse as in species of Sphaerius);
- elongate scape and antennomere 2 (not widened as in species of Sphaerius), small antennomere 3 (not elongate as in species of Sphaerius), 4-segmented loose antennal club;
- movable pronotum with shorter lateral parts and widely rounded anterior and posterior angles;
- larger pronotum;
- metacoxae not reaching posterior edge of ventrite 1;
- comparatively long legs;
- more parallel-sided tibiae.

Burmasporum rossi sp.nov. (Figs 1-6)

Holotype: "19132" (♀). The clear complete beetle is included in a large and irregular amber plate of homogeneous consistence and dark colour, together with other
insects, many gas vesicles, and some organic matter of
different origin, particularly somewhat similar to "stel-
late hairs" in Baltic amber. The beetle holotype lies at
an angle to the plane of the amber piece. The are also
the holotype of Burmitembia venosa COCKERELL, 1919
(ISOPTERA, Embiidae), the holotype of Mantoblatta mira
GOROCHOV, 2006 (POLYNEOPTERA, Mantoblattidae), and
a tick named as "Arachnida, Araneida, Acarida".

Description: Holotype (♀): length 0.8 mm, width
0.5 mm, height 0.4 mm. Oval, rather convex dorsally
and slightly so ventrally; unicoloured dark brown to
blackish; shining, without clear punctuation and
smoothed integument; glabrous.

Head rather large and subflattened, seemingly some-
what longer than distance between eyes, which are well
developed, somewhat elongate and consisting of ex-
tremely small facets. Labrum seemingly somewhat ex-
posed from under frons. Mandibles very long and visible
only laterally. Maxillary palpi visible only laterally, al-
most reaching mandibular apices and last palpomere,
more than twice as long as wide. Antennae 11-segment-
ed, with elongate scape (about 4 times as long as wide at
apex) and antennomere 2 (about twice as long as wide
at apex), antennomeres 3–7 subtransverse and small,
club loose 4-segmented (antennomeres 8 elongate, an-
tennomere 9 subquadrate, antennomere 10 subtrans-
verse, terminal antennomere more than twice as long as
wide and about as wide as antennomeres 3–7). Pronot-
um evenly convex and seemingly more than twice as
wide as long, longest along the middle, and lateral sides
about 1/3 as long as along median line, anterior and pos-
terior edges gently convex. Scutellum subtriangular and
about 1/4 as wide as pronotum.

Ventral side of head obscurely visible with mentum
seemingly transverse and about half as long as eye.
Prosternum very short, in the middle about 1/4 as long as
head, procoxae open posteriorly and seemingly not con-
tiguous. Mesoxocae seemingly as separated as its width.
Metaventrite subflattened with oblique and contiguous
metacoxae. Metacoxae not reaching posterior edge of
ventrite 1. Abdomen about half as long as metasternum.
Hypopygidium subtriangular and with angular apex.

Legs moderately developed. Protibia slightly
widened apically and about 2/3 as wide as antennal club;
metatibia subparallel-sided and nearly half as wide as
antennal club; mesotibia with large triangular expan-
sion at apex; all tibiae with rows of dark brown bristles
along outer edges and dense hairs through entire sur-
face. Femora about twice as wide as metatibia or some-
what wider, with punctuation and covered with short
bristles. Protarsus about as wide as corresponding tibia;
meso- and metatarsi somewhat narrower; claws simple
and slightly expanded at base.

Discussion

Burmasporum rossi gen. et sp.nov. shows a great simi-
ilarity to the species of Sphaerius, which can be inter-
preted as an evidence that the family Sphaeriusidae be-
came recognizable before the time of deposition of the
Burmese amber. Most Recent representatives of this
family are associated with moist substrates (usually they
live at river banks), although ENDRODY-YOUNG (1997)
described an African species which lives in more or less
dry ecological circumstances. The new fossil species
could have inhabited the Cretaceous forest with Arau-
cariaceae producing the Burmese amber.
Zusammenfassung

Als erster fossiler Vertreter der Familie Sphaeriusidae (Kugelläfer) wird die neue Gattung und Art *Burma-sporum rossi* gen. et sp. nov aus Burmesischem Bernstein (Unterkreide) beschrieben. Obwohl die Abspaltung der Familie nach diesem Befund mindestens in die früheste Mittelkreide zu legen ist, weist die neue Art große Ähnlichkeiten mit rezenten Arten der Gattung *Sphaerius* auf.

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