

# A New Genus of the Subfamily Anaidinae (Coleoptera, Scarabaeoidea, Hybosoridae) from the Mesozoic of Transbaikalia

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**Abstract**—A new genus and species, *Protanoides sibiricus* gen et sp. nov., of the subfamily Anaidinae (family Hybosoridae) from the Lower Cretaceous Baisa locality in Transbaikalia is described. This find adds considerably to knowledge of the diversity of this subfamily in the Mesozoic of Asia and gives evidence of the relict status of the Recent Anaidinae.

**Key words:** Hybosoridae, new genus and species, Lower Cretaceous, Transbaikalia.

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## INTRODUCTION

The range of Recent species of the subfamily Anaidinae is restricted to the Western Hemisphere, with some species of this subfamily reaching as far north as Mexico (Ocampo and Ballerio, 2006). A representative of a fossil genus of this subfamily has been described based on an isolated wing impression from the Lower Cretaceous Baisa locality (Nikolajev, 1996). The study of beetle impressions from this locality has revealed another, virtually complete impression of a scarabaeoid beetle of the family Hybosoridae, which is assigned to the subfamily Anaidinae.

Placing this beetle in the family Hybosoridae is only supported by the eye partially divided by the lobe of the gena, the protibia with numerous denticles, the contiguous mesocoxae, the mesotibia with at most one transverse carina on the exterior side, and the elytra completely covering the abdomen. However, the complex of characters observed in the impression does not allow placing the beetle in any living or fossil taxon of supraspecific rank that is presently included in this family.

The new genus cannot be assigned to the nominal subfamily of the Hybosoridae, since its mandibles are invisible in dorsal view. The mandibles are also invariably visible in dorsal view in the subfamilies Ceratocanthinae and Liparochrinae (Ocampo, 2006). The beetle in question differs from the subfamily Pachyplectrinae in both the groove structure and habitus. I believe that the genus *Brenskea* Reitter, 1891 (one of two genera included in Pachyplectrinae) belongs to the subfamily Dynamopodinae, which is included in the family Scarabaeidae in the last catalogue of scarabaeoid beetles.

The mandibles are hidden under the clypeus in members of two subfamilies, presently placed in the family Hybosoridae: the monotypic Mesozoic subfamily Mimaphodiinae (Nikolajev, 2007) and the Recent subfamily Anaidinae. The body shape and the large size of the beetle distinguish the new genus from the fossil subfamily Mimaphodiinae, whereas both its body shape and groove shape attest the possibility that it belongs to the subfamily Anaidinae. A number of Recent members of this subfamily, like the new genus, have mandibles directed somewhat ventrally and invisible in dorsal view (Ocampo, 2006, text-fig. 8b).

The holotype of the new species is stored in the collection of Borissiak Paleontological Institute of the Russian Academy of Sciences (PIN).

## SYSTEMATIC PALEONTOLOGY

**Family Hybosoridae** Erichson, 1847

**Subfamily Anaidinae** Nikolajev, 1996

**Genus *Protanoides*** Nikolajev, gen. nov.

**E t y m o l o g y.** From the Greek *protos* (first) and the type genus of the subfamily.

**T y p e s p e c i e s.** *Protanoides sibiricus* sp. nov.

**D i a g n o s i s.** Medium-sized oblong beetles. Mandibles and labrum invisible in dorsal view. Eye partly divided by lobes of gena. Pronotum with narrow coriaceous border along anterior margin. Scutellum small, triangular, with rounded apex. Elytron with broad lateral portion curved abruptly ventrally. Pygidium completely covered by elytra. Each elytron with ten puncture grooves. Sides of grooves vertical. Coxae of all legs contiguous. Mesocoxae positioned at right angle. Protibia with more than three denticles on exte-

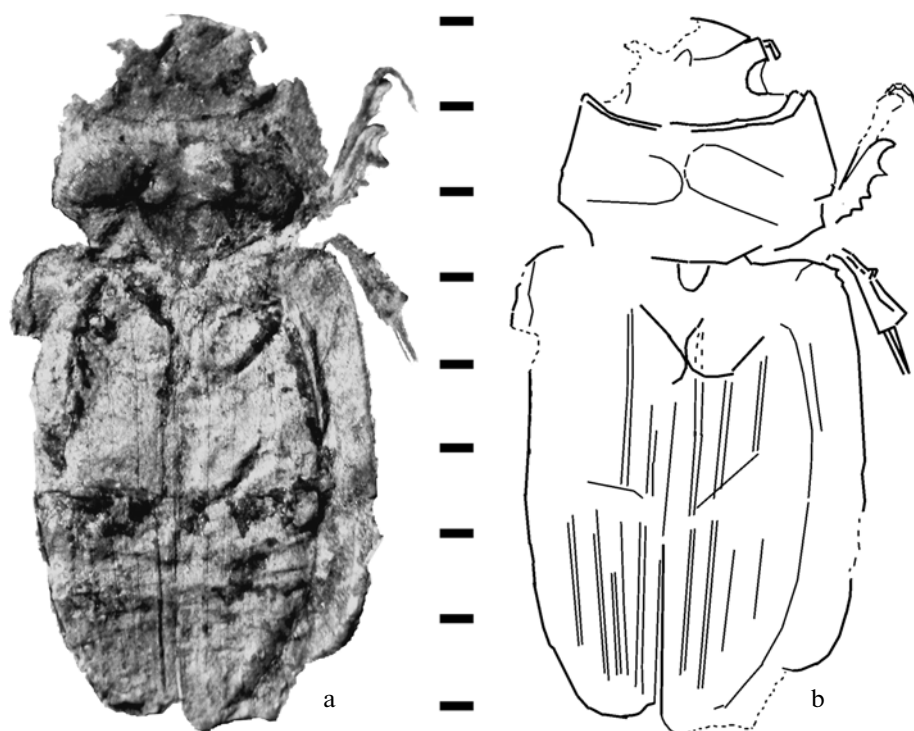


Fig. 1. *Protanaides sibiricus* sp. nov., holotype PIN no. 3064/7148: (a) habitus and (b) structural details. Scale bar, 1 mm.

rior margin. Mesotibia with one denticle (probably transverse carina) on exterior margin.

**Species composition.** Type species.

**Comparison.** *Protanaides* differs from all Recent genera of the subfamily in the relatively small number of grooves on the elytra and in the presence of a spine on the exterior margin of the mesotibia. It differs from *Cretanaides* Nikolajev, 1996, the second Mesozoic genus of the subfamily, known from a single elytron impression, in its smaller size and the absence of tubercles in the intergroove spaces on the elytra.

**Remarks.** The complex of characters, such as a small number of elytral grooves and the presence of a spine on the exterior side of the mesotibia (plesiomorphies), combined with the mouthparts invisible in dorsal view (possible autapomorphy) suggest that the genus *Protanaides* is possibly a sister group to Recent taxa of the same rank. But, unfortunately, very many structural details of great taxonomic value in the system of the family (antennal club structure, wing venation, number of abdominal sternites) remain unknown in the new genus.

*Protanaides sibiricus* Nikolajev, sp. nov.

**Etymology.** From Siberia.

**Holotype.** PIN, no. 3064/7148, counter impression of a beetle, with the preserved left foreleg and left midleg; Russia, Buryatiya, Eravninskii District, left bank of the Vitim River 3 km downstream

from the Baisa River mouth, Baisa locality; Lower Cretaceous, Valanginian–Hauterivian, Zaza Formation, layer 31 (Martinson, 1961; Zherikhin et al., 1999).

**Description** (Fig. 1). The clypeus is narrow, with a broadly rounded anterior margin. The suture between the clypeus and frons is arcuate. The frons has a relatively low pointed tubercle at the midline near the anterior margin. The anterior margin of the genal lobe is angularly protruding. The pronotum is incised between its posterior angles, while the lateral margins are straight; its anterior angles are straight, with rounded apices. The pronotum is widest behind the middle.

**Measurements**, mm. Length of impression from clypeus to apices of elytra, 8.1; width at femurs, 4.0; length of visible part of head, 1.3; length of clypeus medially 0.5; distance between interior margins of eyes, about 1.5; length of pronotum along midline, 1.7; maximum width of pronotum, 3.4; width of scutellum, 0.5; width at bottom of elytral groove, 0.1; width of intergroove space, 0.21; length of protibia (from tarsal base to tibial base, 1.75; maximum width of mesocoxa, 0.75; length of mesotibia, 1.2; width of apical truncation of mesotibia, about 0.4; length of apical spur of mesotibia, 0.6; length of metasternum along midline, about 1.7; length of protarsomeres 1–5 (without claws), about 0.07, 0.07, 0.1, 0.12, and 0.4.

**Material.** Holotype.

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