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# Review of the Family Anthribidae (Coleoptera) from the Jurassic of Karatau: Subfamily Protoscelinae. Genus *Protoscelis* Medvedev

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**Abstract**—The subfamily Protoscelinae from the Middle to Late Jurassic of Karatau is transferred from the family Chrysomelidae to the family Anthribidae. The genus *Protoscelis*, comprising five species, is reviewed. Males and females of the genus are described and keys to the identification of male and female specimens are provided. The new species *P. medvedevi* sp. nov. is described. The generic names *Cerambyomima* Medvedev, 1968, *Pseudomegamerus* Medvedev, 1968 and *Protosceloides* Medvedev, 1968 are synonymized under *Protoscelis* Medvedev, 1968, and the species *Pseudomegamerus grandis* Medvedev, 1968 is synonymized under *Cerambyomima longicornis* Medvedev, 1968. The new combinations *Protoscelis longicornis* (Medvedev, 1968) comb. nov. and *P. nitidicornis* (Medvedev, 1968) comb. nov. are established.

**Keywords:** Coleoptera, Curculionoidea, Anthribidae, Protoscelinae, Protoscelis, Karatau, new species, new placement, new synonyms, new combinations

**DOI:** 10.1134/S0031030113030064

## INTRODUCTION

Karatau locality (Kazakhstan, South Kazakhstan Region, Baidibekskii District, Mikhailovka Village; Middle–Upper Jurassic, Karabastau Formation) is an extremely rich Mesozoic locality of curculionoid beetles (Legalov, 2012b). The fauna of Karatau includes four families of Curculioformia: Obrieniidae, Nemomychidae, Anthribidae, and Ithyceridae (Arnoldi et al., 1977, 1991; Zherikhin and Gratshev, 1993; Legalov, 2010, 2011, 2012a; Gratshev and Legalov, 2011), with Nemomychidae and Anthribidae dominant both by the number of species and by the number of specimens collected (Legalov, 2012b).

Fungus weevils (family Anthribidae) are primitive curculionoid beetles closely related to the family Nemomychidae (Legalov, 2006). The first known Mesozoic anthribid was described from the Middle Albian of Khetana (Zherikhin, 1993). Earlier members of the family remained unknown until found by the author in Karatau (Legalov, 2011). The peculiar chrysomelid subfamily Protoscelinae was described from the same locality (Medvedev, 1968); the systematic position of this subfamily has remained unclear. The examination of series of specimens from Karatau has revealed that this subfamily actually belongs to the family Anthribidae.

Many anthribid specimens are stored in the collection of the Borissiak Paleontological Institute, Russian

Academy of Sciences (PIN). These materials made it possible to specify the taxonomic position of some taxa, establish new synonyms, and describe new genera and species.

## SYSTEMATIC PALEONTOLOGY

### Family Anthribidae Billberg, 1820

#### Subfamily Protoscelinae Medvedev, 1968, *sit. nov.*

**Type genus.** *Protoscelis* Medvedev, 1968.

**Diagnosis.** Body rather strongly chitinized. Rostrum reduced, flattened. Labrum free, large. Mandibles large, weakly elongate, without denticles or with large or weakly pronounced denticles on internal margin. Antenna short to elongate, with distinct compact club. Temples weakly elongate or short, usually shorter than eyes. Antennae inserted in front of eyes. Pronotum without lateral rib, with very weak, often poorly visible, subbasal transverse line. Elytra elongate, with weak punctuate grooves. Abdominal apex usually not covered with elytra. Abdominal ventrites homonomous. Tarsi appearing three-jointed.

**Composition.** This subfamily includes two genera comprising a total of ten species from the Jurassic of Karatau. It may also include an undescribed impression from Talgragar (Australia, Upper Jurassic, Tithonian).

**Comparison.** The subfamily Protoscelinae differs from the other anthribid subfamily known from the Jurassic of Karatau, Juranthribinae, in the reduced rostrum, rather strongly chitinized body, and more or less elongate antenna with a compact club.

**Remarks.** I have compared Protoscelinae with members of the superfamilies Chrysomeloidea (Orsodacnidae, Megalopodidae, Chrysomelidae, Oxypeltidae, Disteniidae, Vesperidae, and Cerambycidae) and Curculionoidea (Nemonychidae, Anthribidae, Belidae, Ithyceridae, Brentidae, and Curculionidae). The place of Protoscelinae in the superfamily Curculionoidea is shown by the antenna with a three-articled, more or less compact club, absent in Chrysomeloidea, more or less developed subbasal line on pronotum, and strongly pronounced sexual dimorphism. The reduced rostrum, developed subbasal line on pronotum, and type of sexual dimorphism, which manifests itself in long male antennae and short female antennae and larger body size in females, warrant the placement of Protoscelinae in the family Anthribidae.

#### Genus *Protoscelis* Medvedev, 1968

*Protoscelis*: Medvedev, 1968, p. 156.

*Cerambyomima*: Medvedev, 1968, p. 160, syn. nov.

*Pseudomegamerus*: Medvedev, 1968, p. 158, syn. nov.

*Protosceloides*: Medvedev, 1968, p. 159, syn. nov.

**Type species.** *P. jurassica* Medvedev, 1968

**Diagnosis.** Mandible weakly curved, on internal margin with rather small denticles, not visible in most impressions. Eye large, usually weakly sinuate on anterior and posterior margins. Frons wide. Antenna long, with oval scape and elongate flagellomeres, reaching in both sexes beyond posterior margin of pronotum, usually reaching humeri or middle of elytron, usually directed obliquely posteriorly in impressions. Head with more or less distinct neck constriction. Pronotum wide, weakly convex dorsally. Sides of elytra usually slightly rounded. Intervals flat or slightly convex, rather wide. Elytra weakly convex, with external margins not notched at metacoxae. Procoxae situated near prosternal base. Legs long. Femora weakly thickened. Tibiae almost straight, long, thin, longer than femora. Tarsi weakly elongate to weakly dilated.

**Species composition.** Members of the genus *Protoscelis* can be distinguished from each other rather clearly by their antennal length and body size. Based on these characters, I include five species in this genus.

**Remarks.** Beetles of this genus are rather uniform morphologically. Presumably, males and females differed, as in extant anthribids, in the length of antennae, longer in males and shorter in females. Female anthribids are usually larger. The more or less distinct neck constriction was probably present in all species of the genus; in many impressions it is clearly visible. The elytra had deep grooves and weakly convex intervals.

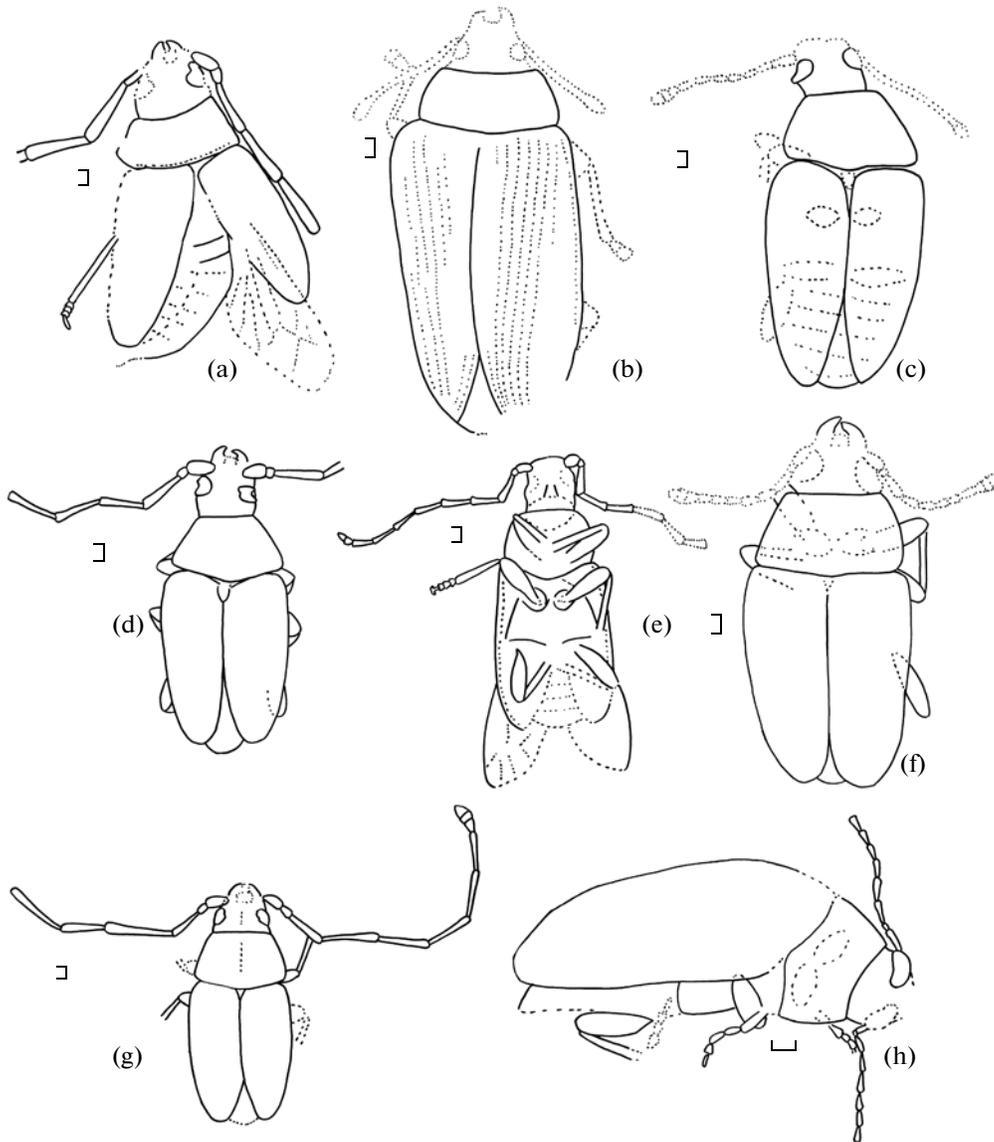
Comparison of *Protoscelis jurassica* Medvedev, 1968 with series of impressions of type species of the genera *Cerambyomima* Medvedev, 1968, syn. nov. and *Protosceloides* Medvedev, 1968, syn. nov. has shown that these impressions differ only in the longer or shorter antennae and in body size. The genus *Pseudomegamerus* Medvedev, 1968, syn. nov. has no substantial differences from the genus *Protoscelis* Medvedev, 1968 and is synonymous with that genus, since the characters provided in the original description, namely the neck constriction and structure of antennae, are similar to those of *Protoscelis jurassica* Medvedev, 1968 and other species of the genus, and examination of the material has revealed that traces of longitudinal ribs on elytra, noted by Medvedev (1968), are actually elytral grooves. Specimens placed in this species are actually females of *Protoscelis longicornis* (Medvedev, 1968), which differed from males, in effect, only in the short antennae.

#### Key to males of the genus *Protoscelis*

1. Antennae very long, reaching beyond elytral apices (Figs. 1e, 1g)..... 2  
—Antennae shorter, not reaching beyond elytral apices (Figs. 2a, 2b, 2f, 2g).....3
2. Antennae barely longer than elytra (Fig. 1e). Second flagellomere 3.3–4.6 times as long as wide.....  
.....*P. nitidicornis*  
—Antennae considerably longer than elytra (Fig. 1g). Second flagellomere 4.8–5.8 times as long as wide.....  
.....*P. longicornis*
3. Body larger (8.1–12.0 mm). Antennae reaching far beyond humeri (Figs. 2a, 2b).....*P. jurassica*  
—Body smaller (3.2–7.9 mm). Antennae barely reaching or not reaching humeri (Figs. 2f, 2g).....4
4. Body larger (6.1–7.9 mm). Antennae wider and shorter (Fig. 2g).....*P. parvula*  
—Body smaller (3.2–5.7 mm). Antennae narrower and longer (Fig. 2f).....*P. medvedevi*

#### Key to females of the genus *Protoscelis*

1. Antennae clearly reaching beyond humeri (Figs. 1b, 1c, 1f). Body larger (11.7–18.0 mm).....2  
—Antennae clearly not reaching beyond humeri, reaching or not reaching them (Figs. 2a, 2d, 2e). Body smaller (3.2–12.7 mm).....3
2. Body larger (14.1–18.0 mm).....*P. longicornis*  
—Body smaller (11.7–13.4 mm).....*P. nitidicornis*
3. Body larger (9.0–12.7 mm). Antennae reaching humeri (Fig. 2a).....*P. jurassica*  
—Body smaller (3.2–8.2 mm). Antennae reaching beyond middle of pronotum (Fig. 2d, 2e).....4
4. Body larger (5.4–8.2 mm).....*P. parvula*  
—Body smaller (3.2–5.2 mm).....*P. medvedevi*



**Fig. 1.** Members of the genus *Protoscelis*: (a–c, g) *P. longicornis* (Medvedev, 1968): (a) specimen PIN, no. 2784/1426, dorsal view, male, (b) specimen PIN, no. 2904/952, dorsal view, female, (c) specimen PIN, no. 2997/4502, dorsal view, female, (g) specimen PIN, no. 2997/2075, dorsal view, male; (d–f) *P. nitidicornis* (Medvedev, 1968): (d) specimen PIN, no. 2997/2063, dorsal view, male, (e) specimen PIN, no. 2554/735, ventral view, male, (f) specimen PIN, no. 2784/1440, dorsal view, female; (h) *P. jurassica* Medvedev, 1968, specimen PIN, no. 2384/726, lateral view, male. Scale bars in Figs. 1, 2, 1 mm.

***Protoscelis longicornis* (Medvedev, 1968), comb. nov.**

Plate 10, fig. 1

*Cerambyomima longicornis*: Medvedev, 1968, p. 161, text-fig. 6; pl. 16, fig. 7.

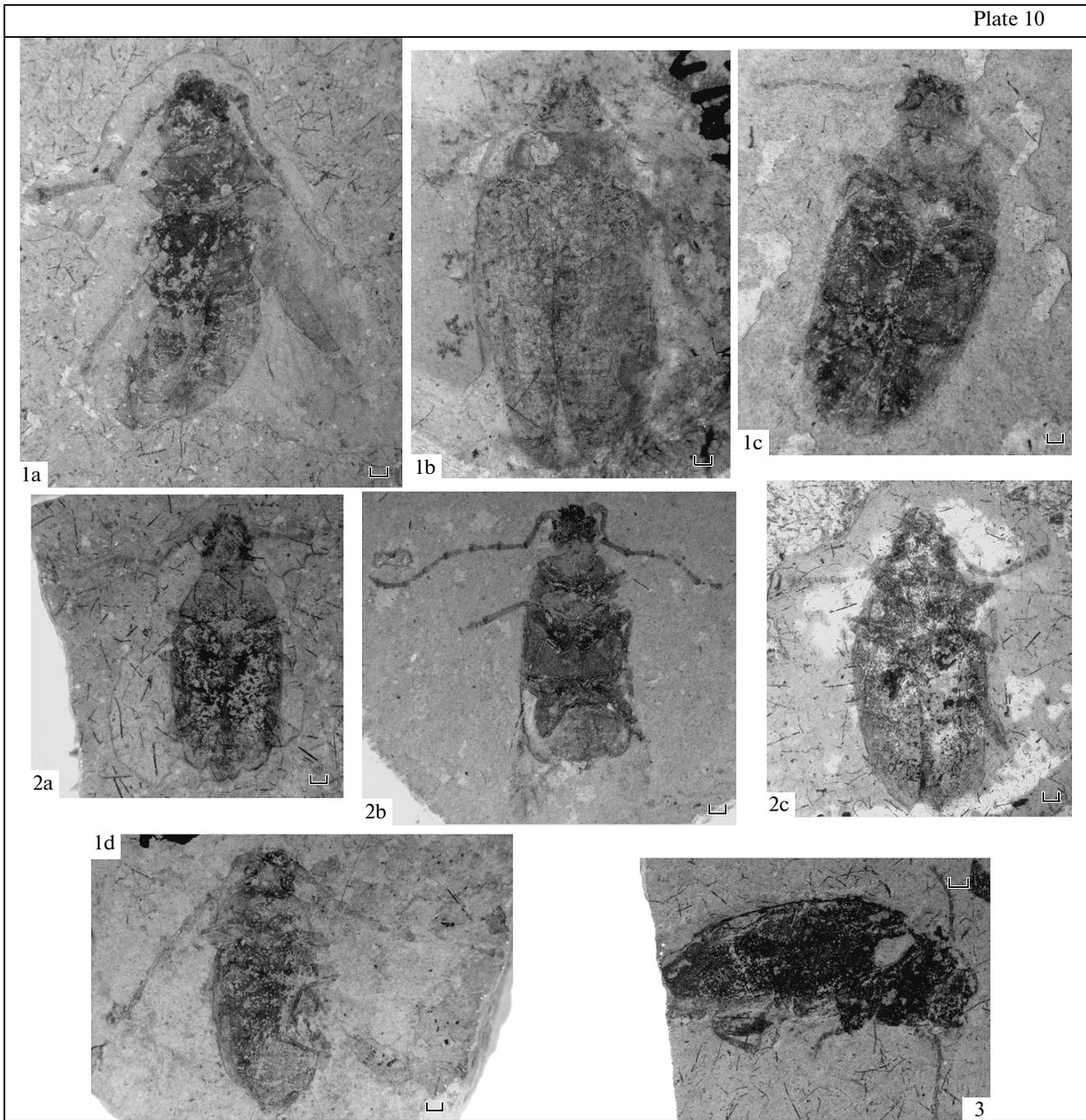
*Pseudomegamerus grandis*: Medvedev, 1968, p. 158, text-fig. 4; pl. 16, fig. 5, syn. nov.

**Holotype.** PIN, no. 2066/3241, positive impression of beetle; Karatau–Mikhailovka, Middle–Upper Jurassic.

**Description** (Figs. 1a–1c, 1g). The body is brown, with the head, pronotum and elytra darker.

**Male.** The labrum is large, slightly wider than or equal in width to the mandible, almost rectangular.

The frons is finely and sparsely punctate. The temple is shorter than or equal in length to the eye. The antennae are large, considerably longer than the body. The scape is 1.8–2.4 times as long as wide. Flagellomeres 2–7 are strongly elongate. Flagellomere 2 is 4.8–5.8 times as long as wide and 3.1–3.8 times as long as flagellomere 1. Flagellomere 3 is 1.1–2.0 times as long as flagellomere 2 and 4.3–8.0 times as long as wide. Flagellomere 4 is slightly longer or slightly shorter than flagellomere 3 and 4.5–7.3 times as long as wide. Flagellomere 5 is 1.4 or 0.91 times as long as flagellomere 4 and 6.7–7.4 times as long as wide. Flagellomere 6 is



## Explanation of Plate 10

Members of the genus *Protoscelis*. Scale bars, 1 mm.

**Fig. 1.** *P. longicornis* (Medvedev): (a) specimen PIN, no. 2784/1426, dorsal view, male; (b) specimen PIN, no. 2904/952, dorsal view, female; (c) specimen PIN, no. 2997/4502, dorsal view, female; (d) specimen PIN, no. 2904/943, dorsal view, male.

**Fig. 2.** *P. nitidicornis* (Medvedev): (a) specimen PIN, no. 2997/2063, dorsal view, male; (b) specimen PIN, no. 2554/735, ventral view, male; (c) specimen PIN, no. 2784/1440, dorsal view, female.

**Fig. 3.** *P. jurassica* (Medvedev), specimen PIN, no. 2384/726, lateral view, male.

equal in length to and slightly narrower than flagellomere 5. Flagellomere 7 is 6.4 times as long as wide and 0.77 times as long as flagellomere 6. The club

is compact, 0.83 times as long as flagellomere 7. Club segment 1 is trapezoid, as long as wide at the apex, 0.31 times as long as flagellomere 7. Club segment 2 is

slightly wider than and 0.71 times as long as segment 1. Club segment 3 is pointed, slightly narrower than and 1.4 times as long as segment 2. The pronotum at the apex is slightly narrower than long or 1.6 times as wide as long, in the middle 1.4–2.0 times as wide as long, at the base 1.6–2.4 times as wide as long. The disc is finely punctate. The elytra are 2.4–3.5 times as long as the pronotum, 1.3–1.4 times as long as their width together at the middle. The profemora are weakly thickened. The mesofemora are slightly thicker than the profemora. The tarsi are slightly wider than the tibiae. The tarsomeres are subequal, slightly wider than long. The apical tarsomere is elongate, subequal in length to the other tarsomeres together.

**Female.** The antennae are long, reaching the humeri or barely reaching beyond the humeri. Flagellomeres 2–7 are weakly elongate. The club is slightly longer than flagellomere 7. The pronotum at the apex is 0.91 or 1.6 times as wide as long, in the middle 1.5–2.2 times as wide as long, and at the base 1.6–2.3 times as wide as long. The elytra are 5.7–8.6 times as long as the pronotum, 2.2–2.9 times as long as wide in the middle.

**Measurements, mm.** Body length without rostrum: male, 10.1–14.0, female, 14.1–18.0.

**Material.** In addition to the holotype, the holotype of *Pseudomegameris grandis*: PIN, no. 2239/895, part and counterpart of beetle. Paratypes of *P. grandis*: PIN, nos. 2066/2473, 2239/1329, and 2384/415, parts and counterparts of beetles. (All from Karatau–Mikhailovka, Middle–Upper Jurassic.) Presumably male specimens: PIN, nos. 2554/738, positive impression of beetle; 2784/1426, positive impression of beetle; 2784/1429, positive impression of beetle; 2784/1436, negative impression of beetle; 2997/2061, part and counterpart of beetle; and 2997/2075, part and counterpart of beetle. Presumably female specimens: PIN, nos. 2239/1341, positive impression of beetle; 2554/736, positive impression of beetle; 2554/737, positive impression of beetle; 2554/738, positive impression of beetle; 2904/951, positive impression of beetle; 2904/952, positive impression of beetle; 2904/954, negative impression of beetle; 2997/441, negative impression of beetle; 2997/445, positive impression of beetle; 2997/449, positive impression of beetle; 2997/4502, positive impression of beetle; and 2997/4504, positive impression of beetle. (All from the type locality.)

*Protoscelis nitidicornis* (Medvedev, 1968), comb. nov.

Plate 10, fig. 2

*Protosceloides nitidicornis*: Medvedev, 1968, p. 160, text-figs. 5; pl. 16, figs. 6.

**Holotype.** PIN, no. 2066/2593, part and counterpart of beetle; Karatau–Mikhailovka, Middle–Upper Jurassic.

**Description** (Figs. 1d–1f). The body is brown. The antennae and tibiae are sometimes lighter in color.

**Male.** The labrum is large, slightly wider than the mandible, rectangular, slightly wider than long. The eye is rather strongly sinuate. The frons is punctate. The temple is slightly longer than the eye. The antennae are long, slightly longer than the body. The scape is 1.3–2.0 times as long as wide. Flagellomere 1 is shortened, 0.36–0.42 times as long as the scape, barely wider than long, as long as wide, or 1.3 times as long as wide. Flagellomeres 2–7 are strongly elongate. Flagellomere 2 is 3.3–4.6 times as long as wide and 4.0–5.5 times as long as flagellomere 1. Flagellomere 3 is equal to or 1.1 times as long as flagellomere 2 and 3.7–5.3 times as long as wide. Flagellomere 4 is slightly longer than or slightly shorter than flagellomere 3 and 4.0–5.7 times as long as wide. Flagellomere 5 is 0.91 times as long as flagellomere 4 and 4.0–6.0 times as long as wide. Flagellomere 6 is equal in length to flagellomere 5 or slightly shorter, 3.7–5.0 times as long as wide. Flagellomere 7 is 5.0 times as long as wide and equal in length to or 0.83 times as long as flagellomere 8. The club is rather compact, 1.4 times as long as flagellomere 7. Club segment 1 is strongly elongate trapezoid, 3.0 times as long as wide, 0.77 times as long as flagellomere 7. Club segment 2 is slightly wider than and 0.4 times as long as segment 1. Club segment 3 is pointed, slightly narrower than and 1.2 times as long as segment 2. The pronotum at the apex is 1.2 times as long as wide, in the middle 1.5 times as wide as long, and at the base 1.8 times as wide as long. The disc is punctate. The elytra are 2.0 times as long as the pronotum, 1.3 times as long as wide in the middle. The femora are weakly thickened, all approximately equal in width. The tibiae are rather narrow, 2.4–2.6 times narrower than the femora. The tarsi are slightly wider than the tibiae. The tarsomeres are subequal. Tarsomere 1 is slightly shorter than tarsomere 2. Tarsomere 3 is weakly bilobate. The apical tarsomere is weakly elongate, slightly longer than tarsomere 3. The claws are large.

**Female.** The eye has a weak, barely visible sinuation. The antennae are long, barely reaching beyond the humeri. Flagellomeres 2–7 are weakly elongate. The scape is oval. Flagellomere 1 is shortened, 0.30 times as long as the scape. Flagellomere 2 is 3.3–3.7 times as long as flagellomere 1. Flagellomere 3 is 0.71–0.77 times as long as flagellomere 2. Flagellomere 4 is equal in length to or slightly shorter than flagellomere 3. Flagellomere 5 is slightly shorter than flagellomere 4. Flagellomere 6 is equal in length to or slightly shorter than flagellomere 5. Flagellomere 7 is slightly shorter or slightly longer than flagellomere 6. The club is compact, 2.0 times as long as flagellomere 7. Club segment 1 is trapezoid, as long as wide at the apex, 0.67 times as long as flagellomere 7. Club segment 2 is slightly wider than and slightly shorter than flagellomere 1. Club segment 3 is pointed, slightly

wider than and 1.1–1.7 times as long as segment 2. The pronotum at the apex is 1.2 times as wide as long, in the middle 1.6 times as wide as long, and at the base 1.7 times as wide as long. The elytra are 2.7 times as long as the pronotum, 1.3 times as long as wide in the middle.

**Measurements**, mm. Body length without rostrum: male, 8.7–11.7, female, 11.7–13.4.

**Material**. In addition to the holotype, specimens PIN (presumably male), nos. 2554/735 (negative impression of beetle); 2784/1430 (positive impression of beetle); 2904/943 (negative impression of beetle); 2904/948 (positive impression of beetle); 2997/2063 (negative impression of beetle); 2997/935 (part and counterpart of beetle); and specimens PIN (presumably female), nos. 2239/1031 (part and counterpart of beetle), 2784/1440 (positive impression of beetle); and 2997/442 (positive impression of beetle). (All from the type locality.)

*Protoscelis jurassica* Medvedev, 1968

Plate 10, fig. 3; plate 11, fig. 1

*Protoscelis jurassica*: Medvedev, 1968, p. 156, text-figs. 1, 2; pl. 16, figs. 1–3.

**Holotype**. PIN, no. 2239/1346, positive impression of beetle; Karatau–Mikhailovka, Middle–Upper Jurassic.

**Description** (Figs. 1h, 2a–2d). The body is brown, more or less pale. The eyes are darker than the body.

**Male**. The labrum is large, considerably wider than the mandible, appearing semicircular or broadly rectangular, distinctly wider than long. The maxillary palpus is long; the apical palpomere and preapical palpomere are elongate. The eye is large, more or less strongly convex, 1.6–2.3 times as wide as long. The eye has a rather strong sinuation. The frons is wider than the eye diameter. The temple is rather short, shorter than the eye. The antennae are long, reaching beyond the humeri. The scape is 2.8–3.7 times as long as wide. Flagellomere 1 is shortened, 0.27–0.50 times as long as the scape, 1.3–1.8 times as long as wide. Flagellomeres 2–7 are strongly elongate. Flagellomere 2 is 1.8–5.5 times as long as wide and 1.8–3.6 times as long as flagellomere 1. Flagellomere 3 is 0.91 times as long as or equal in length to flagellomere 2 and 3.3–5.0 times as long as wide. Flagellomere 4 is equal in length to or 0.71 times as long as flagellomere 3 and 2.8–4.3 times as long as wide. Flagellomere 5 is equal in length to or slightly shorter than flagellomere 4 and 2.8–4.0 times as long as wide. Flagellomere 6 is 1.1 times as long as, equal in length to, or 0.77–0.83 times as long as flagellomere 5 and 3.0–4.0 times as long as wide. Flagellomere 7 is 2.3–4.7 times as long as wide, equal in length to or 0.91 or 1.2 times as long as flagellomere 6. The club is rather compact, 1.6–2.3 times as long flagellomere 7. Club segment 1 is strongly elongate trapezoid, 1.4–1.6 times as long as

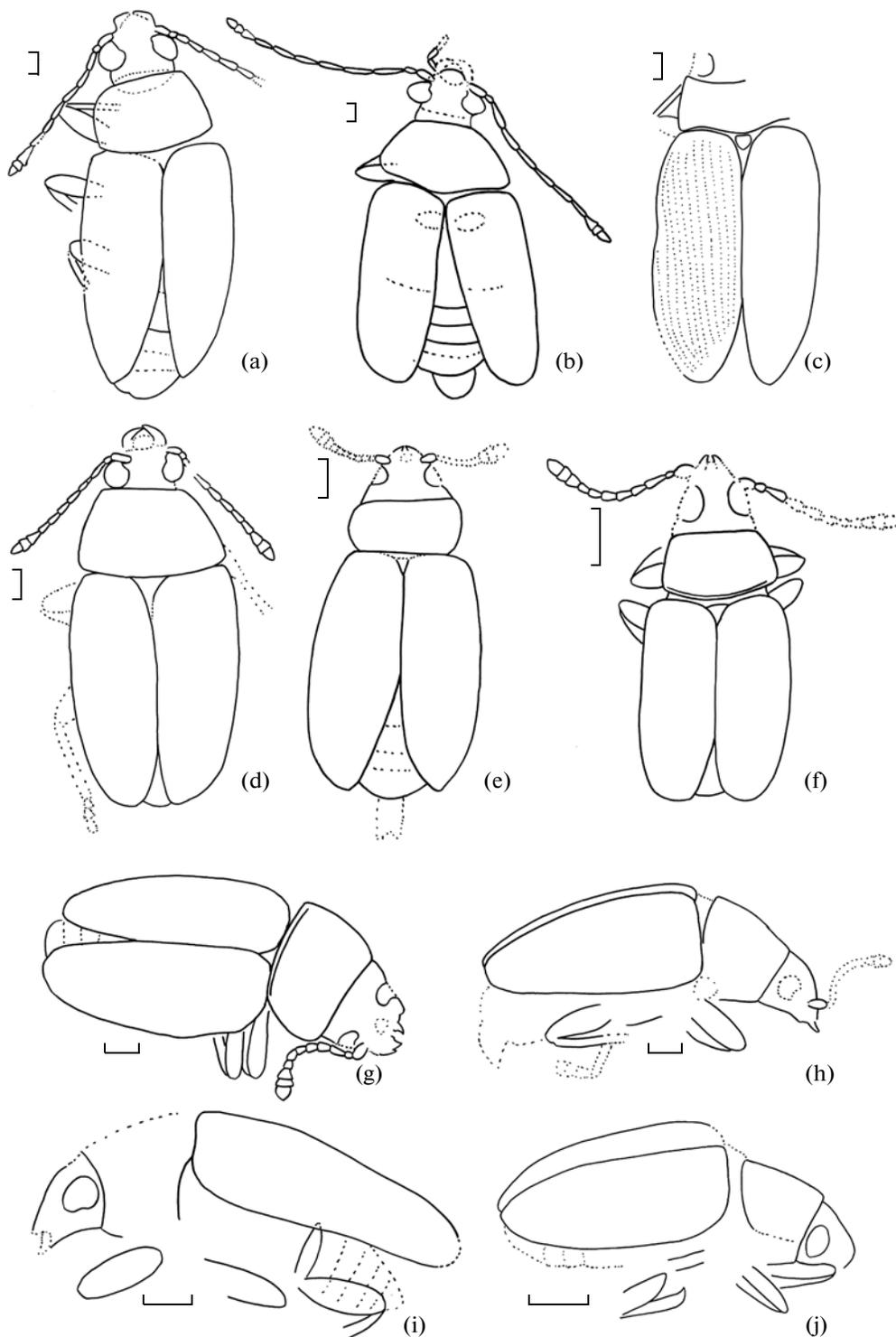
wide, 0.71–0.91 times as long as flagellomere 7. Club segment 2 is slightly wider than or equal in width to segment 1 and 0.40–0.43 times as long as flagellomere 1. Club segment 3 is pointed, 0.77 times as wide and 2.5 times as long as or equal in length to segment 2. The pronotum is more or less trapezoid, at the apex 0.91 to 1.2 times as wide as long, in the middle 1.5–1.7 times as wide as long, and at the base 1.6–1.9 times as wide as long, densely punctate, with hairs directed posteriad. The elytra are 2.8–3.2 times as long as the pronotum, 1.3–1.5 times as long as wide in the middle. Each of the elytral grooves bears two rows of long dark hairs. The femora are weakly thickened. The profemora and mesofemora are subequal in width. The metafemora are slightly thicker. The tibiae are rather narrow, 0.38–0.5 times as wide as the femora. The tarsi are equal in width to or slightly narrower than the tibiae. Tarsomeres 1 and 2 are elongate trapezoid, equal in length, or tarsomere 2 is slightly shorter than tarsomere 1. Tarsomere 3 is weakly bilobate, 0.56–0.77 times as long as flagellomere 2. The apical tarsomere is elongate, 1.5–1.8 times as long as tarsomere 3.

**Female**. The eyes are large, weakly convex, 1.2–1.6 times as long as wide. The antennae are long, reaching slightly beyond the humeri. Flagellomeres 2–7 are weakly elongate. The scape is 2.8 times as long as wide. The flagellomeres are subequal in width. Flagellomere 1 is shortened, 1.5 times as long as wide and 0.43 times as long as the scape. Flagellomere 2 is 3.5 times as long as wide and 2.3 times as long as flagellomere 1. Flagellomere 3 is 3.0 times as long as wide and 0.83 times as long as flagellomere 2. Flagellomere 4 is equal in length to flagellomere 3 and 2.4–3.0 times as long as wide. Flagellomere 5 is 2.4–2.5 times as long as wide and 0.83 times as long as or equal to flagellomere 4. Flagellomere 6 is equal in length to or 0.83 times as long as flagellomere 5 and 2.0–2.5 times as long as wide. Flagellomere 7 is 2.0 times as long as wide and 1.3 times as long as or equal in length to flagellomere 6. The club is compact, 0.40 times as long as the flagellum.

Club segment 1 is trapezoid, 1.3 times as long as wide, equal in length to or 1.3 times as long as flagellomere 7. Club segment 2 is 1.4–1.7 times as wide as long and 0.59–0.71 times as long as segment 1. Club segment 3 is weakly pointed, 1.3–1.7 times as long as wide and 1.4–1.7 times as long as segment 2. The pronotum at the apex is 1.1 times as long as wide, in the middle 1.4 times as wide as long, and at the base 1.7 times as wide as long. The elytra are 2.6 times as long as the pronotum and 1.3 times as long as wide in the middle. The tibiae are 0.33–0.40 times as wide as the femora. The tarsi are long, no wider than the tibiae. Tarsomeres 1 and 2 are trapezoid. Tarsomere 3 appears elongate.

**Measurements**, mm. Body length without rostrum: male, 8.1–12.0, female, 9.0–12.7.

**Remarks**. The original description contain a misprint: on p. 156, this species is misnamed *P. par-*



**Fig. 2.** Members of the genus *Protoscelis*: (a–d) *P. jurassica* Medvedev, 1968: (a) specimen PIN, no. 2997/444, dorsal view, male, (b) specimen PIN, no. 2452/264, dorsal view, male, (c) specimen PIN, no. 2997/2071, dorsal view, male, (d) specimen PIN, no. 2239/1226, dorsal view, female; (e, g, h) *P. parvula* Medvedev, 1968: (e) specimen PIN, no. 2784/1434, dorsal view, female, (g) specimen PIN, no. 2997/2065, dorsal view, male, (h) specimen PIN, no. 2384/509, dorsal view, male; (f, i, j) *P. medvedevi* sp. nov.: (f) holotype PIN, no. 2239/1258, dorsal view, male, (i) paratype PIN, no. 2997/2073, lateral view, (j) paratype PIN, no. 2997/2122, lateral view.

*vula*, as the following species, described on p. 157, although in the figure caption (text-fig. 1, p. 157) and plate captions (p. 251, figs. 1–3) the specific epithet of this species is printed as *jurassica*.

**M a t e r i a l.** In addition to the holotype, paratypes PIN (all from Karatau–Mikhailovka, Middle–Upper Jurassic), nos. 2066/2933 (positive impression of beetle); 2239/1342 (part and counterpart of beetle); 2239/923 (part and counterpart of beetle); 2066/3311 (positive impression of beetle); 2066/3000 (negative impression of beetle); 2384/770 (negative impression of beetle); specimens PIN (presumably male), nos. 2066/2882 (positive impression of beetle); 2066/3056 (positive impression of beetle); 2066/3314 (part and counterpart of beetle); 2384/655 (positive impression of beetle); 2384/726 (negative impression of beetle); 2384/781 (part and counterpart of beetle); 2452/264 (positive impression of beetle); 2904/944 (part and counterpart of beetle); 2904/953 (positive impression of beetle); 2997/2071 (positive impression of beetle); 2997/2191 (negative impression of beetle); 2997/444 (positive impression of beetle); 2997/446 (positive impression of beetle); 2997/448 (negative impression of beetle); 2997/4505 (positive impression of beetle); specimens PIN (presumably female), nos. 2066/2882 (positive impression of beetle); 2239/1226 (positive impression of beetle); 2384/733 (positive impression of beetle); 2384/751 (positive impression of beetle); 2384/752 (negative impression of beetle); 2784/1441 (negative impression of beetle); 2784/1446 (negative impression of beetle); 2904/946 (negative impression of beetle); 2904/949 (positive impression of beetle); 2904/955 (negative impression of beetle); 2954/646 (positive impression of beetle); 2997/2064 (part and counterpart of beetle); and 2997/2502 (positive impression of beetle); specimens PIN (sex unclear), nos. 2384/725 (negative impression of beetle); 2384/789 (positive impression of beetle); 2554/743 (positive impression of beetle); 2784/1426 (positive impression of beetle); 2904/950 (negative impression of beetle); 2997/2066 (part and counterpart of beetle); 2997/2069 (positive impression of beetle); 2997/2070 (part and counterpart of beetle); 2997/2071 (part and counterpart of beetle); 2997/2074 (negative impression of beetle); 2997/2497 (negative impression of beetle); and 2997/443, (positive impression of beetle). (All from the type locality.)

*Protoscelis parvula* Medvedev, 1968

Plate 11, fig. 2

*Protoscelis parvula*: Medvedev, 1968, p. 157, text-fig. 3; pl. 16, fig. 4.

**H o l o t y p e.** PIN, no. 2066/2595, part and counterpart of beetle; Karatau–Mikhailovka, Middle–Upper Jurassic.

**D e s c r i p t i o n** (Figs. 2e, 2g, 2h). The body is more or less light brown.

**M a l e.** The labrum is large, wider than the mandible, distinctly wider than long. The mandibles are large. The maxillary palpi protrude from below the mandibles. The eye is approximately 1.4 times as wide as long. The sinuation on the anterior margin of the eye is rather strong. The frons is finely punctate. The temple is slightly longer than the eye. The antennae are medium-sized, reaching slightly beyond the humeri or reaching the humeri. The scape is 1.8–2.2 times as long as wide. Flagellomere 1 is shortened, 2.3 times shorter than the scape, 1.3 times as long as wide. Flagellomeres 2–4 are weakly elongate. Flagellomere 2 is 2.5 times as long as wide and 1.9 times as long as flagellomere 1. Flagellomeres 3–7 are equal in width. Flagellomere 3 is barely longer and slightly wider than flagellomere 2 and 2.3 times as long as wide. Flagellomere 4 is 1.2 times as long as flagellomere 3 and 1.5 times as long as wide. Flagellomeres 5 and 6 are equal, each of them barely shorter than flagellomere 4 and 1.4 times as long as wide. Flagellomere 7 is 1.1 times as long as wide and 0.83 times as long as flagellomere 6. The club is rather compact, 0.48 times as long as the flagellum. Club segment 1 is trapezoid, 1.3 times as wide as long and 1.3 times as long as flagellomere 7. Club segment 2 is broadly trapezoid, 2.3 times as wide as long, 0.67 times as long as segment 1. Club segment 3 is pointed, teardrop-shaped, 1.2 times as wide and 1.6 times as long as segment 2 and 1.2 times as wide as long. The pronotum at the apex is 1.3 times as wide as long, in the middle 1.5 times as wide as long, and at the base 1.3 times as wide as long. The disc is finely punctate. The elytra are 4.6–5.2 times as long as the pronotum, 2.6 times as long as wide in the middle. The femora are weakly thickened, all subequal in width. The tibiae are rather narrow, 0.34 times as wide as the femora, probably weakly curved. The tarsi are large, distinctly wider than the tibiae. Tarsomere 1 is trapezoid, slightly wider than the tibia. Tarsomere 2 is almost rectangular, transverse, wider than tarsomere 1. Tarsomere is weakly bilobate, wider than flagellomere 2.

**F e m a l e.** The eye has no distinct sinuation. The antennae are shorter, not reaching the humeri. Flagellomeres 2–7 are weakly elongate. The scape is 1.8 times as long as wide. Flagellomere 1 is shortened, 0.36 times as long as the scape. Flagellomere 2 is 1.8 times as long as flagellomere 1. Flagellomere 3 is 0.77 times as long as flagellomere 2. Flagellomere 4 is 0.83 times as long as flagellomere 3. Flagellomere 5 is 1.5 times as long as flagellomere 4. Flagellomere 6 is 1.5 times as long as flagellomere 5. Flagellomere 7 is equal in length to flagellomere 6. The club is compact, 1.8 times shorter than the flagellum. Club segment 1 is trapezoid, 2.0 times as wide as long, slightly longer than flagellomere 7. Club segment 2 is broadly trapezoid, 1.7 times as wide as long, slightly longer than article 1. Club segment 3 is pointed, as wide as and 2.0 times as long as article 2, 1.2 times as long as wide. The pronotum at the apex and at the base is 1.7 times



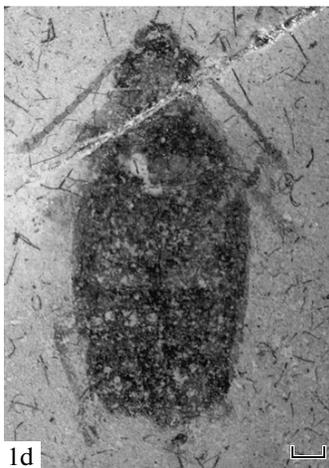
1a



1b



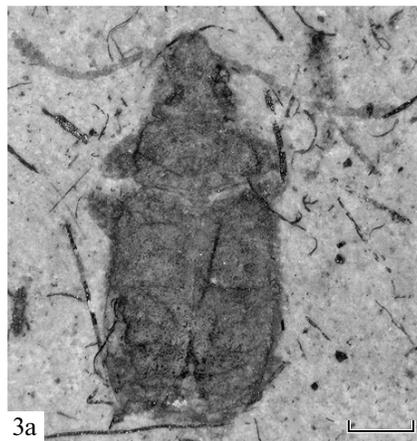
1c



1d



2a



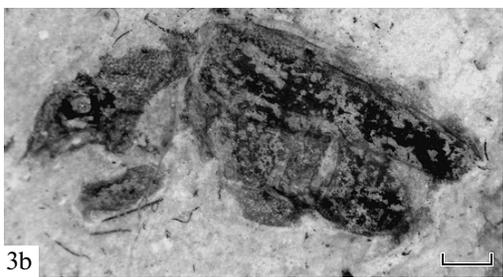
3a



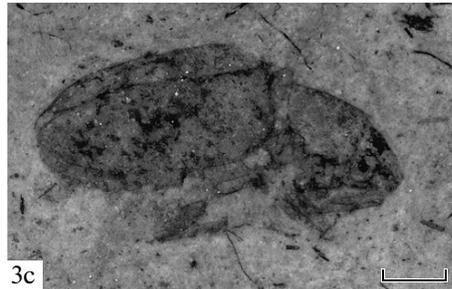
2b



2c



3b



3c

## Explanation of Plate 11

Scale bars, 1 mm.

**Fig. 1.** *P. jurassica* (Medvedev): (a) specimen PIN, no. 2997/444, dorsal view, male; (b) specimen PIN, no. 2452/264, dorsal view, male; (c) specimen PIN, no. 2997/2071, dorsal view, male; (d) specimen PIN, no. 2239/1226, dorsal view, female.

**Fig. 2.** *P. parvula* (Medvedev): (a) specimen PIN, no. 2784/1434, dorsal view, female; (b) specimen PIN, no. 2997/2065, dorsal view, male; (c) PIN, no. 2384/509, dorsal view, male.

**Fig. 3.** *P. medvedevi* sp. nov.: (a) holotype PIN, no. 2239/1258, dorsal view, male; (b) paratype PIN, no. 2997/2073, lateral view; (c) paratype PIN, no. 2997/2122, lateral view.

as wide as long, in the middle 2.2 times as wide as long. The elytra are 8.2 times as long as the pronotum, 2.6 times as long as wide in the middle.

**Measurements**, mm. Body length without rostrum: male, 6.1–7.9, female, 5.4.

**Remarks.** In the original description the holotype is misnumbered as 2066/2593 (p. 157). In the plate caption (p. 251, fig. 4), it is numbered correctly as 2066/2595. The beetle figured in text-fig. 3 (p. 158) is the direct impression of specimen no. 2066/2595.

The sex of some specimens could not be determined; their body length without rostrum ranges from 5.7 to 8.2 mm.

**Material.** In addition to the holotype, specimens PIN (presumably male), nos. 2331/653 (negative impression of beetle); 2384/509 (part and counterpart of beetle); 2384/639 (positive impression of beetle); 2784/1437 (negative impression of beetle); 2784/1442 (positive impression of beetle); 2784/1445 (positive impression of beetle); 2997/2062 (positive impression of beetle); 2997/2065 (part and counterpart of beetle); specimen PIN (presumably female), no. 2784/1434 (part of beetle); and specimens PIN (sex unclear), nos. 2784/1435 (positive impression of beetle); 2784/1438 (negative impression of beetle); 2784/1444 (negative impression of beetle); 2904/947 (positive impression of beetle); 2997/447 (negative impression of beetle); 2997/2068 (negative impression of beetle); 2997/2069 (negative impression of beetle); and 2997/2072 (negative impression of beetle). (All from the type locality.)

*Protoscelis medvedevi* Legalov, sp. nov.

Plate 11, fig. 3

**Etymology.** In honor of the entomologist L.N. Medvedev.

**Holotype.** PIN, no. 2239/1258, positive impression of beetle; Karatau–Mikhailovka, Middle–Upper Jurassic.

**Description** (Figs. 2f, 2i, 2j). The body is brown. The eyes and legs are darker than the body.

**Male.** The labrum is rather large, slightly wider than the mandible, slightly wider than long. The mandibles are medium-sized. The eye is large, approximately 1.6 times as wide as long. The situation on the anterior margin of the eye is weak. The temple is short, considerably shorter than the eye. The antennae are medium-sized, reaching beyond the humeri. The

scape is 1.6 times as long as wide. Flagellomere 1 is shortened, 0.7 times as long as the scape, 1.5 times as long as wide. Flagellomeres 2–7 are elongate. Flagellomere 2 is 2.7 times as long as wide and 2.7 times as long as flagellomere 1. Flagellomeres 2–4 are equal in width. Flagellomere 3 is 1.6 times as long as flagellomere 2 and 1.7 times as long as wide. Flagellomere 4 is 1.2 times as long as flagellomere 3 and 2.0 times as long as wide. Flagellomere 5 is 0.83 times as long as flagellomere 4 and 1.4 times as long as wide. Flagellomere 6 is equal in length to flagellomere 4 and 1.7 times as long as wide. Flagellomere 7 is 1.3 times as long as wide and 0.77 times as long as flagellomere 6. The club is rather compact, 2.4 times shorter than the flagellum. Club segment 1 is trapezoid, 1.3 times as wide as long, equal in length to flagellomere 7. Club segment 2 is more broadly trapezoid, 1.4 times as wide as long, equal in length to segment 1. Club segment 3 is pointed, teardrop-shaped, 1.8 times as long as and barely narrower than segment 2 and 1.4 times as wide as long. The pronotum at the apex is 1.6 times as wide as long, in the middle 1.9 times as wide as long, and at the base 2.0 times as wide as long. The subbasal line is distinct. The elytra are 3.5 times as long as the pronotum, 1.3 times as long as wide in the middle. The femora are weakly thickened; pro- and mesofemora are subequal in length. The tibiae are rather narrow, weakly curved apically.

**Measurements**, mm. Body length without rostrum, 3.6. Body length without rostrum in paratypes, 3.2–5.2 mm.

**Material.** In addition to the holotype, paratypes PIN (sex unclear), nos. 2384/569 (positive impression of beetle); 2784/1433 (positive impression of beetle); 2784/1461 (positive impression of beetle); 2997/459 (positive impression of beetle); 2997/2068 (positive impression of beetle); 2997/2073 (positive impression of beetle); 2997/2077 (positive impression of beetle); 2997/2112 (positive impression of beetle); 2997/2116 (positive impression of beetle); 2997/2122 (positive impression of beetle); and 2997/2123 (positive impression of beetle). (All from the type locality.)

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*Translated by P. Petrov*