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A new Species of the Pill Beetles (Coleoptera, Byrrhidae) from Siberian Altai Mountaines

by S. Tshernyshev and R. Dudko

Abstract: In this paper, a new species of the pill beetles with metallic luster of the surface is described from high altitudes of Altai Mts. (Siberia) – *Byrrhus mordkovitshi*. The species is similar to the previously described from Altai Mts., *Byrrhus bermani* Korotyaev, which is treated and redescribed. A distributional map, illustrations and key to species are given.

Keywords: Coleoptera – Byrrhidae – *Byrrhus* – taxonomy – new species.

In the course of a collecting trip to high altitude Altai mountains by R.Yu. Dudko, A.Yu. Dudko and D.E. Lomakin in 1994, an abundant material of pill beetles was collected. Among all *Byrrhus* a new species to science, *Byrrhus mordkovitshi* n.sp., was found.

According to the coloration of the surface, this species belongs to the group of metallic lustrous *Byrrhus*. Up to the present time, among the metallic *Byrrhus* of the Siberian fauna only two species were known: *B. subaeneus* Reitter, 1896 and *B. bermani* Korotyaev, 1990. The first species was described from Transbaikalia, the second one from the Kurai mountainous range of South-East Altai.

The main characters used by the author (KOROTYAEV, 1990) to delimit *Byrrhus bermani* from *B. subaeneus* were as follows: more bright and shining green-bronze coloration of the surface; the longitudinal grooves in elytra feebly marked; pubescence and puncturation of elytra more sparse; differences in the phallus shape (Figs 5, 10, 12). From both remaining species *B. mordkovitshi* it sharply differs by the following characters: strong shining green-blue metallic luster; suture of elytra depressed; the elytral disc almost lack longitudinal grooves, sparsely covered with more short hairs and more densely punctate with more large punctures. The aedeagus of the new species with round-oval lamella at the tip (Fig. 7), but in *B. bermani* the lamella is lance-oval (Fig. 11). Phallus sharply curved at the top (Fig. 8), while in *B. bermani* (Fig. 12) and *B. subaeneus* (Fig. 5) it is almost straight. A distribution of species is shown in the map (Fig. 3).

The fact, which attracts a special attention, is, that the wings in *B. bermani* are reduced, while in *B. mordkovitshi* they are normally developed.

A description of a new species and redescription of *B. bermani* are given below. In the original description of the latter species, the author gave only the diagnosis without detailed characters. We decided, that it is important to give the complete description of a rare species ranged locally in a small region of Siberian mountains.

All specimens, mentioned in the work, are kept in the following museums: SZM = Siberian Zoological Museum, Novosibirsk; NHMB = Naturhistorisches Museum, Basel.

Key to metallic lustrous species of *Byrrhus* Linné found in Siberian mountains.

1. Elytra distinctly striate, surface with bronze lustre, densely covered with fine adpressed brownish hairs. Phallus (Fig. 5)

***B. subaeneus* Reitter**

- Elytra weakly striate or not striate, surface shining, with bright green-bronze or blue-green metallic lustre 2

2. Elytra weakly striate, with distinct smooth longitudinal ribs (Fig.1). Surface with green-bronze metallic lustre. Aedeagus with narrow lancet-oval lamella (Fig. 11), the distal part of phallus straight (Fig. 12). Hind wings atrophied

***B. bermani* Korotyaev**

- Elytra not striate in the middle, lacking longitudinal ribs (Fig. 2). Surface with blue-green lustre. Aedeagus with wide round-oval lamella (Fig.7) , the distal part of phallus sharply curved (Fig. 8). Hind wings normal

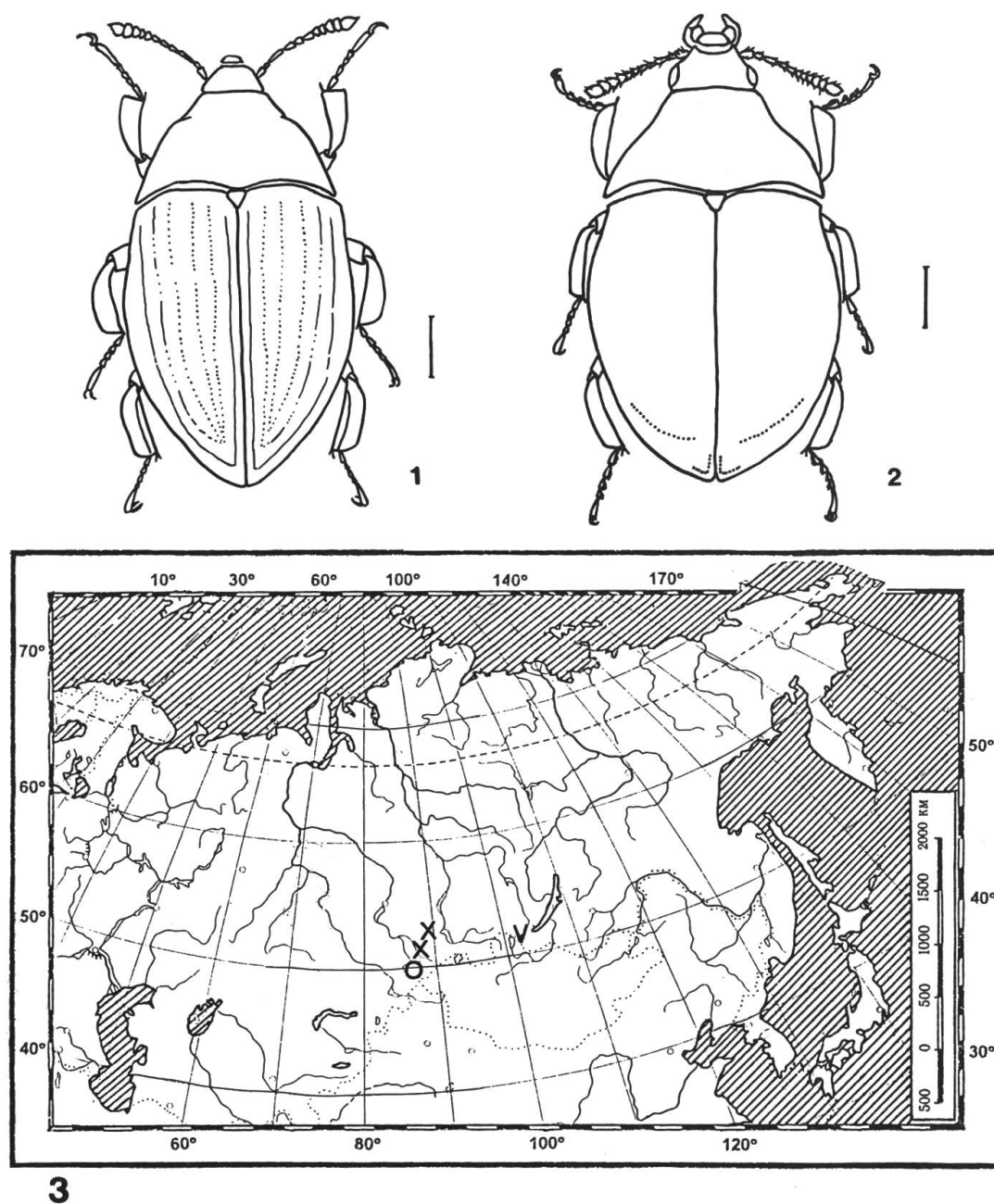
***B. mordkovitshi* n.sp.**

***Byrrhus mordkovitshi* n.sp.**

Figs 2, 3(X), 4, 6–9.

Description: Holotypus, male. Body elongate, oval (Fig. 2). Head black. Antennae black-brown, maxillar palps light-brown. Pronotum and elytra dark with bright blue-green metallic lustre (in one specimen it is green-bronze). Scutellum black. Legs almost black, but tarsi black-brown. Ventral side dark-brown.

Head not large, 1.75 times narrower than the pronotum (at the base), forehead evenly convex, flat. Clypeus (Fig. 4) weakly marginate, covered in the distal part with straight hairs, distal part strongly emarginate, with long sharp angles, a transverse narrow depression behind the clypeus separate it from the labrum. Labrum (Fig. 4) not large, transverse, with widely rounded angles, sharply punctate with large punctures, covered with long, adpressed dark hairs. Mandibles (Fig. 4) large, with thin carina at the base, the apex of the right mandibula with



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Figs 1-3: 1-2: General view: 1, *Byrrhus bermani* Korotyaev. 2, *Byrrhus mordkovitshi* n.sp. Scale 1 mm. Fig. 3. Distributional map of the metallic lustrous *Byrrhus* with localities in Siberia: O – *Byrrhus bermani* Korotyaev; X – *Byrrhus mordkovitshi* n.sp.; V – *Byrrhus subaeneus* Reitter.

two dents and a little protuberance below the inner tooth, left mandibula with three dents at the tip – lateral, of the equal length, and middle, somewhat longer. Maxillar palps not large, the joints more or less longitudinal, the apical segment wide, parallel, slightly narrowed to the

apex and cut. Eyes transverse, with straight, not emarginate or protrudent sides. Genae short and straight. Antennae clavate, 11-segmented, short, not reaching the basis of pronotum, basal joint oval, swollen, 3 times larger than the second, 2d small, round, 3d elongate, the longest, 4th twice smaller than the previous, cylindrical, 5th somewhat wider and shorter than the 4th, 6th distinctly transversal, shorter than the previous, but not wider, 7th 1.5 times wider than the 6th and somewhat longer, 9th and 10th of equal length, 1.5 times larger than the 8th, apical joint elongate, rounded, of the same length than 9th and 10th taken together. All antennal segments bears long erected black hairs at the external part, the apical segments additionally covered with adpressed short goldish pubescence. As a whole, the surface of the head is sparsely punctulate with isodiametrical microsculpture, covered with short adpressed dark hairs.

Pronotum transverse, twice as broad (in the base) as long (in the middle). The sides without longitudinal depressions, marginate with a thin, somewhat elevated margin, the anterior and posterior parts are not marginate, basis archely protrudent at the middle and twice emarginate at the sides, back angles pointed and slightly curved, anterior angles acute, vertical, disc of the pronotum densely punctate in the middle and more sparsely on sides, microsculpture smooth, so the surface is very shining. Pronotum evenly covered with short, adpressed, brownish but imperceptible hairs.

Scutellum small, equilateral triangle shaped, with rounded angles, surface sparsely punctate, covered with short adpressed dark hairs.

Elytra slightly expanded before the middle, with almost perpendicular back slope, apicis with a triangular depression near the suture, basis completely marginate with a thin margin, longitudinal ribs absent, slightly striate only on sides, suture distinct, depressed, disc densely punctate in the middle (the distance between the punctures is 1.5 times their diameters) and more sparsely on the sides (the distance is 2–2.5 diameters). Elytra evenly covered with sparse, thin adpressed brownish hairs, margins of elytra bearing a row of short erected light hairs.

All tibia widened and flattened, rounded at the tip, bearing two sharp and short spurs of equal length, tibia almost of equal width as femora, tarsi 5-segmented, with light pubescence at the pedal part, claws with a little dent at the base. External side of legs covered with small strong goldish setae, inner side with long hairs, disposed at the apex.

Ventral side black-brown, covered with small, but good noticeable goldish-yellow hairs. Pubescence is more dense on the thorax and on

the external part of legs. Prothorax sparsely punctate at the base, as far as on appendage puncturation is more dense. Mesothorax evenly granulate. Granulation large, forming transverse wrinkles in the middle. Sternites evenly granulate with small granulation. Ventral side shining, because of smoothed microsculpture.

Hind wings normal.

Phallus parameres evenly narrowed and curved at the tip (Fig. 6), lamellae of aedeagus wide, round-oval (Fig. 7). Phallus strongly curved at the top and at the bottom (Fig. 8). Tegmen narrow, with thin long laterals (Fig. 9).

Female. Similar to the male, except as follows: Body more strongly widened. Antennae shorter. Antennal joints forming a small clava. Claws without dent at the base.

Length (holotype, without head) 6.8 mm, width: The widest part of elytra – 4.0 mm, the base of elytra – 3.7 mm. The largest specimen: Length 7.6 mm, the most width 4.9 mm, at elytral base – 4.3 mm.

Holotypus (SZM): W-Siberia: Altai Mts., Chulyshman upland, Eastern part of the Kurkure Mt. Range, upper stream of Bazhiterengol River, 2350–2500 m, 3.VII.1994, A. et R. Dudko; Hakassia, Saraly river, 14.VII.1975, Yu.Korshunov, paratypus ♀ (SZM); Altai Mts., env. of Teletskoie Lake, Upper stream of Cheliush Riv., 1850 m, pitfall trap, 5–7.VI.1994, D.E. Lomakin, 4 paratypes ♂ (SZM), 1 paratypus ♂ (NHMB).

Diagnosis: This new species is closely related to *Byrrhus bermani* Korotyaev, for more details consult the key.

Habitat: Beetles were found in the litter of the mountainous tundra landscape.

Etymology: The species is named after Prof. Vyacheslav G. Morchkovich of the Siberian Zoological Muzeum (Novosibirsk) who was one of the founders of the Coleoptera collection and is helping to increase its facilities at present.

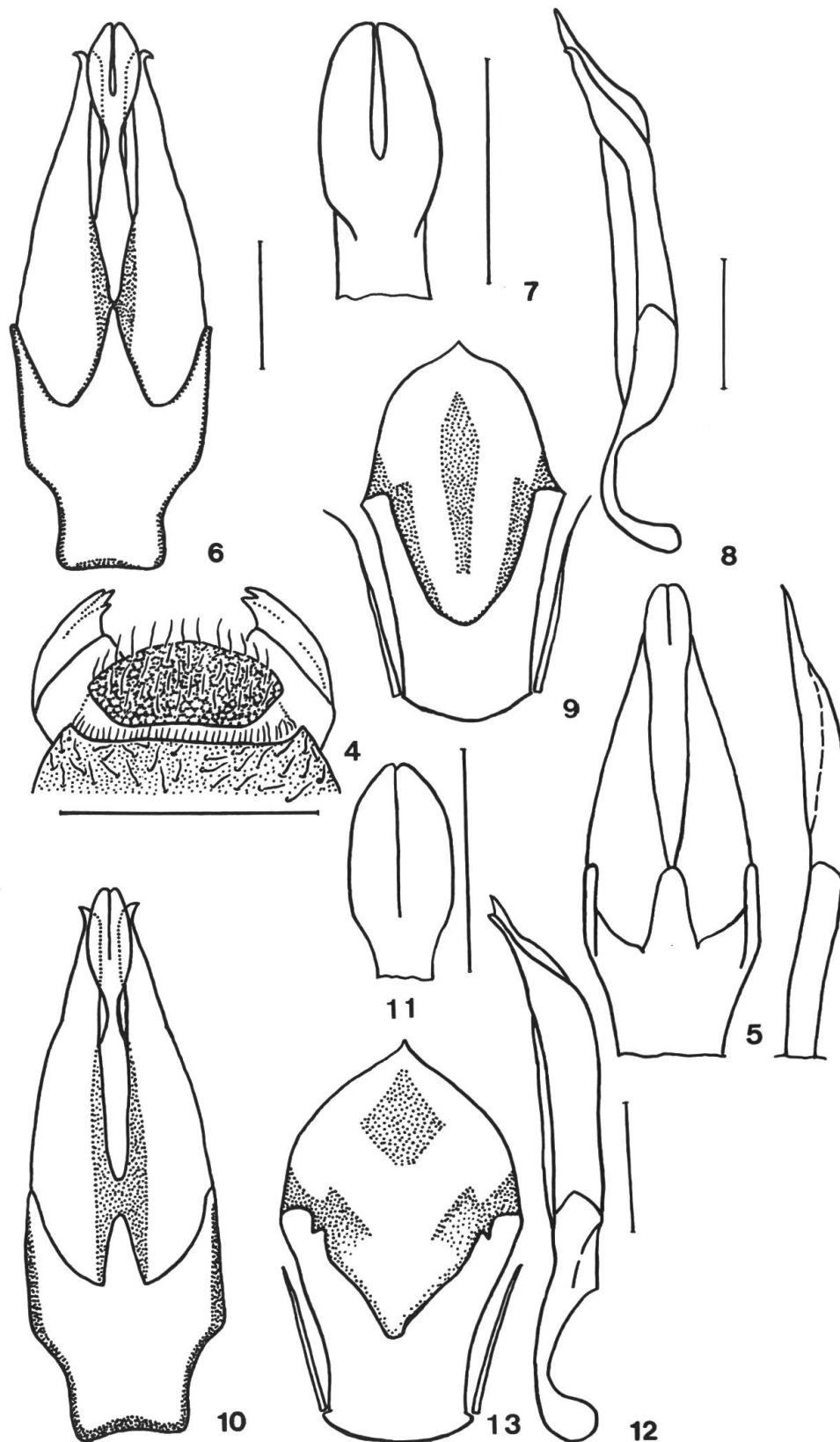
***Byrrhus bermani* Korotyaev**

Figs. 1, 3(O), 10–12.

Byrrhus bermani KOROTYAEV, 1990, Insects of Mongolia, 11: 129–131.

Material: Topotypes: W-Siberia: Altai Mts., West part of Kurai Mt. Range, valley of Kurai River (middle stream), 1800 m, 12.VIII.1994, R. Dudko et D.Lomakin, 3♂ (SZM); Altai Mts., Chihachev Mt. Range, 3 km SE of Chernaia Mt., h ~ 2700–2800 m, tundra, 11.VII.1996, A. et R. Dudko, 1♀ (SZM).

Description: Body elongate, oval (Fig. 1). Head black. Antennae black-brown, maxillar palps light-brown. Pronotum and elytra dark



with bright green-bronze metallic lustre. Scutellum black. Legs almost black, but tarsi black-brown. Ventral side dark.

Head not large, 2.3 times narrower than the pronotum (at the base), front feebly triimpressed, clypeus weakly marginate, covered on the distal part with straight hairs, the distal part strongly emarginate, with long sharp angles, a transverse narrow depression behind the clypeus is separating it from the labrum. Labrum not large, transverse, with widely rounded angles, sharply punctate with large punctures, covered with long, adpressed dark hairs. Mandibles large, with thin carina at the base, the apex of the right mandibula with two dents, without little protuberance below the inner tooth, left mandibula with three dents at the tip, of which the inner is shortest. Maxillar palps not large, the joints more or less longitudinal, the apical segment wide, parallel, slightly narrowed to the apex and cut. Eyes transverse, with straight, not emarginate or protrudent sides. Genae short and straight. Antennae clavate, 11-segmented, short, not reaching the basis of pronotum, basal joint round, swollen, 3 times larger than the second, 2d small, round, 3d elongate, the longest, 4th twice shorter than the previous, cylindrical, 5th joint somewhat wider and shorter than 4th, 6th distinctly transversal, shorter than the previous, but not wider, 7th 1.5 times wider and somewhat longer than 6th, 9th and 10th of equal length, 1.5 times larger and wider than 8th, the apical joint elongate, rounded, of the same length as 9th and 10th taken together. All antennal segments bear long erected black hairs at the external part, the apical segments additionally covered with adpressed short goldish pubescence. As a whole, the surface of the head sparsely punctulate with dense isodiametric microsculpture, covered with short adpressed dark hairs.

Pronotum transverse, 1.6 times as broad (at the base) as long (in the middle), sides with longitudinal depressions, marginate with a thin, somewhat elevate margin, the anterior and posterior parts not marginate, the basis archely protrudent at the middle and twice emarginate at the sides, posterior angles pointed and slightly curved, anterior angles acute, vertical, disc densely punctate in the middle and more sparsely on



Figs 4–13, Stomal part of the head of *Byrrhus mordkovitshi* n.sp. Scale 0.5 mm. 5–13: Genitalia: Fig. 5, *Byrrhus subaeneus* Reitter, phallus dorsal and lateral (according Koro-tyaev, 1990). 6–9: *Byrrhus mordkovitshi*, n.sp.: 6, phallus, dorsal. 7, lamella of the aedeagus. 8, phallus, lateral. 9, tegmen. Scale 0.25 mm. 10–13: *Byrrhus bermani* Koro-tyaev: 10, phallus, dorsal. 11, lamella of the aedeagus. 12, phallus, lateral. 13, tegmen. Scale 0.25 mm.

the sides, microsculpture not smooth, so the surface is noticeable mat. Pronotum evenly covered with short, adpressed, brownish, but good noticeable hairs.

Scutellum small, equilateral triangle shaped, with rounded angles. Surface sparsely punctate, covered with short adpressed dark hairs.

Elytra slightly expanded at about the middle, without perpendicular back slope, apices with triangular depression near the suture, base not marginate, disc slightly striate, with smooth ribs, suture distinctly elevate, disc densely punctate in the middle (the distance between the punctures is equal to their diameters) and more sparse on the sides (the distance is 2 diameters). Elytra evenly covered with sparse, thin adpressed brownish hairs, margins bearing one row of short erected light hairs.

All tibia widened and flattened, rounded at the tip, bearing two sharp and short spurs of which the inner somewhat longer, almost of equal length as femora, tarsi 5-segmented, with light pubescence at the pedal part, claws with a little dent at the base. External side of legs covered with small strong goldish setae, inner side with long hairs, disposed at the apex.

Ventral side black-brown, covered with small, goldish hairs. Pubescence is more dense on external part of legs. Underside of pronotum sparsely punctate at the base, and more dense on its sterna. Mesotorax evenly granulate, granulation large, forming transverse wrinkles in the middle. Sternites evenly granulate with small granulation, ventral side not shining, because of microsculpture not smooth.

Hind wings atrophied.

Phallus parameres evenly narrowed but slightly curved at the top, with curved tips (Fig. 10), lamellae of the aedeagus narrow, lance-oval (Fig. 11), phallus straight at the top and curved at the bottom (Fig. 12), tegmen wide, with thin short laterals (Fig. 13).

Female. Similar to the male, except as follows: Body more widened. Antennae shorter and narrower. Antennal joints forming smaller clava. Claws without dent at the base.

Length 6.8 mm, width: the most wide part of elytra – 4.1 mm, at the base of elytra – 3.9 mm.

Habitat: Beetles occurs in the litter of the mountainous tundra and steppe landscapes of the Kurai Mt. Range of Altai.

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