

A revision of the genus *Protocollops* EVERS, 1991 (Coleoptera, Malachiidae)

by Sergei E. TSHERNYSHEV

Abstract

A revision of the genus *Protocollops* Ev. is presented, morphological characteristics of the genus are given. Five species, *Collops alatauensis* WITTMER, 1992, **comb.n.**, *C. bicoloripennis* (PIC, 1920), **comb.n.**, *C. betpakdalensis* MEDVEDEV, 1964, **comb.n.**, *C. nigerrimus* WITTMER, 1992, **comb.n.**, and *C. susamirensis* WITTMER, 1992, **comb.n.** are transferred to *Protocollops*. *Protocollops bicoloripennis* (PIC, 1920) is synonymized with *P. betpakdalensis* (MEDVEDEV, 1964), **syn.n.**, and *P. turanicus* (EVERS, 1966) with *P. susamirensis* (WITTMER, 1992) **syn.n.** Two new species, *Protocollops transiliensis* TSHERNYSHEV, **sp.n.** from Kazakhstan, and *P. yakovlevi* TSHERNYSHEV, **sp.n.** from Mongolia, are described. Diagnosis, figures of male antenna, genitalia and urites, and a distribution map are provided for all species. A key for *Protocollops* species is also presented.

Key words: Coleoptera, Malachiidae, *Collops*, *Troglocollops*, *Protocollops*, Central Asia, Mongolia.

Резюме

Представлена ревизия рода *Protocollops* Ev. с подробным описанием морфологических признаков рода. Пять видов: *Collops alatauensis* WITTMER, 1992, **comb.n.**, *C. bicoloripennis* (PIC, 1920), **comb.n.**, *C. betpakdalensis* MEDVEDEV, 1964, **comb.n.**, *C. nigerrimus* WITTMER, 1992, **comb.n.** и *C. susamirensis* WITTMER, 1992, **comb.n.** перенесены в род *Protocollops*. Установлена новая синонимика для видов *Protocollops bicoloripennis* (PIC, 1920) = *P. betpakdalensis* (MEDVEDEV, 1964), **syn.n.**, и *P. turanicus* (EVERS, 1966) = *P. susamirensis* (WITTMER, 1992) **syn.n.** Описаны два новых вида: *Protocollops transiliensis* TSHERNYSHEV, **sp.n.** из Заилийского Алатау в Казахстане, и *P. yakovlevi* TSHERNYSHEV, **sp.n.** из Монгольского Алтая. Для каждого вида приводится описание, рисунки усика, гениталий и уритов самца, карта распространения. Дана определительная таблица видов рода *Protocollops*.

Ключевые слова: Coleoptera, Malachiidae, *Collops*, *Troglocollops*, *Protocollops*, Центральная и Средняя Азия, Монголия.

Introduction

Evers (1991) described genus *Protocollops* EVERS, 1991 for two species, *Collops apicalis* BALL. and *C. bulganensis* Ev. They differ from *Collops* ER. by 5-segmented anterior tarsi in both sexes, in male possessing a comb on the 2nd segment. Evers did not present a detailed description of the genus, and did not study additional differential characters; he pointed out that the new genus is "Adelphotaxon von *Collops*". Doubt about *Collops* distribution in Palaearctic was suggested earlier by W. Wittmer (1965). He described genus *Troglocollops* to include all East Asian *Collops* representatives with swollen 3 and 4 antennal segments and impression or protuberances on head in males. Later, for the remaining Palaearctic *Collops* without impression or protuberances on head and possessing simple antenna in males, another genus, *Protapalochrus* EVERS, 1987, was established. Describing *Protocollops*, Evers has settled discussion about *Collops* presence in Palaearctic, and eliminates this genus completely from the fauna of the Old World.

Taxonomic vagueness and weak differences of females of separate species, represent a problem, that to the end of the previous century from the territory of Eurasia many new species have been wrongly attributed to different genera. Thus, *Troglocollops turanicus* EVERS, 1966, *Collops betpakdalensis* L. MEDVEDEV, 1964 were described from Kazakhstan from unique females; *Laius bicoloripennis* PIC, 1920 from Siberia (!), *Collops alatauensis* WITTMER, 1992, *C. susamirensis* WITTMER, 1992, *C. nigerrimus* WITTMER, 1992, from Kazakhstan, Kyrgyzstan and China. When describing new species, authors used only male special characters, and did not pay attention to the fact, that several species were previously described in this region from females. Such external characters as specific coloration, body shape, and location of male special characters in 3rd

antennal segment allow transferring all of them to the genus *Protocollops*.

Studying type material of species should be attributed to the *Protocollops*, two new species, *Protocollops transiliensis* sp.n. from Zailiyskiy Alatau in Kazakhstan and *P. yakovlevi* sp.n. from Mongolian Altai are found.

Thus, insufficiently detailed original description of the genus, vagueness of taxonomic position of some species, and two new species allow revising *Protocollops* EVERS, 1991 in the present paper.

For the description and diagnosis of the species, some special male characters (genitalia and urites) have been studied. Once the genitalia had been studied, they were attached onto label paper using water soluble glue and pinned under the specimen. All specimens are kept in the following museum collections:

HMB: Hungarian Museum of Natural History (Magyar Nemzeti Múzeum, Természettudományi Múzeum), Budapest;

MNHP: National Museum of Natural History, Paris (Paris Museum National d'Histoire Naturelle);

HUMB: Humboldt-Universität zu Berlin museum für Naturkunde;

SZMN: Siberian Zoological Museum, Institute of Animal Systematics and Ecology, Siberian Branch of the Russian Academy of Sciences, Novosibirsk;

ZISP: Zoological Institute, the Russian Academy of Sciences, St. Petersburg;

ZMH: Zoological Museum of Helsinki, Finland;

ZMUM: Zoological Museum of the Moscow State University.

For species description special male structures and genitalia were studied. Under "special male structures" means: 1st and 3rd antennal segments, swollen and of complex structure, with impressions and bunch of hairs on the 3rd segment. Drawings for different species have been prepared using specimens from the following localities: *Protocollops apicalis* (BALLION, 1878) - Kazakhstan, near Almaty; *P. bulganensis* (EVERS, 1968) (paratypus) - Mongolia, Somon Bulgan; *P. alatauensis* (WITTMER, 1992) (holotypus) - Kazakhstan, Dzhungarskiy Alatau; *P. bicoloripennis* (PIC, 1920) (holotypus) - Kyrgyzstan, Przheval'sk; *P. nigerrimus* (WITTMER, 1992) (holotypus) - China, left confluent of Bi-Chu river; *P. turanicus* (EVERS, 1966) (holotypus of *Protocollops susamirensis* (WITTMER, 1992) **syn.n.**) - Kyrgyzstan, Yuch-Imchik; *P. transiliensis* TSHERNYSHEV, **sp.n.** (holotypus) - Kazakhstan, Zailiyskiy Alatau near Almaty; *P. yakovlevi* TSHERNYSHEV, **sp.n.** (holotypus) - Mongolia, Somon Altai.

Protocollops EVERS, 1991

EVERS, 1991c: 108-109. Type species: *Apalochrus apicalis* BALLION, 1878.

DEFINITION: Medium size malachiid beetles, ranging from 3 to 4.5 mm in length. Surface with double coloration: almost black with metallic lustre and partly (legs, elytral apices and lateral sides, stomal part, basal antennal segments, pronotum etc.) orange-yellow; covered with black erect and light adpressed hairs. A unique species, *P. nigerrimus*, is completely dark coloured. Antenna 11-segmented (Fig. 1), with swollen 1st and modified 3rd segments in male and beaded in female, long, reaching a first quarter of the elytra; in male the 3rd joint swollen, of complicated structure and emarginate externally and possessing a bunch of long hairs. Remaining segments with rounded outer edges, transverse, except the apical, which is parallel-sided. Interocular plate on head flat. Pronotum transverse, in some species (as in *P. apicalis*) impressed and sinuate posteriorly, usually uniformly dark, sometimes orange (as in *P. apicalis*), or with light basal angles (as in *P. alatauensis*). Thorax mesepimers and anterior trochanters dark. Vesicles yellow. First tarsi 5-segmented, covered with very short and sparse hairs, all segments simple. 2nd segment in male possessing a comb above. Elytral apices simple, evenly rounded in both sexes, appendages lacking. Wings in males normally developed, when in females reduced.

In *males*, apical tergite evenly sinuate at the apex (Fig. 3); apical sternite duplicate (Fig. 2) and probably species specific. Male genitalia composed of the following structures: phallus and tegmen (paramers) fixed to the base of aedeagus and forming its cover (Fig. 9); the shape of aedeagus simple, with slightly flattened and prolonged apex, inner sac with a number of small teeth, and several strong spines (Fig. 4).

DIAGNOSIS: *Protocollops* belongs to tribe Apalochrini MULSANT & REY, 1868, and should be placed among *Troglocollops* and *Intybia* genera, near *Simoderus*. It can be easily separated from the genus *Troglocollops* by the flat interocular area and bunch of hairs in 3rd segments. *Simoderus* coloration and body shape are quite similar to *Protocollops*, but location of specific male structure on pronotum differentiate this monotypic genus from all know Eurasian Malachiidae. Tarsal comb in males and specific dark coloration with light apices of elytra differentiate *Protocollops* from *Intybia*. Shapes of the apical sternite and tegmen are quite specific and, probably, can be used as a special character for identification of species.

DISTRIBUTION: All species of the genus *Protocollops* are restricted in their range to the territory of Central and Middle Asia sensu lato: Mongolia (*P. bulganensis*, *P. yakovlevi*), China (*P. nigerrimus*), Kazakhstan (*P. bicoloripennis*, *P. transiliensis*, *P. alatauensis*, *P. apicalis*), and Kyrgyzstan (*P. turanicus*).

HABITAT: Species occur on grasses and flowers in high altitude mountains.

List of species in the Genus *Protocollops*:

1. *P. apicalis* (BALLION, 1878)
2. *P. alatauensis* (WITTMER, 1992), **comb.n.**
3. *P. turanicus* (EVERS, 1966) **comb.n.**
= *P. susamirensis* (WITTMER, 1992), **comb. et syn.n.**
4. *P. transiliensis* TSHERNYSHEV, **sp.n.**
5. *P. bicoloripennis* (PIC, 1920), **comb.n.**
= *P. betpakdalensis* (MEDVEDEV, 1964), **comb. et syn.n.**
6. *P. bulganensis* (EVERS, 1968) **comb.n.**
7. *P. yakovlevi* TSHERNYSHEV, **sp.n.**
8. *P. nigerrimus* (WITTMER, 1992), **comb.n.**

Key to species of the genus *Protocollops*

1. Apices of elytra dark, lacking reddish or yellowish spots. Male antenna and genitalia as in Figs 40-44 *P. nigerrimus*
2. Apices of elytra in both sexes reddish or yellowish or with narrow light margins 3
3. Pronotum yellow-orange, sometimes with dark spot above the middle. Male antenna and genitalia as in Figs 1-4 *P. apicalis*
- Pronotum uniformly dark, sometimes with light spots near hind angles 4
4. Legs completely dark. Male antenna and genitalia as in Figs 23-26 *P. bicoloripennis*
- Legs partly light 5
5. Tibiae of all legs almost completely yellow 6
- Tibiae of hind legs dark 8
6. Tarsi, especially in fore legs, almost completely dark. Base of pronotum and laterals of elytra sometimes light. Male antenna and genitalia as in Figs 6-10 *P. alatauensis*
- Tarsi, especially in fore legs, light. Pronotum and laterals of elytra completely dark 7
7. Punctuation of elytra smooth, indistinct, yellow coloration in elytral apices thin and round. Male antenna and genitalia as in Figs 12-15
..... *P. turanicus*
- Punctuation of elytra distinct, yellow coloration

- in elytral apices semilunar. Male antenna and genitalia as in Figs 17-22
..... *P. transiliensis* sp.n.
8. Total body length larger than 4 mm. Half of intermediate tibiae dark. Elytral laterals dark. Male antenna and genitalia as in Figs 28-32
..... *P. bulganensis*
 - Total body length smaller than 4 mm, at about 3.5 mm. Intermediate tibiae completely yellow. Elytral laterals with light areas or margins. Male antenna and genitalia as in Figs 34-38 *P. yakovlevi* sp.n.

Protocollops apicalis (BALLION, 1878)
(Figs 1-5)

- Apalochrus apicalis* BALLION, 1878: 294;
Collops apicalis (BALLION, 1878): Abeille de Perrin, 1891b: 205, 206-207;
Zygia apicalis (BALLION, 1878): Pic, 1931i: 421;
Dicranolaius apicalis (BALLION, 1878): Wittmer, 1965b: 143;
Collops apicalis (BALLION, 1878): Wittmer, 1992a: 11, 13. Fig.1;
Troglocollops apicalis (BALLION, 1878): Evers, 1966f: 106;
Protocollops apicalis (BALLION, 1878): Evers, 1991c: 108. Turkestan, Kuldscha.
= *Collops abrinoides* ABEILLE DE PERRIN, 1885a: CXVI.

MATERIAL: 1 male - "USSR Kazakhstan Kungey Alatau near 77.00/43.10 AlmaAta July 1990 2500-3500m Kolibáč leg" (SZMN); 1♂ - Kazakhstan, Dzharkent: "Джаркент, 27.V.[19]18" (SZMN).

DESCRIPTION: *Male*: Body elongate, narrow, slightly expanded posteriorly. Apices and sides of elytra, lateral and basal parts of pronotum, 1-3 antennal segments, mouthparts, femora and tarsi of all legs and anterior femora almost completely orange, other parts black with green metallic lustre. Surface covered with fine adpressed brownish hairs, elytra additionally with erect black hairs. 1st antennal segment short, swollen, triangular - shaped, the 3rd one (Fig. 1), transverse and oval, with bunch of hairs from above. Interocular plate on head flat, very slightly impressed, not marginate from sides near eyes. Head with distinct microsculpture, elongate, narrower than the pronotum.

Pronotum elongate impressed and sinuate behind the middle, distinctly marginate, with smoothed microsculpture, slightly dull, not shining. Scutellum small, elongate, narrow, triangular in shape.

Elytra subparallel, slightly expanded posteriorly, shoulders distinct, not protruding, suture marginate, distinct, apices with small prolonged tips, not adjoining.

Anterior tarsi with strong comb on the second segment, 1st and 2nd segment in fore- and intermediate legs are the same length as apical; intermediates, taken together, are 1.3 times shorter; in posterior legs the 2nd segment is the same length as apical one. Claws thin and sharp, with distinct plate, possessing hook-shaped process.

Apical tergite evenly sinuate at the apex (Fig. 3); apical sternite duplicate, as in Fig. 2. Aedeagus shown in Fig. 4, usual in shape, with slightly flattened and prolonged apex, inner sac with 4 strong spines and two groups of small ones near the tip on ventral side, and near the middle at dorsal side.

Length 3.2 mm, width (at elytral base) 0.8 mm.

Female differs from male by the following characters: tarsal comb absent, body strongly expanded, abdomen enlarged and elongate, not entirely covered by elytra. Antennae simple and shorter; orange coloration in elytra wider.

Length 5.0 mm, width (at elytral base) 1.2 mm.

DIAGNOSIS: From its congeners, *P. apicalis* can be easily distinguished by the light coloration of pronotum and sides and apices of elytra. Slender body is also characteristic for this species.

DISTRIBUTION: The species was described from "Kouldzha", Central Asian part of China, and later registered from Kazakhstan (Sharkent, Almaty) (Fig. 5).

Protocollops alatauensis (WITTMER, 1992), **comb.n.**
(Figs 6-11)

Collops alatauensis WITTMER, 1992a: 12, 13, 15, fig. 7.

MATERIAL: Holotype, male, Kazakhstan, Taldy-Korgan Province, Sary-Gura mountain, forest and alpean belts in foothills of Dzhungarskiy Alatau, 24.6.1926, leg. Dobrzhansky (ZIN). Paratypes: 3 males, idem, (ZIN); other material: 1 male, Kazakhstan, Dzhungarskiy Alatau, 20-25 km SSO Topolevka vill., 20.6.1957, coll.-? (ZIN); 1 male, Kazakhstan, Dzhungarskiy Alatau, S of Koktuma vill., near Alakol' Lake, 25.6.1962, leg. I.M. Kerzhner (ZIN); 1 male, 1 female, "Tyshkan-Tau Kizbaj-See 3100 m, 21.VII.1990", "SO Kasachstan V. Dolin" (SZMN).

МАТЕРИАЛ. Голотип, самец, "Семиреч. обл. Гора Сары. Гора Талды Курганск. у. 24.6.[19]26", "Лесн[ая]. и альп[ийская]. обл[асти]. предгор. Джунгарск. Алатау. Дбржанский" (ЗИН). Паратипы: 3 самца, собраны совместно с голотипом (ЗИН); другой материал: 1 самец, "20-25 км ЮЮВ с.Тополевки, Джунгар. Алатау Кержнер 20.VI.1957 г." (ЗИН); 1 самец, "Джунгар. Алатау S Коктумы на Алаколе Кержнер 25 VI [1]962" (ЗИН); 1 самец самка, "Tyshkan-TauKizbay-See 3100m, 21.VI.1990", "SO Kasachstan V. Dolin" (СЗМН).

DESCRIPTION: Holotype, male. Body elongate, narrow, very slightly expanded posteriorly. Apices of elytra, antennal segments 1-2, and small basal part of the 3rd, mouthparts, tibiae and basal segments of tarsi in anterior legs, tibiae excepting their apical parts in intermediate and posterior legs yellow, other parts black with green-blue metallic lustre. Surface covered with fine adpressed light hairs, elytra additionally with sparse black erect bristles. 1st antennal segment short, swollen, round, the 3rd (Fig. 6), transverse, narrow and oval, with bunch of hairs from above and two impressions. Interocular plate on head flat, very slightly impressed, its sides slightly elevate. Head with distinct microsculpture and smooth punctures, elongate, narrower than the pronotum.

Pronotum transverse and slightly impressed posteriorly, distinctly marginate on sides and at the base, with distinct microsculpture and smoothed punctures, slightly dull, not shining. Scutellum small, rectangular, with rounded angles, shining.

Elytra sub-parallel, very slightly expanded posteriorly behind the middle, shoulders small, not protruding, suture not margined, indistinct, apices simple, not produced contiguous.

Anterior tarsi with distinct comb on the second segment, 1st and 2nd segment taken together in fore- and intermediate legs are 1.5 times shorter than the apical, and the same length as apical in intermediate legs.

Claws elongate, thin and sharp, with small plates at bases.

Apical tergite sinuate at the apex and pointed (Fig. 8); apical sternite as in Fig. 7, with rectangular protuberances on sides near the base. Tegmen as in Fig. 9, with wide processes. Aedeagus shown in Fig. 10, with slightly flattened and strongly prolonged apex, inner sac with 3 strong spines and three groups of small ones near the tip on dorsal side, and near the middle at ventral side.

Length 2.9 mm, width (at elytral base) 1.0 mm.

Female differs from male by the following characters: tarsal comb absent, body strongly expanded just behind

the middle of elytra, looks oval, abdomen enlarged and elongate, not covered by the elytra completely. Pronotum with yellow-orange coloration of base at sides, and narrow yellow margination of lateral sides. Antennae simple and shorter with 3rd and 4th segments of the equal sizes and equilateral triangular in shape, the 1st segment clavate, long, with thin pedicellum.

Length 3.9 mm, width (at elytral base) 1.2 mm.

DIAGNOSIS: From the its congeners, *P. alatauensis* differs by its black coloration and specific in shape 3rd segment of male antennae, yellow tibiae in all legs and other characters given in the key. Yellow coloration of pronotum in some specimens, wider in shape and slightly impressed at base pronotum, and narrow-oval shape of the 3rd antennal segment of male relate this species with *P. apicalis*.

DISTRIBUTION: The species was described from Dzhungar Alatau near Taldy Kurgan in Kazakhstan. This is currently the only region where this species is known to occur (Fig. 11).

Protocollops turanicus (EVERS, 1966), **comb.n.**
(Figs 12-16)

Troglocollops turanicus EVERS 1966f: 105-106; 1987c: 59, 61 (checklist). – Wittmer 1979e: 151.
= *Collops susamirensis* WITTMER, 1992a: 12, 13, 14, Figs 4, 5, **comb.n. et syn.n.**

MATERIAL: Holotype of *Troglocollops turanicus* Ev., female, "Turkestan: Dschilarik, leg. J. Sahlberg. Holotypus" (42°44,5'N 75°48,5'E, H~1250 m a.s.l.) (ZMH); paratype, female, "Turkestan, fluss Tschu, leg. J. Sahlberg" (HUMB); other material: holotype of *Collops susamyrensis* Wittm., male, Kyrgyzstan, Bishkek Province, confluent of Susamyr river, 13.8.1913, Chernavsky leg. (ZISP); paratype of *Collops susamyrensis* Wittm., female, idem, (ZISP).

МАТЕРИАЛ. Голотип *Troglocollops turanicus* Ev., самка, с этикетками: "Turkestan: Dschilarik, leg. J. Sahlberg. Holotypus" (Кыргызстан, Жел-Арык или Джел-Арык, 11 км ЮВВ с. Быстровка (по тракту на Иссык-Куль), в прямой видимости от р. Чу, 42° 44,5' N 75° 48,5' E, около 1250 м н.у.м.) (ZMH); паратип, самка, "Turkestan, Fluss Tschu, leg. J. Sahlberg" (HUMB); голотип *Collops susamyrensis* Wittm., самец, с этикетками: 1) печатная: "Юч Имчик, прит.[ОК] Суссамыр. Пиш[пекского]у.[езда] Чернав.[ский]"

13. VIII.[1]913", 2) печатная, на красной бумаге: "HOLOTYPUS", 3) рукописная на белой бумаге: "*Collops susamirensis* Wittm. det. W. Wittmer" (ЗИИ). Паратип, самка, собрана вместе с голотипом (ЗИИ).

DESCRIPTION: Male (holotype of *Protocollops susamirensis* (Wittmer), damaged, without left intermediate and posterior legs). Body suboval, expanded posteriorly at about the middle. Elytral apices, 1-3 antennal segments, margins of mouthparts, femora and tarsi of all legs yellow, other parts black-brown with slight green metallic lustre. Surface covered with fine short light adpressed hairs, elytra additionally with sparse black erect hairs. 1st antennal segment swollen, triangular, almost completely hiding the 2nd one, the 3rd one (Fig. 12), round, with two impressions and two bunches of hairs, larger on dorsal side, and small one ventrally. Interocular plate on head flat, not marginate on sides, covered with fine white adpressed hairs. Head narrower than the pronotum, with distinct microsculpture, puncturation absent.

Pronotum narrow, transverse, distinctly marginate on sides and at the base, with smoothed puncturation and distinct microsculpture, slightly dull, not shining. Scutellum small, transverse, oval, slightly impressed at the middle.

Elytra suboval, slightly expanded posteriorly from the middle, shoulders distinct and slightly produced, suture marginate, distinct, apices evenly rounded, adjoining. Surface with smoothed puncturation and distinct microsculpture, looks slightly dull, not shining.

Anterior tarsi with very small comb on the second segment, 1st and 2nd segment in anterior legs twice shorter, and in intermediate and posterior legs are the same length as apical. Claws thin elongate and sharp, with distinct plates at the bases.

Apical tergite rounded at the apex (Fig. 14); apical sternite as in Fig. 13, evenly sinuate and rounded at the apex. Aedeagus shown in Fig. 15, with inflated inner sac, possessing 3 strong spines in a middle, and four groups of small ones near the tip on dorsal side, near the middle at ventral side, and near the basal half on ventral side.

Length 3.0 mm, width (at elytral base) 1.1 mm.

Female (holotype of *P. turanicus* (Ev.), and paratype of *P. susamyrensis* (Wittm.)) differs from male by the following characters: tarsal comb absent, body strongly expanded posteriorly from the base of the elytra, first segment of antenna clavate, with thin pedicellum, the 3rd segment small flat, equilateral triangular in shape, yellow coloration of elytral apices narrower.

Length 3.3 mm, width (at elytral base) 1.2 mm.

DIAGNOSIS: From the allied species differs in yellow coloration of tibiae and tarsi, specific shape of the 1st and 3rd antennal segments and the male genitalia.

DISTRIBUTION: Mountains of Kyrgyzstan, bushes near streams and rivers (Fig. 16).

NOTES: *P. turanicus* was described from female collected by J. Sahlberg (John Reinhold Sahlberg, 1845-1920) in Dzhel-Aryk village in Turkestan during expedition trip of K. Mannerheim on the way from Pishpek (Bishkek) to Issyk-Kul' Lake. This area is now part of Kyrgyzstan. *P. susamyrensis* was described from male and two females from the environs of Yuch-Imchik village near Susamyr river in Kyrgyzstan. Females of both species are similar and could not be differentiated by external characters. The similarity of these two species, collected in locations in the same restricted region, indicate they are co-specific and can be synonymized.

Protocollops transiliensis TSHERNYSHEV, **new species**
(Figs 17-22)

MATERIAL: Holotype, male, Kazakhstan, Zailiyskiy Alatau, 25 km SW of Almaty, upper of Almatinskoe Lake, Kumbeltau Mountain Range, h~3300 m a.s.l., 28.6.2006, S.V. Kolov leg. (SZMN), allotype, female, collected together with holotype, (SZMN). Paratypes: 2 males, 2 females, Kazakhstan, Zailiyskiy Alatau, Kumbeltau Mountain Range, h~3300 m a.s.l., 26.7.2003, S.V. Kolov leg. (SZMN); 2 males, Kazakhstan, Zailiyskiy Alatau, Almatinskiy State Reserve, 20 km N of Tolgar, h~2400-2600 m a.s.l., 19.6.1988, L.V. Egorov leg. (SZMN); 1 male, Kazakhstan, Zailiyskiy Alatau, 8 km of Bolshoe Almatinskoe Lake, h~3500 m a.s.l., 16.7.1992, S. Bugrov leg. (ZMUM); 2 males, Kazakhstan, Zailiyskiy Alatau, tract of Prohodnaya River, alpean meadows, h~3200 m a.s.l., 3.7.2002, Boldyreva leg. (SZMN).

МАТЕРИАЛ. ГОЛОТИП, САМЕЦ, С ЭТИКЕТКАМИ: "Казахстан, Заилийский Алатау, 25 км ЮЗ Алма-Аты, выше озера Алмаатинского, хребет Кумбельтау, h~3300 м, 28.6.2006, С.В. Колов" (СЗМН), аллотип, самка, совместно с голотипом (СЗМН). Паратипы: 2 самца, 2 самки, "Казахстан, Заилийский Алатау, хребет Кумбельтау, h~3300 м, 26.7.2003, С.В. Колов" (СЗМН); 2 самца, "Казахстан, Алма-Атинский аповедник, 20 км Сзг.Толгар, h~2400-2600 м н.у.м., 19.6.1988, Л.В.Егоров" (СЗМН); 2 самца, "Казахстан, Заилийский Алатау 8 км от вольшого

Алма-Атинского озера, h~3500 м н.у.м., 16.7.1992, С. Бугров" (СЗМН); 2 самца, "Казахстан, Заилийский Алатау, ущелье реки Проходная, альпийский луг, 3200 м н.у.м., 3.7.2002, Болдырева" (СЗМН).

DESCRIPTION: Holotype, male. Body elongate, narrowed anteriorly, and evenly widened from the base of elytra. Apices of elytra narrowly, 1-3 antennal segments, distal parts of clypeus and labrum, tibiae and tarsi of all legs yellow, other parts black with green-blue metallic lustre. Surface covered with fine and short semierect light hairs, elytra additionally with very short black semierect bristles. 1st antennal segment short, swollen, wide and triangular in shape with produced dorsal angle, the 3rd segment large, round, with two distinct impressions and bunch of hairs dorsally near the base, the 4th segment funnel-shape (Fig. 17). Interocular plate on head flat, slightly impressed, with elevated carinate lateral sides. Head slightly elongate, distinctly narrower than the pronotum, with very dense microsculpture, appearing mat.

Pronotum transverse, evenly rounded on sides, finely marginate, with distinct microsculpture, slightly dull, not shining. Scutellum small, transverse, rectangular in shape.

Elytra suboval, expanded from base to apices, shoulders distinct, slightly protruding, suture marginate, distinct, apices evenly rounded, adjoining.

Anterior tarsi with fine comb on the second segment, 1st and 2nd segment taken together in fore- and intermediate legs are 1.5-2 times shorter than apical; in posterior legs the 1st and 2nd segments a little bit shorter than the apical. Claws thin and sharp, with distinct semi-transparent round plates at the base.

Apical tergite sinuate at the apex and emarginate (Fig. 19); apical sternite as in Fig. 18, strongly sinuate to the apex at about the middle. Tegmen as in Fig. 20, with narrow and curved processes. Aedeagus shown in Fig. 21, with flattened and prolonged apex, and dorsally curved tip of inner sac; inside the aedeagus only two strong spines, one at the base, and another one at the middle.

Length 3.7 mm, width (at elytral base) 1.0 mm.

Female differs from male by the following characters: tarsal comb absent, body strongly expanded and larger, 1st antennal segment clavate, and the 3rd one flat and triangular, interocular plate flat, finely marginate, sides not carinate.

Length 4.2 mm, width (at elytral base) 1.1 mm.

DIAGNOSIS: In the genus *Protocollops* the new species, *P. transiliensis*, is similar to *P. turanicus*, and differs by

distinct puncturation, semilunar yellow apices of elytra, and specific structure of male 3rd antennal segment and the genitalia.

DISTRIBUTION: Zailiiskiy Alatau Mountains of Kazakhstan (Fig. 22).

ETYMOLOGY: The name "*transiliensis*" reflects distribution of the species in the mountains of Zailiiskiy Alatau.

Protocollops bicoloripennis (Pic, 1920), **comb.n.**
(Figs 23-27)

Laius bicoloripennis Pic, 1920a: 21;

Collops bicoloripennis (Pic, 1920): WITTMER 1992a: 12, 13. Fig.2. Siberia.

= *Collops betpakdalensis* MEDVEDEV, 1964: 157; MEDVEDEV, 1980: 117, **comb. et syn.n.**;

= *Troglocollops betpakdalensis* (MEDVEDEV, 1964): EVERS, 1987c: 60, 61. Kazakhstan.

MATERIAL: Holotype of *Laius bicoloripennis* Pic, male, reprepared by Wittmer, labelled: "type", handwritten by Pic "Bodemeyer, Semiritschje, Przewalsk", printed "holotypus", printed and placed by Wittmer "431", handwritten working number placed by Wittmer "*Laius bicoloripennis* Pic", handwritten by Pic "*Collops bicoloripennis* (Pic), det W. Wittmer", handwritten by Wittmer. Holotype of *Collops betpakdalensis* MEDVEDEV, female, labelled: handwritten "уроч. Чекмень-калган, Л.Арнольди, 15.VI.[19]61" (Chekmen'-Kalgan Tract, 15.6.1961, L. Arnoldi leg.), handwritten with blue ink "*Collops betpakdalaensis* m. L.N. Medvedev det. 1962", red type label with printed "Holotypus" and manual inscriptions: "*Collops betpakdalensis* L. Medv."

DESCRIPTION: Holotype, male, damaged, without segments 5-11 of right antenna, tarsi of right leg, and tibia of right intermediate leg. Body slightly elongate, suboval, expanded posteriorly. Apices of elytra, 1-3 antennal segments, and mouthparts partly yellow, other parts dark with blue-green metallic lustre; tarsi and distal parts of tibiae in anterior legs lighter. Surface covered with fine adpressed light hairs, elytra additionally with black erect bristles. 1st antennal segment swollen, enlarged, triangular - shaped, the 3rd one (Fig. 23), quadrate, with bunch of hairs from above, and two transverse impressions. Interocular plate on head flat, not marginate. Head with smooth microsculpture and

puncturation, shining, slightly elongate, narrower than the pronotum.

Pronotum transverse, slightly impressed and sinuate at the base, distinctly marginate, with smoothed microsculpture, and fine sparse puncturation, shining. Scutellum small, trapeziform, slightly elongate, slightly dull, not shining.

Elytra suboval, expanded posteriorly just behind the basal fourth, shoulders distinct, small, not protruding, suture weakly marginate, indistinct, apices evenly rounded, and adjoining.

Anterior tarsi with distinct comb on the second segment, 1st and 2nd segments taken together in hind and intermediate legs equal in length to apical segment, and half as long in anterior legs. Claws thin and sharp, with small distinct plates at the bases.

Apical tergite evenly rounded and sinuate at the apex (Fig. 25); apical sternite as in Fig. 24, triangular-shaped. Aedeagus shown in Fig. 26, with four strong spines in the inner sac, lacking small ones.

Length about 3.0 mm, width (at elytral base) about 1.1 mm.

Female (holotype of *P. betpakdalensis* (Medvedev), damaged, without 3-11 segments of left antenna, and left anterior leg) can be compared with male by the following characters: apices of elytra, 1st, 2nd and ventral sides of 3-6th antennal segments, apical parts of mouth-segments yellow, other body parts black with blue-green metallic lustre, distal half of tibiae and tarsi of anterior legs lighter. 1st antennal segment cylindrical, with wide base, the 3rd equilateral-triangular in shape, the same in size with the 4th segment. Suture distinctly marginate and slightly elevated. Apices of elytra individually rounded, not adjoining.

Length 3.2 mm, width (at elytral base) 1.1 mm.

DIAGNOSIS: From the other species, *P. bicoloripennis* can be distinguished by its dark legs and specific shape of male antennal segments and genitalia. By the quadrate shape of the 3rd antennal segment of male, *P. bicoloripennis* is similar to *P. bulganensis*, *P. yakovlevi* and *P. nigerrimus*.

DISTRIBUTION: The species was described from "Semiritschje, Przewalsk", near the town Przhevalsk in Kyrgyzstan. Terra typica was wrongly given in the description as "Sibérie", this species should be eliminated from the list of Siberian insects, and attributed to Central Asian fauna. Females of *P. betpakdalensis* were collected in Kazakhstan, near Betpak-Dala Mountain (Fig. 27).

NOTES: *P. betpakdalensis* described from females, superficially looks very similar to *P. bicoloripennis*. Similarity of main characters in both species allows synonymize them.

Protocollops bulganensis (EVERS, 1968) **comb.n.**
(Figs 28-33)

Collops bulganensis EVERS, 1968d: 31-32;
Protocollops bulganensis (EVERS, 1968): EVERS, 1991c: 108;
Collops bulganensis (EVERS, 1968): WITTMER 1992a: 12, 13, fig. 3.

MATERIAL: Holotype, female, with printed photo labels "MONGOLIA, Chovd aimak, 10 km SSW von Somon Bulgan, 1200 m Exp. Dr. Z. KASZAB, 1966" and "Nr.628 4-5.VII.1966", printed label on red paper "HOLOTYPUS \$", handwritten on red paper "*Collops bulganensis* EVERS, A.Evers det. 1967" (HMB); paratype, female, labelled: "MONGOLIA, Chovd aimak, 10 km SSW von Somon Bulgan, 1200 m Exp. Dr. Z. KASZAB, 1966", "Nr.628 4-5.VII.1966", "PARATYPUS \$", "*Collops bulganensis* EVERS, A.Evers det. 1967" (HMB); paratype, male, with printed photo labels: "MONGOLIA, Chovd aimak, 10 km SSW von Somon Bulgan, 1200 m Exp. Dr. Z. KASZAB, 1966" and "Nr.632 4-6.VII.1966", printed label on red paper "PARATYPUS", handwritten on red paper "*Collops bulganensis* EVERS, A.Evers det. 1967" (HUMB). Other material: 1 female: "МНР, Кобдос.айм., ур. Цойнджинхгоби, 1100 м No.20, 30.VII.[19]76" (Mongolia, Kobdo aimak, Tsoinjinkhgobi tract, 1100 m, 30.7.1976, coll.-?) (ZISP); 1 female: "МНР, кобдос.а., ур. Елхон, 20 км ЮЗ сом. Алтай, 1200 м, No. 10, 31.7.[19]76; (Mongolia, Kobdo aimak, Elkhon tract, 20 km SW Somon Altai, 1200 m, 31.7.1976m coll.-?) (ZISP); 3 females: "Mongolia, Kobdo aim., 50 km SSW Uench, Utien-Mod Mt., 27.6.1980. G. Medvedev" (ZISP); 1 female: "МОНГОЛИЯ, Кобдосский аймак, 15 км Ю булгана, 29.7.[1]970, Кержнер" (Mongolia, Kobdo aimak, 15 km S Bulgan, 29.7.1970, I.M. Kerzhner leg.) (ZISP); 1 female: "МОНГОЛИЯ, СВ край хр. Их-Хавтгийн-Нуру, Кобдосский аймак, 9.VIII.[1]970, Емельянов" (Mongolia, Kobdo-aimak, NE part of Ikh-Khavtgiin-Nnuru, 9.8.1976, Emelianov leg.) (ZISP).

DESCRIPTION: Paratype, male. Body slightly elongate, suboval, expanded posteriorly. Apices of elytra, 1-3rd and basal half of the 4th antennal segments, tarsi and tibia in anterior, and tarsi and half of tibiae in intermediate legs

yellow, other parts dark with fine green-blue metallic lustre. Dorsal surface covered with fine adpressed light hairs, elytra additionally with black erect bristles. 1st antennal segment swollen, enlarged, triangular in shape, the 3rd one (Fig. 28), trapezoid, with bunch of hairs from above, and two transverse impressions. Interocular plate on head flat, very finely impressed, not marginate. Head with distinct microsculpture and sparse and fine puncturation, shining, elongate, narrower than the pronotum.

Pronotum transverse, slightly impressed and sinuate at the hind angles, distinctly marginate at the base, with dense distinct microsculpture, and sparse puncturation, slightly dull, not shining, covered with fine adpressed brownish hairs. Scutellum small, trapeziform, with rounded angles, slightly dull, not shining.

Elytra suboval, expanded posteriorly at the distal third, shoulders small, distinct, not protruding, suture distinctly marginate, apices evenly rounded, adjoining.

Anterior tarsi with small comb on the second segment, slender, 1st and 2nd segment taken together in hind and intermediate legs are 1.5-1.3 times shorter than apical, and the same length in posterior legs. Claws short, sharp, with distinct plates at the bases.

Apical tergite sinuate to the apex and cut (Fig. 30); apical sternite as in Fig. 29, trapeziform, slightly sinuate at the apex. Tegmen as in Fig. 31, with very wide processes. Aedeagus shown in Fig. 32, sinuate before the tip, and possesses three spines in the inner sac.

Length about 4.0 mm, width (at elytral base) about 1.5 mm.

Female, holotype. In comparison with male differs in the following characters: distal half of tibiae and tarsi of intermediate legs darker; 1st antennal segment cylindrical, with thin base, the 3rd segment triangular, slightly elongate, a little longer than the 4th. Elytra not covering the apex of the abdomen.

Length 5.1 mm, width (at elytral base) 1.8 mm.

DIAGNOSIS: *P. bulganensis* is the largest species of *Protocollops*, typically more than 4 mm in length. Specific coloration of legs, trapeziform 3rd antennal segment and evenly sinuate apical sternite in male differentiate *P. bulganensis* from *P. yakovlevi* sp.n., which also occurs in Mongolia.

DISTRIBUTION: The species was described from Kobdo aimak in environs of Somon Bulgan in Mongolia, and distributed in Mongolian Altai Mountains (Fig. 33).

NOTES. Evers designated male of *P. betpakdalensis* as paratype and kept them in his own collection; one

female from the type series were designated as holotype, and sent to the Budapest museum for deposition. For precise identification of this species, study of paratype is necessary, and more important, than holotype.

Protocollops yakovlevi TSHERNYSHEV, **new species**
(Figs 34-39)

MATERIAL: Holotype, male, provided with printed labels: «MONGOLIA, Bayan-Ulege Aimak, 30 km S of Altai Somon, 2100-2300 m a.s.l., 9.7.2005, R.V. Yakovlev leg.», «MONGOLIA, steppe slopes with *Spirea* sp. and *Rosa* sp. 9.7.2005, R.V. Yakovlev leg.», and, on red paper «Holotypus, #, *Protocollops yakovlevi* sp.n. S.E. Tshernyshev det.» (SZMN). Allotype, female, in copula with holotype, idem (SZMN). Paratypes, 7 males, 9 females with printed photo labels: “Монголия, Баян-Улэгэй айм., р. Их-Джаргалантын-Гол, 20 км СЗ Булгана, 5.7.[1]980, Г. Медведев” (Mongolia, Bayan-Ulegeaimak, Ih-Dzhargalantyn-Gol River, 20 km NW of Bulgan, 5.7.1980. G.S. Megvedev leg.) (ZIN); paratypes: 2 females, “W. MONGOLIA, Hovd aimak, Bulgan-gol basin, Arshantyn-Nuruu Mts., Bayan-gol basin, middle stream of Ulyastain-Sala river, 1700-2300 m, 12.07.2007, E.V. Guskova & R.V. Yakovlev leg.”; 1 male, “W. MONGOLIA, Hovd aimak, Bulgan-gol basin, Dod-Naryjn-Gol Valley, 1500-1700 m, 14.07.2007, E.V. Guskova & R.V. Yakovlev leg.”.

DESCRIPTION: Holotype, male. Body slightly elongate, oval, expanded just behind the middle. Apices and sides of elytra at the middle narrowly, clypeus, 1-3 antennal segments, tarsi of fore legs, and tibiae of fore- and intermediate legs yellow, other parts black with fine green metallic lustre. Surface of dorsal side covered with fine short and adpressed hairs, elytra with double pubescence, fine brownish adpressed, and semierect dark-brown. 1st antennal segment large, swollen, triangular, and slightly funnel in shape, with three impressions and bunch of hairs dorsally near the base (Fig. 34), almost completely covering small round 2nd segment, the 3rd one quadrate. Interocular plate on head slightly impressed, laterally marginate, more distinctly near eyes. Head with distinct microsculpture, slightly elongate, narrower than the pronotum.

Pronotum transverse, evenly rounded on sides, distinctly marginate, with dense microsculpture, slightly dull, not shining. Scutellum small, transverse, rectangular in shape, almost completely covered by pronotum.

Elytra suboval, expanded posteriorly just behind the middle, shoulders smoothed, not protruding, suture not

marginate, apices evenly rounded and adjoining.

Anterior tarsi with a comb on the second segment, 1st and 2nd segment taken together in fore- and intermediate legs are 1.5 times shorter than apical; in posterior legs the same segments are equal to the apical one. Claws short, with distinct elongate plates at the base.

Apical tergite sinuate to the apex, with protruding angles at the base (Fig. 36); apical sternite as in Fig. 35, strongly impressed externally at the base, with rectangular apical part. Tegmen as in Fig. 37, with very wide processes, narrowly emarginate at apex plate. Aedeagus shown in Fig. 38, slender, slightly curved ventrally, with three small spines in a ventral middle part of internal sac.

Length 3.3 mm, width (at elytral base) 1.0 mm.

Female differs from male by the following characters: tarsal comb absent, body distinctly larger and wider, 1st antennal segment clavate, the 3rd one flat and triangular, interocular plate slightly elevate, not marginate on sides.

Length 3.8 mm, width (at elytral base) 1.1 mm.

DIAGNOSIS: From the closely related *P. bulganensis* differs first of all by smaller body size, less than 3.5 mm in length, and the light coloration of sides of elytra at middle. 3rd antennal segment and genitalia of male are also characteristic for this species.

ETYMOLOGY: The species is named after my colleague, lepidopterologist from Barnaul, Dr. Roman Yakovlev, who has collected this new species in Mongolia.

DISTRIBUTION: The species was described from Bajan-Ulege aimak near Somon Kobdo in Mongolia, and distributed in high altitudes of Mongolian Altai Mountains (Fig. 39).

Protocollops nigerrimus (WITTMER, 1992), **comb.n.**
(Figs 40-45)

Collops nigerrimus WITTMER, 1992a: 12, 13, 14-15. Fig.6.1.

MATERIAL: Holotype, male, with labels: printed on old yellowish paper, “Лђв.[ый] прит.[ок] р. Бы-чю, 14.000'. VII.1900. Эксп.[едиция] Козлова” (China, left confluence of By-Chu river, 14.000', July 1900, expedition by Kozlov); printed on red label, “HOLOTYPUS”; and handwritten on white paper, “*Collops nigerrimus* Wittm. det. W. Wittmer”

DESCRIPTION: Holotype, male, damaged, without left antennae, only with two anterior, left intermediate and right posterior legs. Body elongate, narrow, slightly expanded posteriorly. Surface of dorsal and ventral sides is dark with deep-blue metallic lustre. Surface covered with fine short adpressed brown hairs, elytra additionally with short black semierect bristles. 1st antennal segment short, swollen, triangular - shaped, and strongly widened distally, funnel-shape; the 3rd (Fig. 40), quadrate, with four strong impressions and a bunch of hairs distally. Interocular plate on head very slightly impressed in the middle, not marginate on sides and near eyes. Head with very dense puncturation and smooth microsculpture, looks shining, very slightly elongate, and slightly narrower than the pronotum.

Pronotum transverse, narrow, not impressed, distinctly marginate at the base, with smoothed microsculpture and dense rough puncturation, slightly dull, not shining. Scutellum small, transverse, rectangular, slightly emarginate distally, and almost completely hidden by the pronotum.

Elytra suboval, evenly expanded posteriorly, shoulders small, distinct, very slightly protruding, suture marginate, distinct, apices evenly rounded, adjoining. Surface of the elytra very densely and roughly punctured.

Anterior tarsi with strong comb on the second segment, claw segment is the same length as all remaining taken together in anterior legs, and the same length as the 1st in posterior legs. Claws short, sharp, with distinct white plate at the base.

Apical tergite wide, evenly rounded to the apex (Fig. 42); apical sternite as in Fig. 41, strongly sinuate at the base, with double rounded protuberances on sides, and evenly rounded at the tip apical part. Tegmen as in Fig. 43, elongate, with thin at apices and curved inside processes. Aedeagus shown in Fig. 44, slightly curved ventrally possesses six strong spines and three groups of small ones in the inner sac.

Length 3.1 mm, width (at elytral base) 0.9 mm.

Female unknown.

DIAGNOSIS: From the other species of the genus, *P. nigerrimus* differs by its uniform dark coloration, rough and dense puncturation of dorsal surface, and male antennae and genitalia.

DISTRIBUTION: The species was known only from the type locality near BI-Chu river NNW Chamdo in China (Fig. 45).

Acknowledgments

I am sincerely grateful to Dr. Manfred Uhlig and Dr. Bernd Jaeger, curator of Humboldt-University museum collection in Berlin, Germany; Dr. Prof. G.S. Medvedev and Dr. B.A. Korotiaev, ZIN, Saint-Petersburg, Russia; Dr. Otto Merkl, curator of Hungarian museum collection in Budapest, and Dr. N.B. Nikitsky, ZMUM, Moscow, Russia, for sending of type species of *Protocollops* for a loan.

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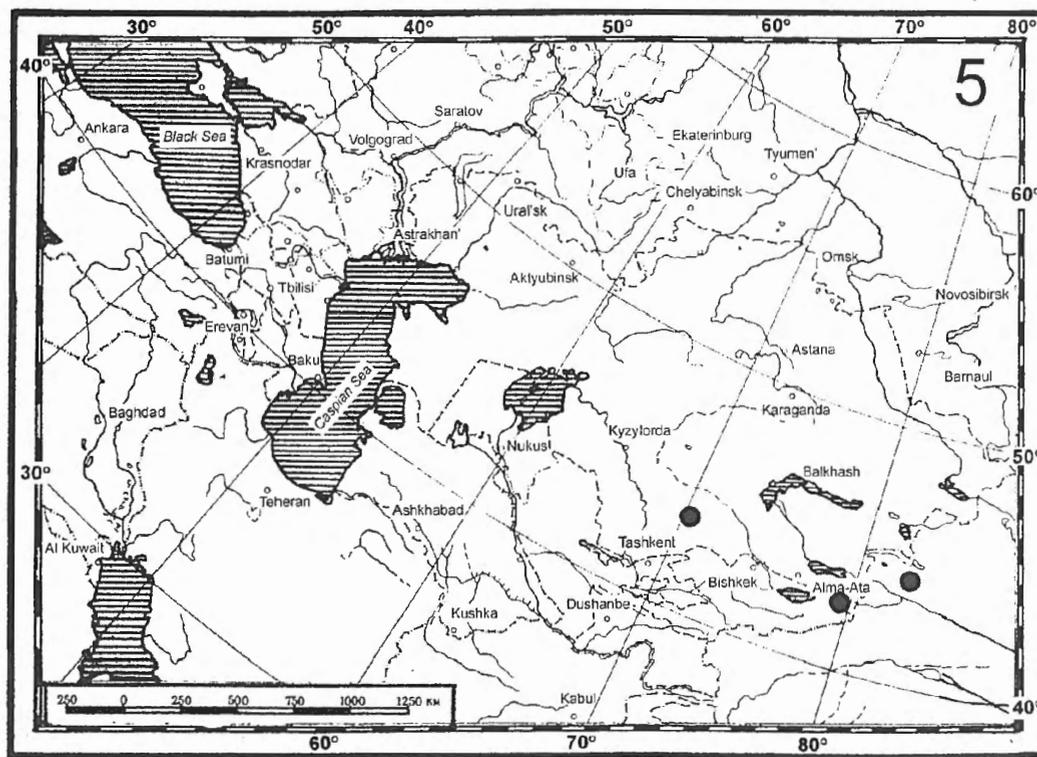
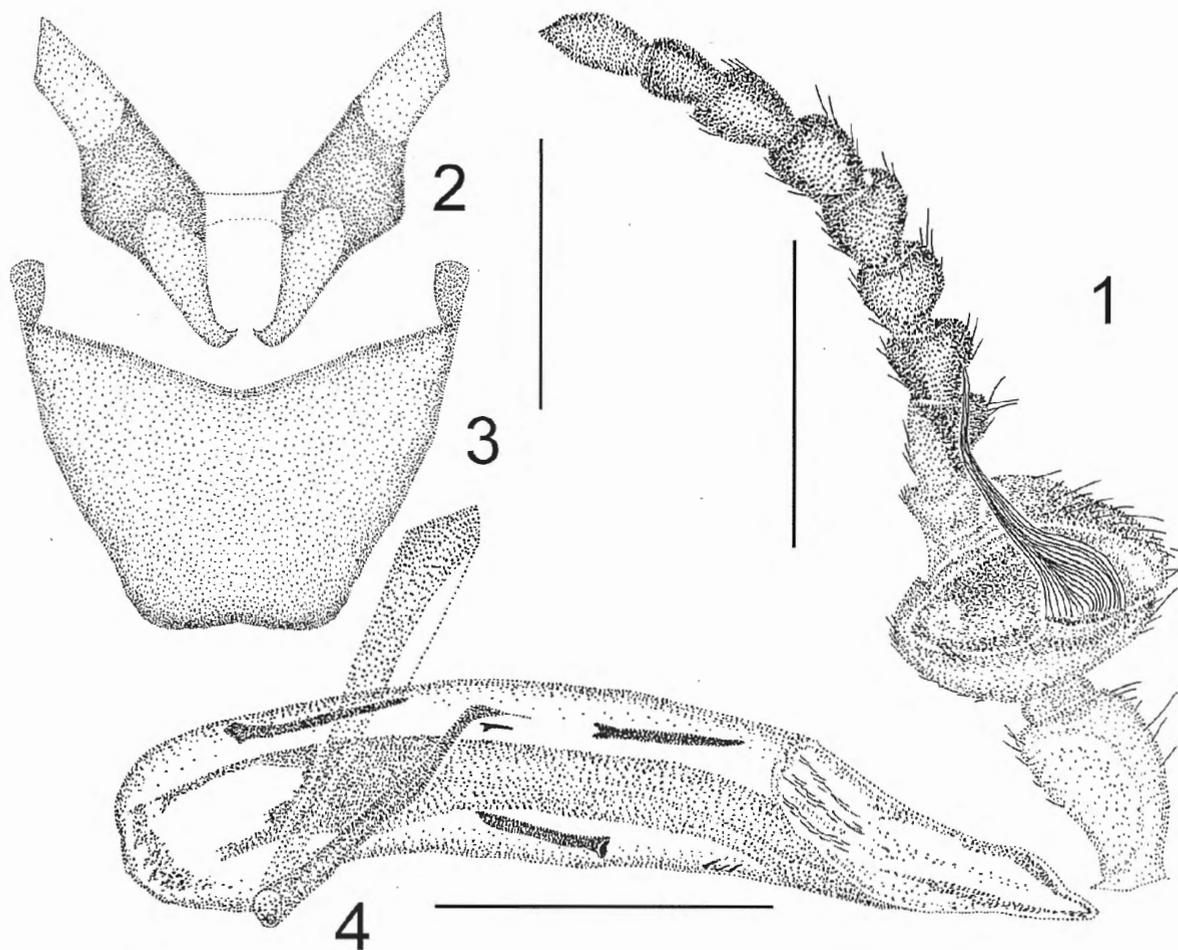
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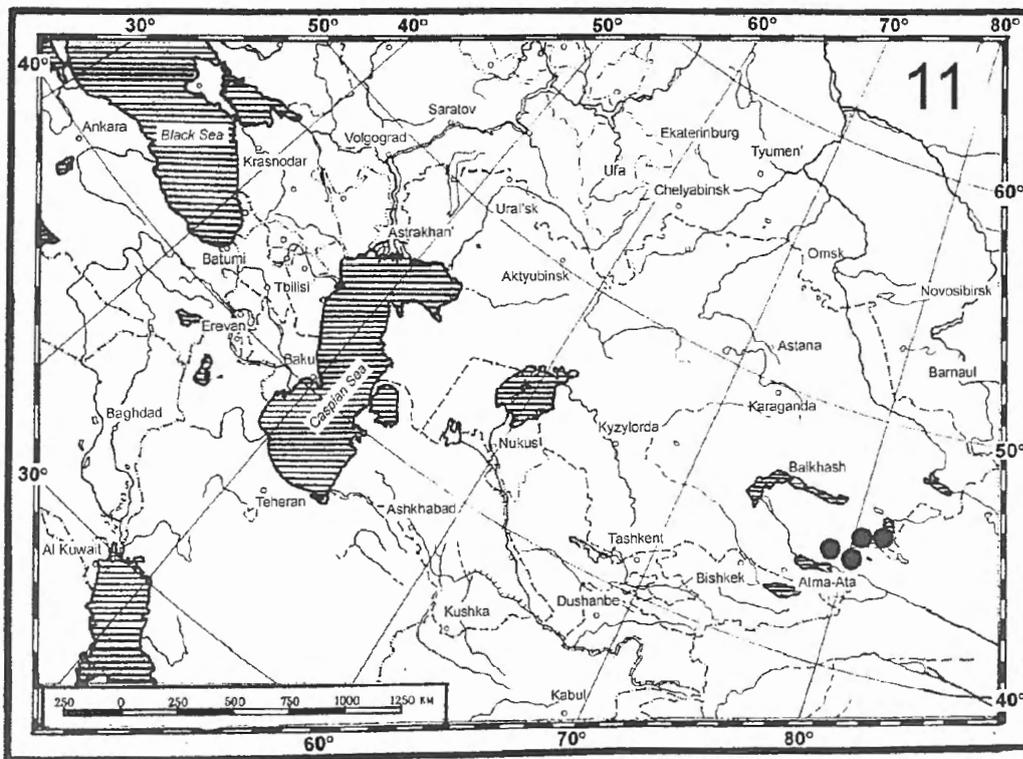
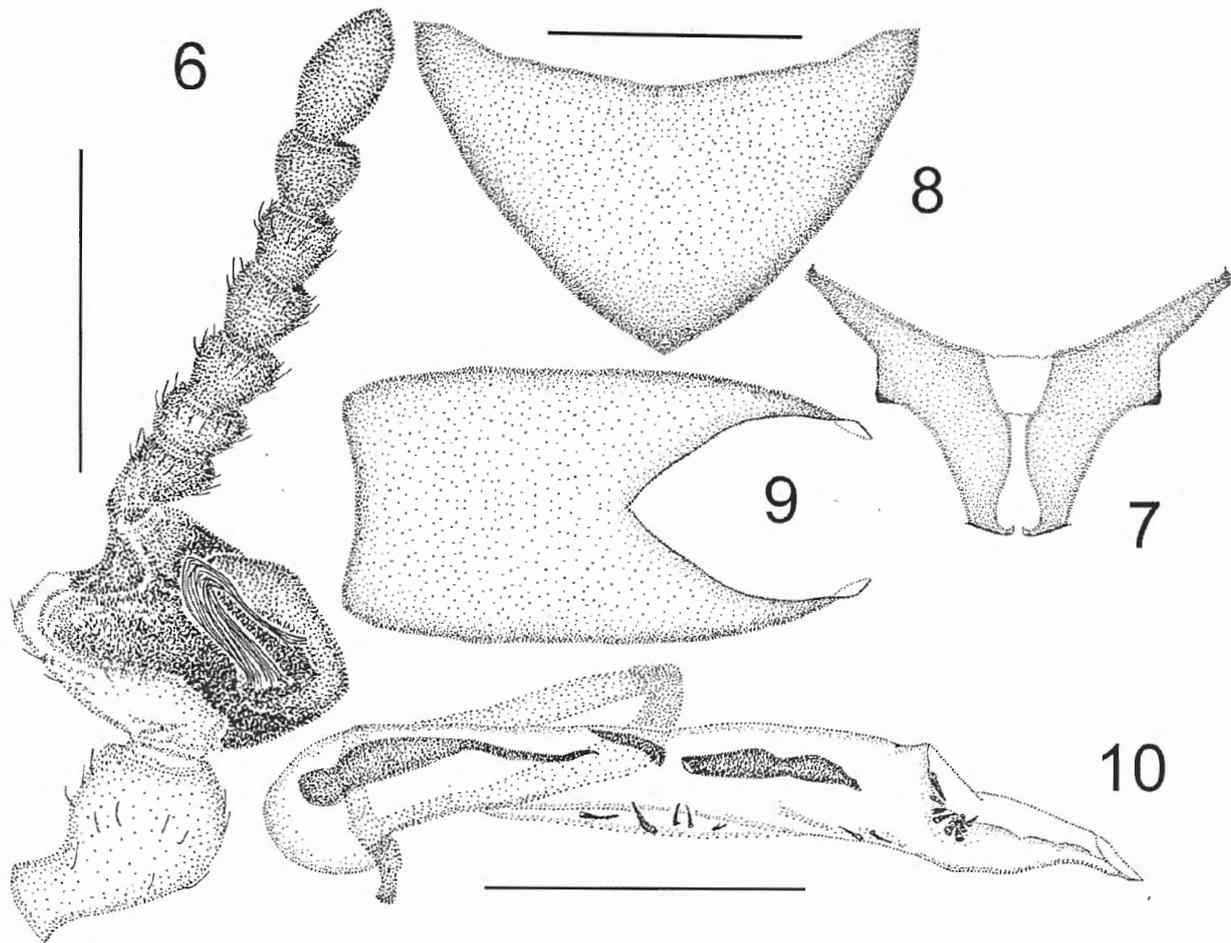
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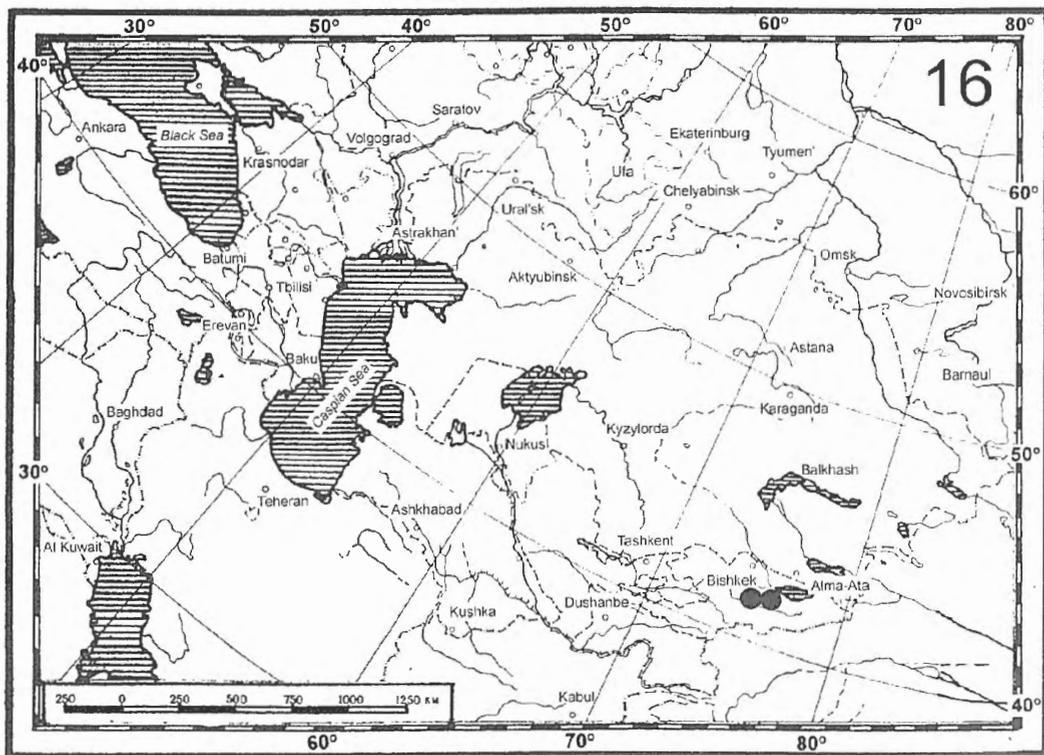
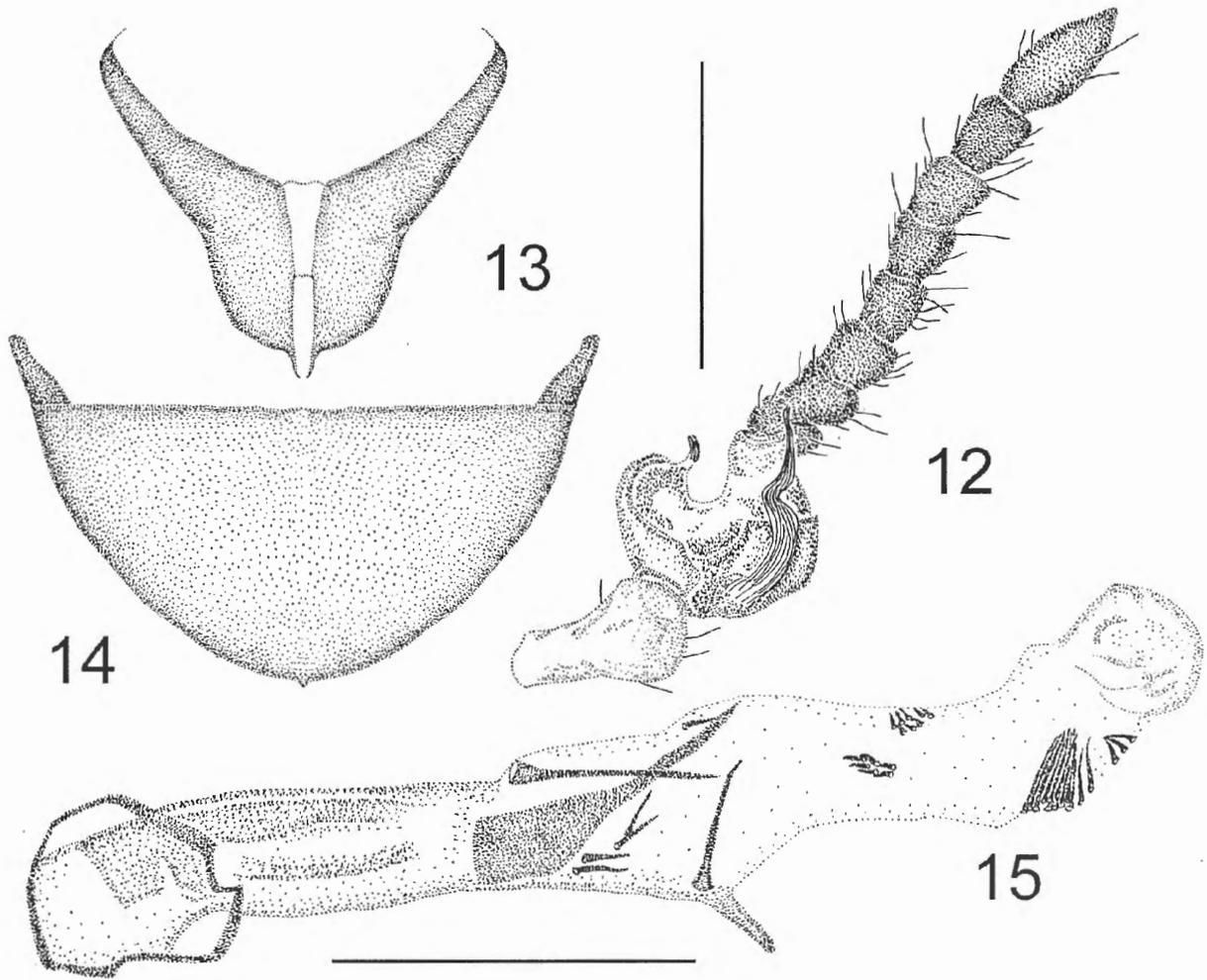
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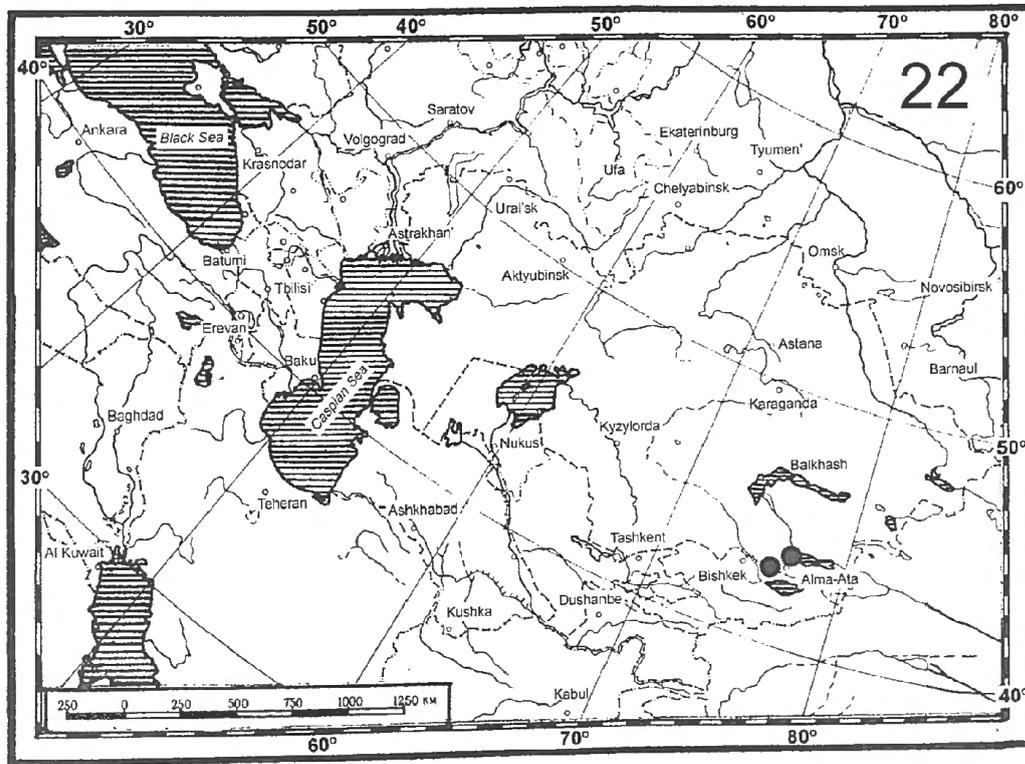
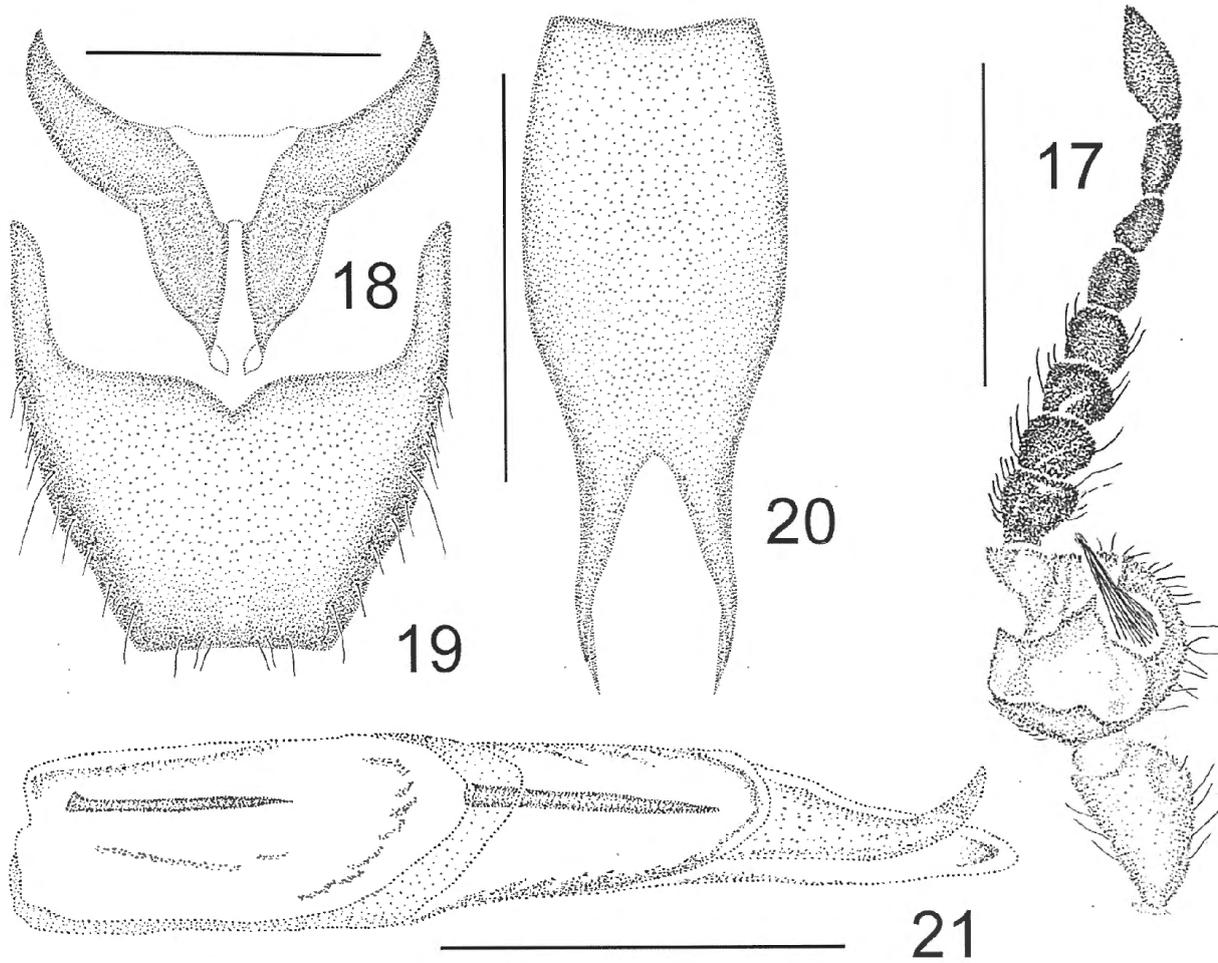
Figs 1-5 – *Protocollops apicalis* (Ball.), male: 1. left antenna. 2. apical sternite. 3. apical tergite. 4. aedeagus, laterally. 5. distribution map. Scale bar 0.5 mm.



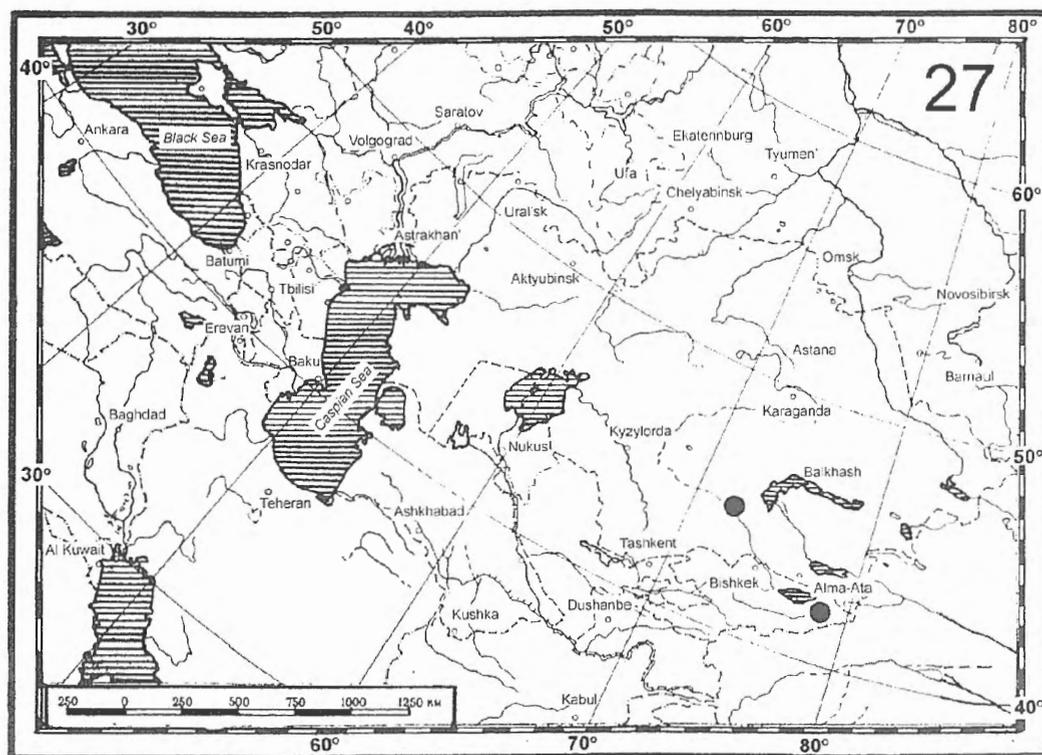
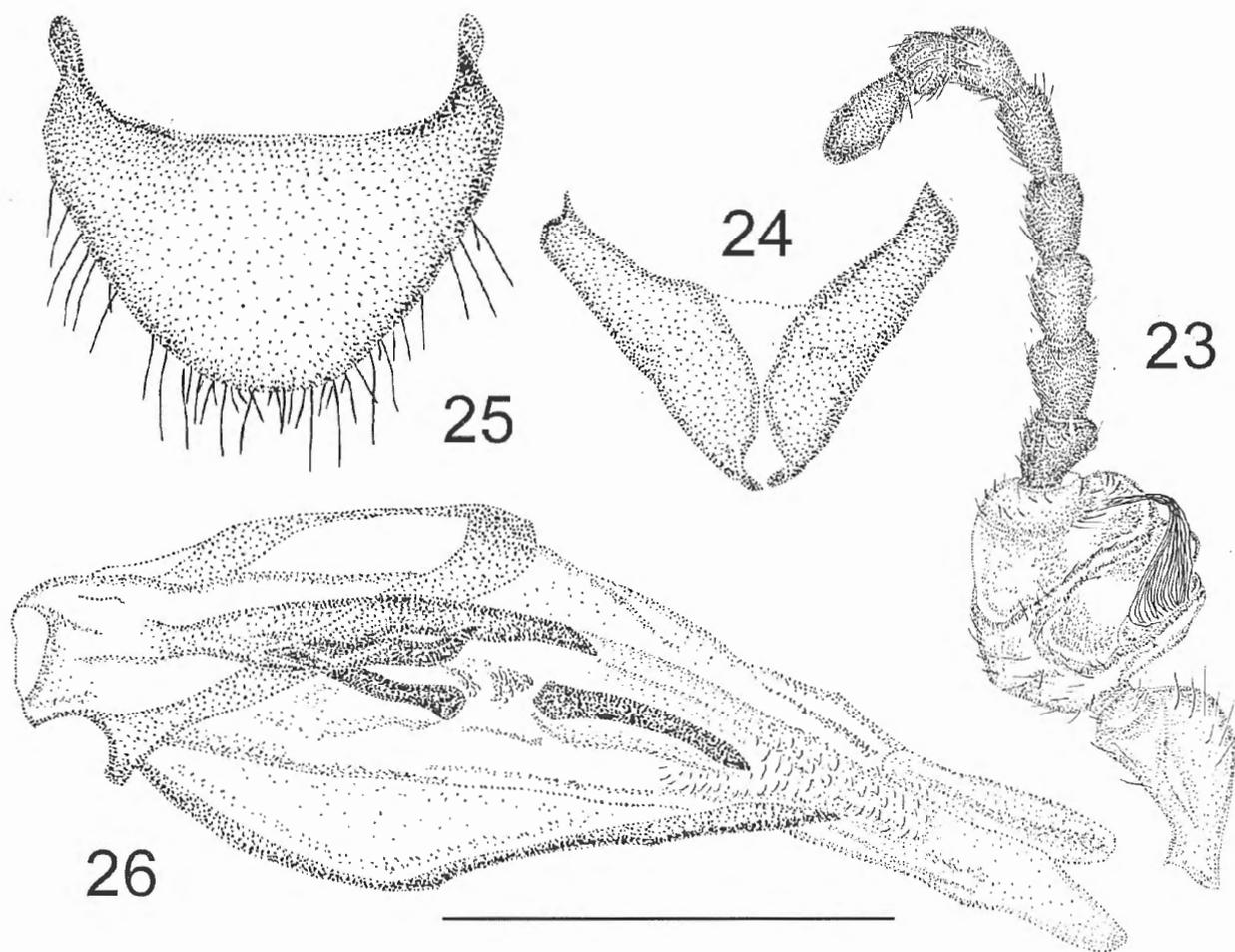
Figs 6-11 – *Protocollops alatauensis* (Wittm.), male: 6. left antenna. 7. apical sternite. 8. apical tergite. 9. tegmen. 10. aedeagus, laterally. 11. distribution map. Scale bar 0.5 mm.



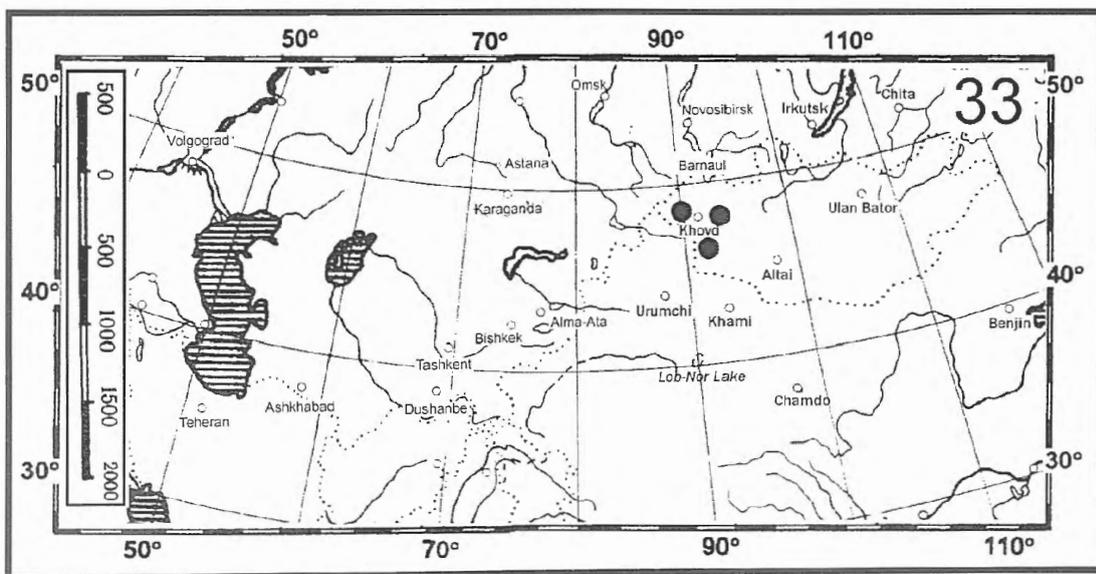
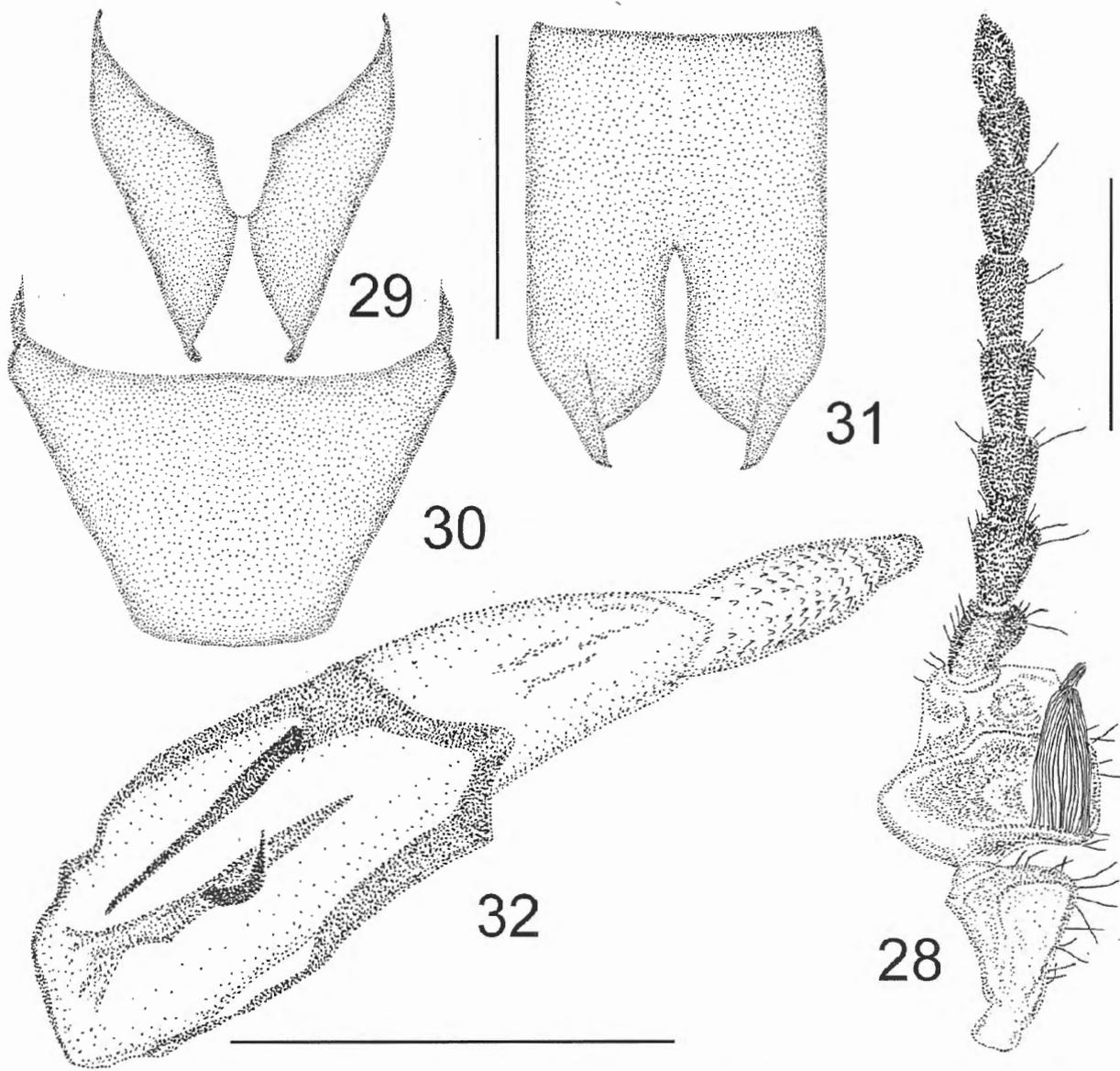
Figs 12-16 – *Protocollops turanicus* (Evers), male: 12. left antenna. 13. apical sternite. 14. apical tergite. 15. aedeagus, laterally. 16. distribution map. Scale bar 0.5 mm.



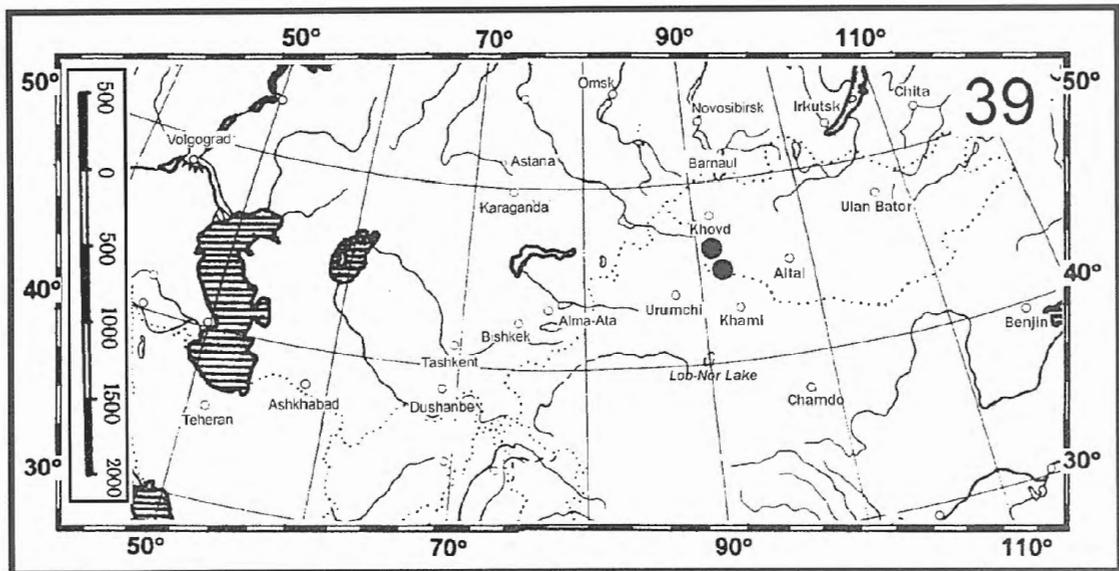
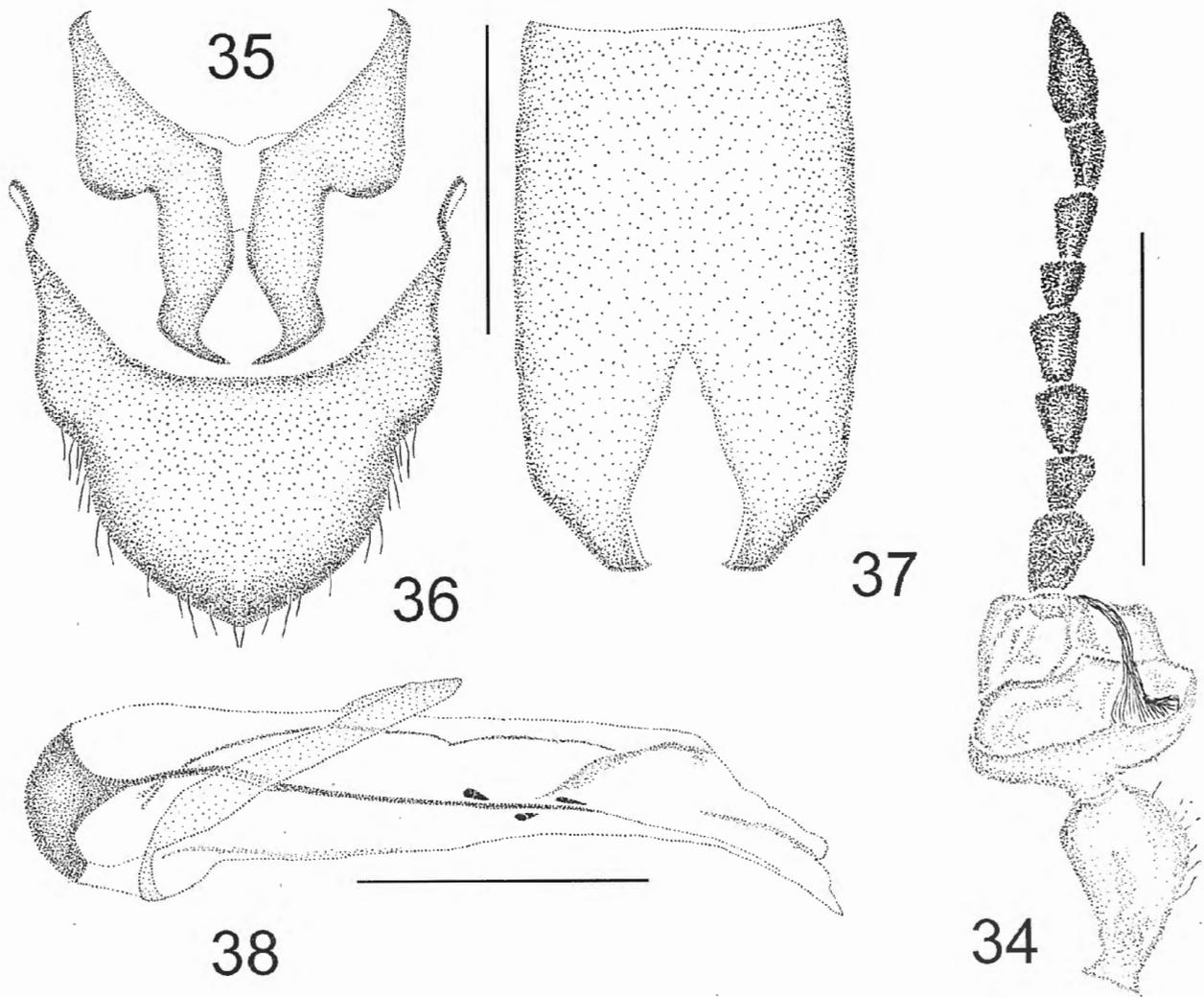
Figs 17-22 – *Protocollops transiliensis* Tshernyshev, sp.n., male: 17. left antenna. 18. apical sternite. 19. apical tergite. 20. tegmen. 21. aedeagus, laterally. 22. distribution map. Scale bar 0.5 mm.



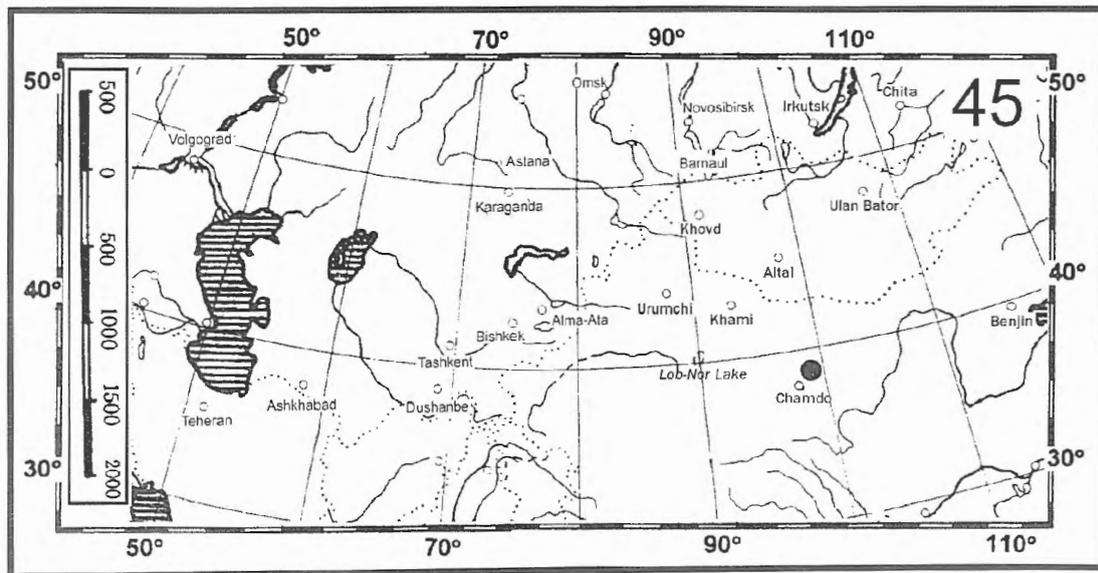
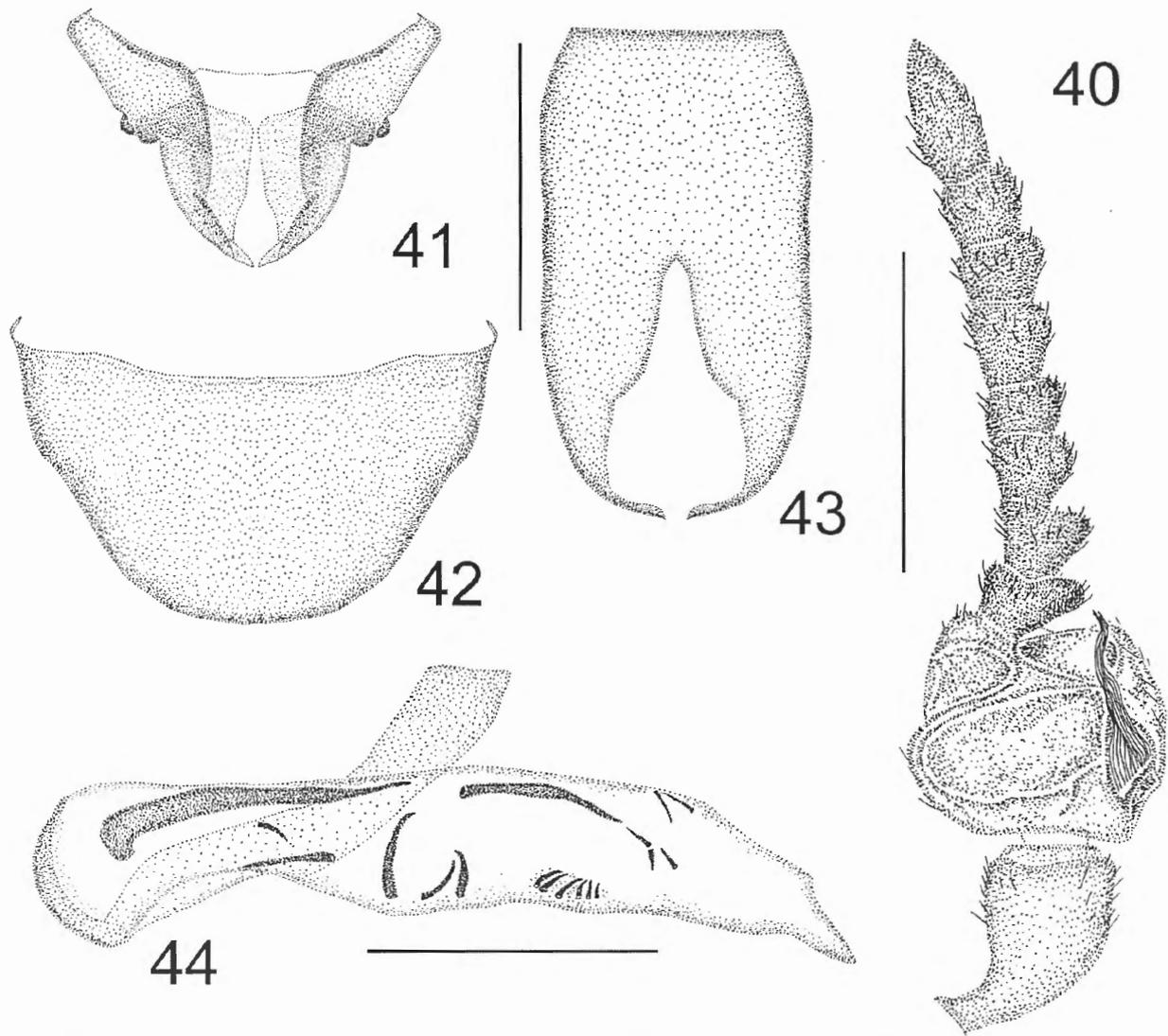
Figs 23-27 – *Protocollops bicoloropennis* (Pic), male: 23. left antenna. 24. apical sternite. 25. apical tergite. 26. aedeagus, laterally. 27. distribution map. Scale bar 0.5 mm.



Figs 28-33 – *Protocollops bulganensis* (Evers), male: 28. left antenna. 29. apical sternite. 30. apical tergite. 31. tegmen. 32. aedeagus, dorsally. 33. distribution map. Scale bar 0.5 mm.



Figs 34-39 – *Protocollops yakovlevi* Tshernyshev, **sp.n.**, male: 34. left antenna. 35. apical sternite. 36. apical tergite. 37. tegmen. 38. aedeagus, laterally. 39. distribution map. Scale bar 0.5 mm.



Figs 40-45 – *Protocollops nigerrimus* (Wittm.), male: 40. left antenna. 41. apical sternite. 42. apical tergite. 43. tegmen. 44. aedeagus, laterally. 45. distribution map. Scale bar 0.5 mm.

