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## The Turkish species of *Geostiba* s. str. THOMSON 1858 (Coleoptera: Staphylinidae, Aleocharinae)

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**A b s t r a c t :** *Geostiba* (s. str.) *taseliensis* sp. n. and *G.* (s. str.) *brachati* sp. n. are described from southern Anatolia (Antalya) and distinguished from related congeners. Diagnostic characters are illustrated and, based on a revision of types and additional material, a key to the Turkish species of *Geostiba* s. str. is presented.

**K e y w o r d s :** Coleoptera, Staphylinidae, Aleocharinae, *Geostiba*, Palaearctic region, Turkey, taxonomy, revision, new species, key to species.

### 1. Introduction

The Western Palaearctic subgenus *Geostiba* s. str. is distributed from Spain to the Caucasus, Crimea, and Iran and currently includes approximately 70 described species. Seven species have so far become known from Turkey (BERNHAEUER 1900, PACE 1993, 1995), a surprisingly low figure when compared to the species diversity in Greece, from where 22 species of *Geostiba* s. str. are known (ASSING 1999, 2000). Consequently, one may assume that the actual number of species occurring in Turkey is much higher and that many further species remain to be discovered. An examination of recently collected material from southern Anatolia and a subsequent comparison with the types of most of the species yielded two new species, which are described below.

### 2. Material

Material from the following collections was examined:

MHNG ..... Muséum d'Histoire Naturelle, Genève (G. Cuccodoro, I. Löbl)

cAss ..... author's private collection

### 3. Species examined and descriptions of new species

#### ***Geostiba* (s. str.) *turcica* (BERNHAEUER 1900)**

*Sipalia turcica* BERNHAEUER 1900: 535f.

**M a t e r i a l e x a m i n e d :** 4♂♂, 6♀♀, Istanbul, "Forêt de Belgrade", 4.VI.1967, leg. Besuchet (MHNG).

The specimens were collected in the type locality and are in agreement with the original description.

#### ***Geostiba* (s. str.) *iconiensis* PACE 1983**

*Geostiba* (s. str.) *iconiensis* PACE 1983: 8.

**T y p e s e x a m i n e d :** Holotype ♂: Turquie, Konya, Sertavul Gesidi, 1500-1600m, 28.IV.1978, Besuchet Löbl / HOLOTYPUS *Geostiba iconiensis* m. det. R. Pace, 1981 / *Geostiba iconiensis* n. sp. det. R. Pace 1981 (MHNG). Paratypes: 2♂♂: same data as holotype (MHNG).

#### ***Geostiba* (s. str.) *simulans* PACE 1983**

*Geostiba* (s. str.) *simulans* PACE 1983: 10.

**T y p e s e x a m i n e d :** Holotype ♂: Turquie, Antakya, Kışlak-Şenköy, 800-850m, 2.V.78, Besuchet Löbl / HOLOTYPUS *Geostiba simulans* m. det. R. Pace, 1981 / *Geostiba simulans* n. sp. det. R. Pace 1981 (MHNG). Paratype: 1♀: same data as holotype (MHNG).

#### ***Geostiba* (s. str.) *arganthonia* PACE 1983**

*Geostiba* (s. str.) *arganthonia* PACE 1983: 10ff.

**T y p e s e x a m i n e d :** Holotype ♂: Turquie, Istanbul, Yalova-Orhangazi, II.V.76, Cl. Besuchet / HOLOTYPUS *Geostiba arganthonia* m. det. R. Pace, 1981 / *Geostiba arganthonia* n. sp. det. R. Pace 1981 (MHNG). Paratypes: 7♂♂, 10♀♀: same data as holotype (MHNG, cAss).

#### ***Geostiba* (s. str.) *kastamonuensis* PACE 1983 (Figs 1-4)**

*Geostiba* (s. str.) *kastamonuensis* PACE 1983: 12.

**T y p e s e x a m i n e d :** Holotype ♂: Turquie, Kastamonu, Ilgazdağ près du col, 17.V.76, 1700-1800m, Besuchet Löbl / HOLOTYPUS *Geostiba kastamonuensis* m. det. R. Pace, 1981 / *Geostiba kastamonuensis* n. sp. det. R. Pace 1981 (MHNG). Paratypes: 2♂♂, 3♀♀: same data as holotype (MHNG).

**A d d i t i o n a l m a t e r i a l e x a m i n e d :** 1♂, 2♀♀: Turquie, Kastamonu, Ilgazdağ 15km N. de Tosya, 1600-1700m, 19.V.76, Besuchet Löbl (MHNG, cAss).

The drawings and description of the ♂ primary and secondary sexual characters in PACE (1983) are based on small ♂♂, in which these characters are somewhat reduced. The shape of the pronotum, the process of the ♂ tergum VII, and the cristal process of the median lobe of the aedeagus of a large ♂ are illustrated in Figs 1-4.

#### ***Geostiba* (s. str.) *attaleensis* PACE 1983**

*Geostiba* (s. str.) *attaleensis* PACE 1983: 12ff.

**T y p e e x a m i n e d :** Holotype ♀: Turquie, Antalya, Topraktepe, 200m, 8.V.78, Besuchet

Löbl / HOLOTYPUS *Geostiba attaleensis* m. det. R. Pace, 1981 / *Geostiba attaleensis* n. sp. det. R. Pace 1981 (MHNG).

The original description of this species unfortunately relies only on a female specimen. Since species of *Geostiba* s. str. are generally characterized and distinguished based on the ♂ primary and especially the secondary sexual characters, which are usually pronounced only in larger ♂♂, the identity of this species will remain doubtful until ♂♂ from the type locality (ca. 35 km northwest of Alanya) become available.

***Geostiba* (s. str.) *pontica* PACE 1996**

*Geostiba* (s. str.) *pontica* PACE 1996: 18.

The original description of *G. pontica* is based on a single ♂, which is deposited in the currently inaccessible collection of H. Franz, Mödling. For the comparative notes and the key below, the details in the description and the illustrations in PACE (1996) had to be relied on.

***Geostiba* (s. str.) *taseliensis* sp. n. (Figs 5-9)**

H o l o t y p e ♂ : N36°21' E032°56', Türkei, Umg. Anamur, Abanoz, 1240m, Meybohm, 19.5.2000 / Holotypus ♂ *Geostiba taseliensis* sp. n. det. V. Assing 2000 (cAss).

D e s c r i p t i o n : In size and coloration similar to other Turkish species of the subgenus. Pronotum and elytra reddish brown; head brown; abdomen anteriorly reddish brown and gradually darkened posteriorly; legs and mouthparts testaceous; antennae brown with the basal antennomeres slightly lighter.

Head slender, 1.15x as long (measured from anterior margin of clypeus to posterior suture) as wide; eyes of similar size as in *G. turcica*, not distinctly projecting from lateral outline of head; isodiametric microsculpture extremely shallow, almost obsolete, integument therefore very shining; antennae relatively long and slender, antennomere X less transverse than in *G. turcica*.

Pronotum slender, slightly wider than head; microsculpture similar to that of head and very shallow, surface distinctly shining; presumably with distinct sexual dimorphism, in ♂ oblong, ca. 1.1x as long as wide, and posteriorly pointed (Fig. 5).

Elytra slightly wider than pronotum, shining, and with distinctive ♂ modifications: near apex of scutellum with short sutural carinae, near posterior angles with short, but sharply elevated folds, central posterior area with pronounced and extensive diagonal impression; puncturation distinctly granulose (Fig. 5).

Abdomen with shallow microsculpture predominantly composed of rather large and short transverse meshes; puncturation, especially that of terga V-VII, very sparse and fine.

♂: terga III-V unmodified; tergum VII with wide-based and apically obtuse (anterodorsal view), massive (lateral view) process near posterior margin; posterior margin of tergum VIII weakly convex, that of sternum VIII indistinctly pointed (Fig. 9); median lobe of aedeagus and apical lobe of paramere as in Figs 6-8.

♀: unknown.

D e r i v a t i o n o m i n i s : The name is derived from the Taşeli Yaylasi, the mountain range where the holotype was collected.

**Comparative notes:** From all other Turkish congeners of the subgenus, *G. taseliensis* is readily distinguished by the characteristic modifications of the ♂ elytra. From those Turkish species, in which the ♂ pronotum is posteriorly not concave or truncate, but more or less pointed or rounded (*G. arganthonia*, *G. kastamonuensis*, *G. simulans*, *G. pontica*), it additionally differs in the weaker microsculpture and more distinct shine of the forebody, moreover in the somewhat longer antennae, the less transverse antennomere X, the more massive process of the ♂ tergum VII (*G. arganthonia*, *G. kastamonuensis*, *G. simulans*), the more slender pronotum (*G. arganthonia*, *G. kastamonuensis*, *G. pontica*), the unmodified ♂ terga III-V (*G. pontica*), and the morphology of the median lobe of the aedeagus. *G. attaleensis*, whose description is based on a single ♀, has a broader head, a posteriorly weakly concave pronotum (suggesting that this character may be even more pronounced in ♂♂), shorter antennae, and a denser and more distinct puncturation of the abdomen, especially of tergum V.

**Distribution and bionomics:** The holotype was collected in the Taşeli Yaylasi, north of Anamur, Antalya, where it was sifted from moist plant debris at the northern side of rocks at an altitude of 1240m.

***Geostiba* (s. str.) *brachati* sp. n. (Figs 10-16)**

**Holotype** ♂: TR-Südküste, Umgeb.: Antalya, Saklikent; 1900m, 10.5.2000, Meybohm/Brachat / Holotypus ♂ *Geostiba brachati* sp. n. det. V. Assing 2000 (cAss). **Paratype** ♀: same data as holotype (cAss).

**Description:** In size and coloration similar to *G. taseliensis*.

Head weakly oblong, 1.05x as long (measured from anterior margin of clypeus to posterior suture) as wide; integument with distinct microreticulation and reduced shine; eyes and antennae as in *G. taseliensis*.

Pronotum approximately as long as wide or indistinctly oblong, microsculpture similar to that of head; with distinct sexual dimorphism: posterior margin in ♂ broadly projecting and concave (Fig. 10), in ♀ weakly convex, smoothly rounded.

Elytra of similar shape and relative width as in *G. taseliensis*; surface with distinct microreticulation and reduced shine; in ♂ with short sutural carinae near apex of scutellum (Fig. 10), weakly pronounced impressions, and with denser and less distinctly granulose puncturation than in *G. taseliensis*; in ♀ with very shallow impressions and less distinct puncturation.

Abdomen with very fine and sparse puncturation; microsculpture distinct, predominantly composed of short transverse meshes.

♂: terga III and IV with smooth, subcircular median tubercles near anterior impressions; tergum VII with short and wide-based, apically very acute process near posterior margin; tergum VIII weakly convex posteriorly; hind margin of sternum VIII obtusely pointed (Fig. 15); median lobe of aedeagus with fine and relatively short cristal process (Figs 11-12); apical lobe of paramere as in Fig. 13.

♀: posterior margin of tergum VIII moderately, that of sternum VIII weakly convex (Fig. 16); spermatheca as in Fig. 14.

**Derivatio nominis:** I dedicate this species to Volker Brachat, Geretsried, who, together with Heinrich Meybohm, collected this and the preceding species during their most successful excursion to southern Anatolia in spring 2000.

**Comparative notes:** In *G. pontica* from northern Anatolia, the only further Turkish representative of *Geostiba* s. str. with tubercles on the ♂ terga III and IV, the ♂ pronotum is posteriorly weakly pointed (not concave or truncate), the process of the ♂ tergum VII is less acute, and the median lobe of the aedeagus is of different shape (see figures in PACE 1996). *G. brachati* shares a posteriorly broadly truncate or broadly concave ♂ pronotum only with *G. turcica* and *G. iconiensis*. The former differs in the more transverse antennomeres V-X, the modifications of the ♂ elytra (more pronounced and longer sutural carinae, much more strongly granulose puncturation, deeper and more extensive impressions), and in the process of the ♂ tergum VII being located at a short distance anterior to the posterior tergal margin. In *G. iconiensis*, the posterior projection of the ♂ pronotum is much more pronounced, the modifications of the ♂ elytra are completely different (much more strongly and extensively impressed, with distinctly bulging lateral margins, more pronounced sutural carinae, more strongly granulose puncturation), the puncturation of the abdomen is denser and more distinct, and the process of the ♂ tergum VII is longer, broader, and apically less acute. From both *G. turcica* and *G. iconiensis*, *G. brachati* is additionally distinguished by the morphology of the aedeagus. In *G. attaleensis*, whose male sexual characters are unknown, the microsculpture of the forebody is much weaker and the puncturation of the elytra and the abdomen is denser and more distinct.

**Distribution and bionomics:** The types were collected in the Bey dağları, southwest of Antalya, where they were found under stones in an alpine meadow at an altitude of 1900m.

#### 4. Key to the Turkish species of *Geostiba* s. str.

The following key includes all the known Turkish species of the subgenus except for *G. attaleensis* (type locality near Alanya), whose ♂ primary and secondary characters, which are essential for a distinction of *Geostiba* s. str., are unknown.

1. ♂: posterior margin of pronotum broadly truncate or (broadly or narrowly) concave in the middle (large ♂♂). (Note that in small ♂♂ of *G. kastamonuensis*, a species with a distinctive cristal process of the median lobe of the aedeagus (Fig. 2), the pronotal hind margin is smoothly convex.).....2
- ♂: posterior margin of pronotum weakly to distinctly pointed or smoothly convex, not truncate or concave. ....5
2. Abdomen with very fine and sparse puncturation. ♂: abdominal terga III and IV each with smooth subcircular tubercle near anterior impression; shape of pronotum as in Fig. 10; elytra with weakly granulose puncturation and with very shallow impressions; aedeagus as in Figs 11-12. Southern Anatolia (Antalya). .....*G. brachati* sp. n.
- Abdomen with denser and more distinct puncturation. ♂: abdominal terga III and IV unmodified; elytra with distinctly granulose puncturation and with deep and extensive impressions. Species from northern Turkey (Thrace, northern Anatolia) or from Konya.....3
3. ♂: pronotum (in large ♂♂!) distinctly oblong, more or less extensively depressed, strongly projecting posteriorly, and with broadly and distinctly concave hind margin (see figure 1 in PACE 1983); elytra with bulging lateral margins; process of tergum VII wide-based, apically rounded, and in lateral view rather slender; for illustrations of the aedeagus see figures 2 and 3 in PACE (1983). Southern Anatolia (Konya).....*G. iconiensis* PACE

- ♂: pronotum not depressed, either less oblong or with posterior margin of different shape; lateral margins of elytra not distinctly bulging. Species from northern Turkey (Thrace, northern Anatolia) .....4
- 4. ♂: pronotum (in large ♂ ♂!) more oblong and more strongly projecting posteriorly, its posterior margin in the middle more narrowly concave (Fig. 1); elytra with longer sutural carinae; process of tergum VII in antero-dorsal view more slender and apically rounded, in lateral view more massive (Figs 3-4); aedeagus with cristal process of median lobe of characteristic shape (Fig. 2; see also figure 25 in PACE 1983). Northern Anatolia (Kastamonu) ..... *G. kastamonuensis* PACE
- ♂: pronotum less oblong and less strongly projecting posteriorly, its hind margin in the middle truncate or broadly concave; elytra with short sutural carinae; process of tergum VII in antero-dorsal view of triangular shape, wide-based and apically acute, in lateral view more slender; aedeagus with cristal process of median lobe very short and thin. Thrace (surroundings of Istanbul) ..... *G. turcica* (BERNHAEUER)
- 5. ♂: terga III-V with median tubercle near anterior impression; for illustrations of the aedeagus see PACE (1996). Northeastern Anatolia (Rize) ..... *G. pontica* PACE
- ♂: terga III-V unmodified. Distribution different .....6
- 6. Forebody very shiny; microsculpture almost obsolete. ♂: pronotum posteriorly distinctly pointed (Fig. 5); elytra with deep impressions and with short, but strongly elevated distinctive folds near posterior angles (Fig. 5); process of tergum VII very erect, in antero-ventral view of triangular shape and apically rounded; aedeagus as in Figs 6-7. Southern Anatolia (Antalya, north of Anamur) ..... *G. tseliensis* sp. n.
- Forebody with more distinct microreticulation and less shine; pronotum without or with very weak sexual dimorphism. ♂: pronotum posteriorly weakly pointed or smoothly rounded; elytra with, at most, shallow impressions and without fold-like elevations near posterior angles; process of tergum VII either shorter and less erect, or very long and spine-like. Distribution different .....7
- 7. ♂: Larger species; pronotum approximately as wide as long or weakly transverse, ca. 1.3 times as wide as head, without appreciable sexual dimorphism, posterior margin in both sexes smoothly convex. ♂: elytra with shallow impressions and with denser, distinctly granulose puncturation; process of tergum VII short and very weakly erect; aedeagus with cristal process of median lobe extremely short. (For illustrations of the facies and the sexual characters see figures 18-23 in PACE (1983).) Northwestern Turkey (Istanbul) ..... *G. arganthonia* PACE
- ♂: Smaller species; pronotum weakly transverse, with weak sexual dimorphism. ♂: pronotum obtusely pointed posteriorly; elytra without appreciable impressions and with sparse, weakly granulose puncturation; process of tergum VII very long, slender, and apically acute (shaped like a sharp spine); aedeagus with cristal process of median lobe much longer and of different shape. (For illustrations of the facies and the sexual characters see figures 12-17 in PACE (1983).) Southern Anatolia (Antakya) .....  
..... *G. simulans* PACE

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I am most grateful to Giulio Cuccodoro and Ivan Löbl (MHNG) for the loan of the type and non-type material under their care as well as to Volker Brachat, Geretsried, and Heinrich Meybohm, Stelle, for the generous gift of their staphylinid by-catches from southern Anatolia.

### Zusammenfassung

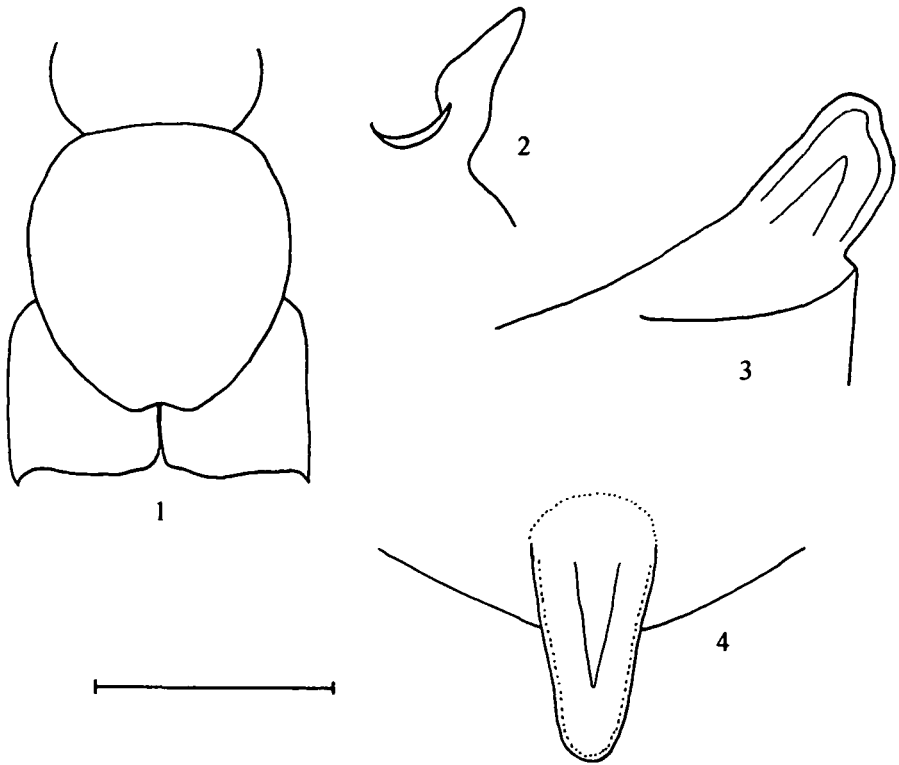
*Geostiba* (s. str.) *tseliensis* sp. n. und *G.* (s. str.) *brachati* sp. n. werden aus dem südlichen Anatolien (Antalya) beschrieben und von verwandten Arten unterschieden. Differentialmerkmale werden abgebildet. Auf der Grundlage einer Revision von Typen und weiterem Material wird eine Bestimmungstabelle für die türkischen Arten der Untergattung *Geostiba* s. str. erstellt.

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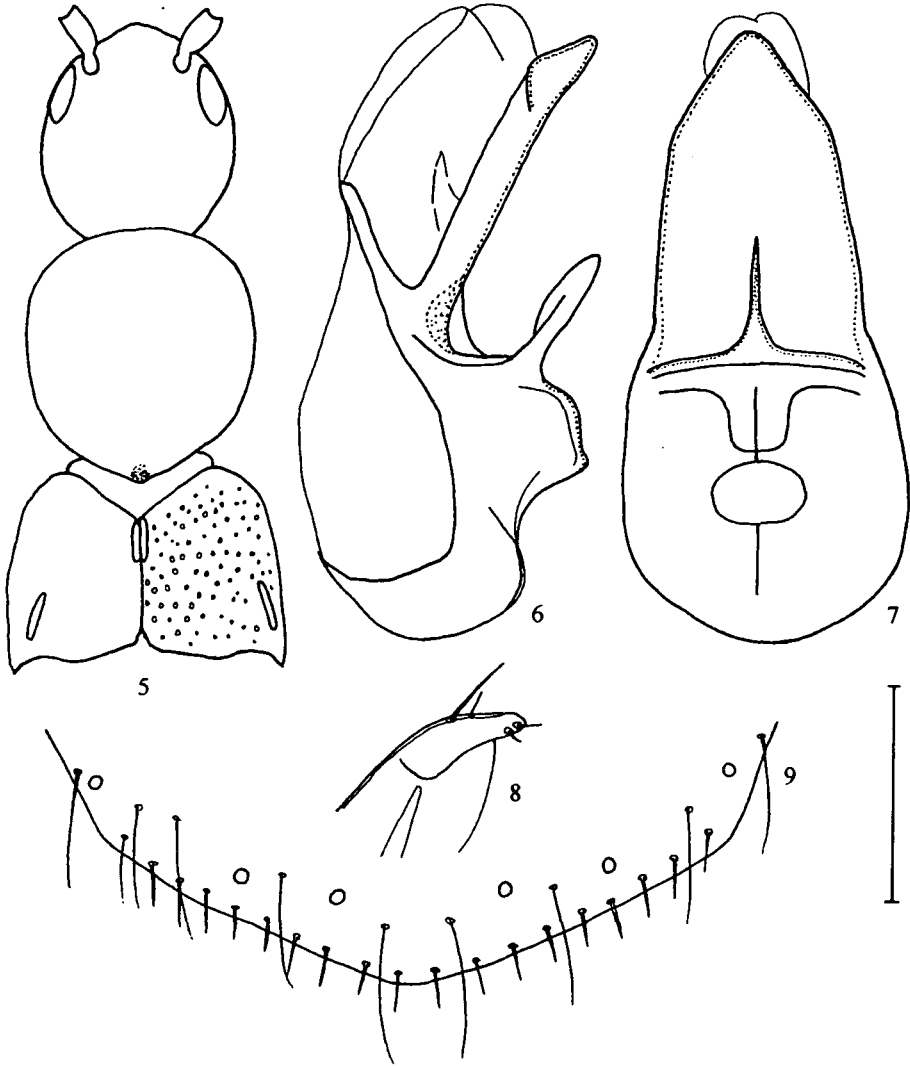
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**Figs 1-4:** *Geostiba kastamonuensis* PACE: 1 – outline of ♂ pronotum and elytra; 2 – cristal process of median lobe of aedeagus in lateral view; 3 – process of ♂ tergum VII in lateral view; 4 – process of ♂ tergum VII in antero-dorsal view. Scale: 0.1 mm; 1 without scale.

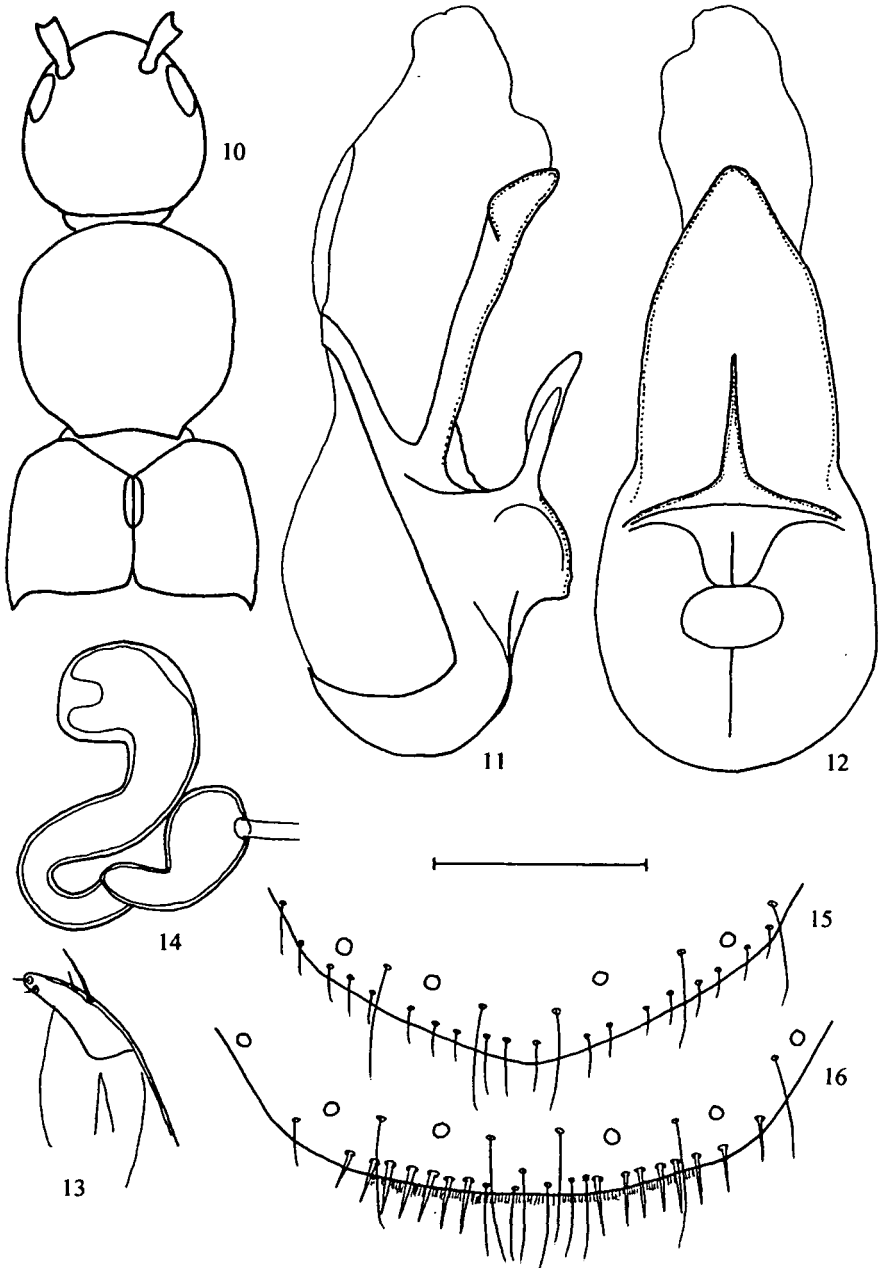


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**Figs 5-9:** *Geostiba taseliensis* sp. n.: 5 – outline of ♂ forebody; 6, 7 – median lobe of aedeagus in lateral and in ventral view; 8 – apical lobe of paramere; 9 – posterior margin of ♂ sternum VIII (long setae omitted). Scale: 0.1 mm; 5 without scale.

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**Figs 10-16:** *Geostiba brachati* sp. n.: 10 – outline of ♂ forebody; 11, 12 – median lobe of aedeagus in lateral and in ventral view; 13 – apical lobe of paramere; 14 – spermatheca; 15 – posterior margin of ♂ sternum VIII (long setae omitted); 16 – posterior margin of ♀ sternum VIII (long setae omitted). Scale: 0.1 mm; 10 without scale.

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