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New species and new records of Eastern Mediterranean *Geostiba* THOMSON (Coleoptera: Staphylinidae, Aleocharinae)

V. ASSING

A b s t r a c t : Based on recently collected material, seven species of *Geostiba* from Greece and Turkey are described and illustrated: *G.* (*Tropogastrosipalia*) *nemrutica* sp.n. (S-Turkey: Adıyaman), *G.* (*T.*) *dibekiana* sp.n. (S-Turkey: Adana), *G.* (*Sipalotricha*) *varnousica* sp.n. (N-Greece: Varnous Oros), *G.* (*Sibiota*) *asperipennis* sp.n. (S-Turkey: Adıyaman), *G. gibbera* sp.n. (S-Turkey: Kahramanmaraş), *G. bigibbera* sp.n. (S-Turkey: Kahramanmaraş), and *G. excepta* sp.n. (S-Turkey: Osmaniye). Additional records are presented, mainly from Greece and Turkey. The distributions of twelve species are mapped.

K e y w o r d s : Coleoptera, Staphylinidae, Aleocharinae, *Geostiba*, Eastern Mediterranean, Turkey, Greece, new species, new synonym, new records.

1. Introduction

In the final part of a revision of the described *Geostiba* species of the Eastern Mediterranean and adjacent regions, which was submitted for publication approximately half a year ago, 136 valid species were recognised (ASSING 2005). In the meantime, however, more material was examined, most of which was collected during three field trips in spring 2005, which yielded not only various additional records, but also seven undescribed species. Not surprisingly, most of the new species were found in Turkey. Including the additional species described in this paper, the number of species in the region - as delimited in ASSING (2005) - now amounts to 143, with 50 species (46 of them exclusive) known from Turkey and 43 species (40 of them exclusive) recorded from Greece.

2. Material, methods, and abbreviations

The material referred to in this study is deposited in the following public institutions and private collections:

FMNH..... Field Museum of Natural History, Chicago (A. F. Newton, J. Boone)
NMNHB ..... "Grigore Antipa" National Museum of Natural History Bucharest (M. Stan)
OÖLL..... Biologiezentrum/Oberösterreichisches Landesmuseum Linz

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cAss ..... author's private collection

cFel ..... private collection B. Feldmann, Münster

cDro ..... private collection B. Drovenik, Ljubljana

cWun..... private collection P. Wunderle, Mönchengladbach

The morphological studies and drawings were carried out using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena) with a drawing tube. For the photographs a digital camera (Nikon Coolpix 995) was used. The maps were generated using the online generic mapping tool (GMT) of the Geomar website at www.aquarius.geomar.de/omc.

Head length was measured from the anterior margin of the clypeus to the posterior carina; elytral length was measured along suture from the apex of the scutellum to the posterior margin.

3. New species and additional records

Below, new records are commented on only when the known range of distribution is extended or when they are remarkable in other respects.

Geostiba (*Geostiba*) *circellaris* (GRAVENHORST)

Additional material examined: **Slovenia:** 2 exs., Vodovice, Vel Polana, 26.III.2002, leg. Drovenik (cDro, cAss); 1 ex., Petanjci, Alnetum, 200 m, 17.II.2001, leg. Drovenik (cDro). **Romania:** 6 exs., "Roterturmpass", leg. Deubel (*NMNHB*).

Geostiba (*Tropogastrosipalia*) *chyzeri* (EPPELSHEIM)

Additional material examined: **Slovakia:** 1♀, Niedere Tatra, leg. Strauss (FMNH).

Geostiba (*Tropogastrosipalia*) *bernhaueri* (BREIT)

Additional type material examined: Paralectotypes: 2♀♀: Klst. Kokos Dobrutscha, Breit / Sipalia Bernhaueri Breit Type (FMNH).

Comment: The lectotype was designated by ASSING (2005). So far, only females of this species have become known.

Geostiba (*Tropogastrosipalia*) *spinicollis* (KRAATZ)

Additional material examined: **Austria:** 1♂, Kärnten, Eisenkappel, leg. Gobanz (FMNH).

Comment: In Austria, the species was previously only known from the Koralpe and its immediate vicinity (ASSING 2005).

Geostiba (*Tropogastrosipalia*) *winkleri* (BERNHAUER)

Additonal type material examined: Paralectotypes: 7 exs.: Iaila-Gebirge, Krim, Winkler (FMNH):

Comment: The lectotype was designated by ASSING (2005).

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Geostiba (*Tropogastrosipalia*) *armata* (EPPELSHEIM)

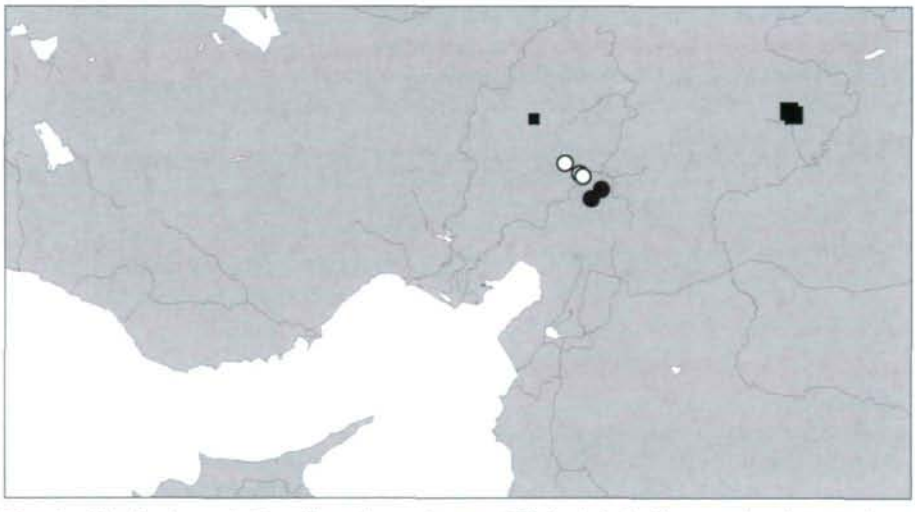
Additional material examined: **Greece:** 101 exs., northern Pindos range, ca. 40 km NNE Konitsa, Oros Gramos, S Oros Arénes, SE Aetomilitsa, 40°17′34N, 20°53′21E, 1650 m, beech forest and adjacent pasture, grass roots and leaf litter sifted, 25.V.2005, leg. Assing, Wunderle (cAss, cFel, cWun); 278 exs., N-Pindos, ca. 40 km NNE Konitsa, Oros Gramos range, Oros Arénes, 40°17′39N, 20°55′22E, 1900 m, N- and E-slope with snowfields, shrubs, grass, and moss sifted, 26.V.2005, leg. Assing, Wunderle (cAss, cWun).

Comments: In contrast to most other species of the subgenus, *G. armata* is relatively widespread. It is here recorded from the Oros Gramos at the border between Greece and Albania for the first time.

Geostiba (*Tropogastrosipalia*) *torisuturalis* ASSING

Additional material examined: **Greece:** 100 exs., Flórina, ca. 20 km SSW Florina, Oros Vitsi, 40°38′32N, 21°22′46E, N-slope, 1850-1900 m, grass and moss sifted, 22.V.2005, leg. Assing, Wunderle (cAss, cFel, cWun); 28 exs., Flórina, ca. 15 km WNW Florina, Oros Varnous, 40°49′12N, 21°15′15E, 1810 m, N-slope below snowfield, grass sifted, 23.V.2005, leg. Assing, Wunderle (cAss, cWun); 2 exs., Flórina, ca. 15 km WNW Florina, Oros Varnous, 40°49′47N, 21°15′29E, 1820 m, N-slope, grass, moss etc. sifted, partly near snow, 23.V.2005, leg. Assing (cAss).

Comments: The species was previously known only from the Vérno and Askio ranges in Flórina and Kozani. It is here recorded from the Varnous for the first time.



Map 1: Distributions of *Geostiba adunca* ASSING (filled circles), *G. marasica* ASSING (open circles), *G. nemrutica* sp.n. (large squares), and *G. dibekiana* sp.n. (small square) in central southern Turkey.

Geostiba (*Tropogastrosipalia*) *adunca* ASSING (Map 1)

Additional material examined: **Turkey:** 17 exs., Kahramanmaraş, ca. 25 km SW Kahramanmaraş, near Yesilyöre, 37°27′18N, 36°46′45E, 600 m, E-slope with oak and *Juniperus*, sifted, 18.&27.III.2005, leg. Assing, Wunderle (cAss, cWun); 26 exs., Kahramanmaraş, 34 km SW Kahramanmaraş, SW Doluca, 37°22′57N, 36°40′42E, 1070 m, shrub litter and grass roots sifted, 27.III.2005, leg. Assing, Wunderle (cAss, cWun).

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Comments: The species was described only recently from the surroundings of Doluca, to the southwest of Kahramanmaraş (ASSING 2004). Its distribution is illustrated in Map 1.

Geostiba (*Tropogastrosipalia*) *marasica* ASSING (Map 1)

Additional material examined: **Turkey:** 4 exs., Osmaniye, NE Kadirli, 11 km NE Andırın, road to Geben, 37°38′42N, 36°25′51E, 1280 m, 3.V.2005, leg. Meybohm & Brachat (cAss); 13 exs., same data, but 12.5 km NE Andırın, 37°39′14N, 36°26′27E, 1500 m (cAss); 4 exs., Kahramanmaraş, 51 km W Kahramanmaraş, Baskonus Yaylaşı, 37°33′56N, 36°33′37E, 1250 m, 5.V.2005, leg. Meybohm & Brachat (cAss); 4 exs., Kahramanmaraş, 50 km W Kahramanmaraş, Baskonus Yaylaşı, 37°33′32N, 36°35′21E, 1450 m, 5.V.2005, leg. Meybohm & Brachat (cAss).

Comments: *Geostiba marasica* was described only recently from Baskonus Yaylaşı, in the area to the west of Kahramanmaraş (Assing 2004). Its distribution is illustrated in Map 1.

Geostiba (*Tropogastrosipalia*) *nemrutica* **sp.n.** (Figs 1-7, Map 1)

Holotype ♂: TR - Adıyaman [15], 50 km NE Adıyaman, S Sincik, 1330 m, 38°01′06N, 38°37′17E, 23.III.2005, V. Assing / Holotypus ♂ *Geostiba nemrutica* sp. n. det. V. Assing 2005 (cAss). Paratypes: 1 ♀: same data as holotype (cAss); 1 ♀: TR - Adıyaman [18], 50 km NE Adıyaman, S Sincik, 1470 m, 38°03′02N, 38°35′32E, 23.III.2005, V. Assing (cAss).

Description: Relatively small species, 2.6-3.0 mm (abdomen fully extended). Coloration: head dark brown to blackish; pronotum and elytra reddish to brown, distinctly lighter than head; abdomen dark brown to blackish brown, with the anterior tergites and the apex only slightly paler; legs testaceous; antennae brown, with the basal antennomeres yellowish.

Facies as in Fig. 1. Head and pronotum with shallow microreticulation (Fig. 2). Eyes small and not distinctly protruding from lateral outline of head, less than half the length of postgenae in dorsal view.

Pronotum with moderate sexual dimorphism, in both sexes approximately 1.20-1.25 times as wide as head. Elytra with moderate sexual dimorphism, less than 0.6 times as long as pronotum.

Abdomen rather shining; microsculpture more distinct and composed of finer meshes posteriorly than anteriorly.

♂: pronotum very weakly oblong and weakly elongated posteriorly, posterior margin convex and in the middle pointed (Fig. 2); elytra with pair of weakly pronounced (short and weakly elevated) sutural elevations near apex of scutellum, disc extensively and shallowly impressed, puncturation not distinctly granulose (Figs 2-3); abdominal tergite IV with weakly delimited median tubercle at base; process of abdominal tergite VII moderately long, slender and acute in antero-dorsal view, and broad-based in lateral view (Fig. 4); tergite and sternite VIII not modified; median lobe of aedeagus with slender cristal process (Fig. 5); apical lobe of paramere shaped as in other species of the subgenus.

♀: pronotum approximately as wide as long or weakly transverse, its posterior margin weakly convex; elytra unmodified and with very fine puncturation; spermatheca as in Fig. 6.

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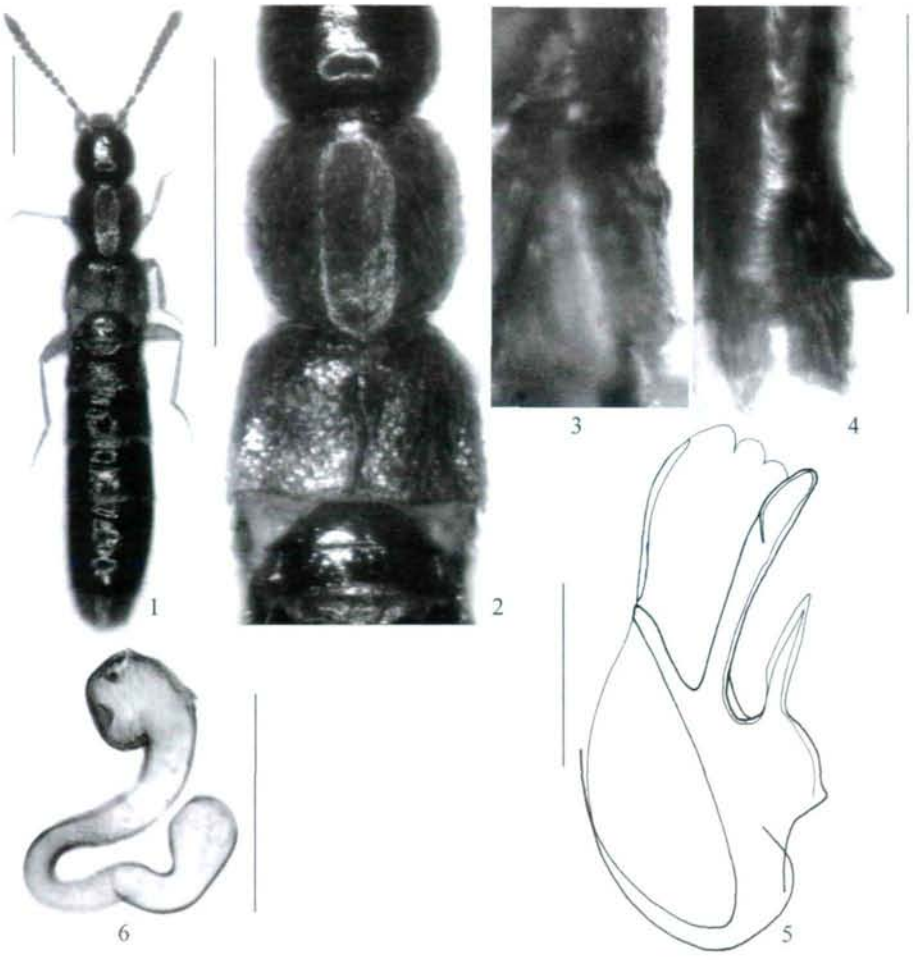
Etymology: The name (Lat., adj.) is derived from the famous Nemrut Dağı, where the type locality is situated.



Figs 1-6: *Geostiba nemrutica* sp.n. (1-5: holotype): ♂ Habitus (**1**); ♂ pronotum and elytra (**2**); ♂ elytra in lateral view (**3**); ♂ abdominal segments VI-VIII in lateral view (**4**); median lobe of aedeagus in lateral view (**5**); spermatheca (**6**). Scale bars: 1-4: 0.5 mm; 5-6: 0.1 mm.

Comparative notes: In the key in ASSING (2005), the species would key out with *G. marasica* or *G. balkarensis* ASSING. From the former, it is distinguished by smaller size, by the less pronounced sexual dimorphism of the pronotum, by the much less pronounced sutural elevations of the male elytra, by the more distinct tubercle on the male tergite IV, and by the differently shaped cristal process of the aedeagus. From the latter, it is separated by the differently shaped male pronotum (in *G. balkarensis* broader and weakly transverse with a weakly convex and in the middle more distinctly pointed posterior margin), by the finer puncturation of the male elytra (in *G. balkarensis* dis-

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tinctly granulose), by the less well-delimited and less pronounced sutural elevations on the male elytra, and by the shorter and less slender process of the male tergite VII.

Distribution and bionomics: As can be inferred from the restricted distributions of other species of the subgenus, *G. nemrutica* may be endemic to the Nemrut Dağı (Map 1). The types were sifted from grass and from the litter of oak trees and shrubs on a N-exposed slope (Fig. 7) at altitudes of 1330-1470 m.

Fig. 7: Type locality of *Geostiba nemrutica* sp.n.

***Geostiba* (*Tropogastrosipalia*) *dibekiana* sp.n.** (Figs 8-13, Map 1)

Holotype ♂: TR [36] - Adana, NE Kozan, Pinarbasi-Eyüplü, 37°56′45N, 36°06′22E, 1560 m, 27.IV.2005, Brachat & Meybohm / Holotypus ♂ *Geostiba dibekiana* sp. n. det. V. Assing 2005 (cAss). Paratypes: 1♂, 2♀♀: same data as holotype (cAss).

Description: Relatively small species, 2.3-2.9 mm (abdomen fully extended). Coloration: head dark brown to blackish; pronotum and elytra reddish brown, paler than head; abdomen dark brown to blackish brown, with the anterior 2-3 tergites and the apex somewhat paler; legs testaceous; antennae brown, with the basal antennomeres yellowish.

Facies as in Fig. 8. Head and pronotum with shallow microreticulation (Fig. 9). Eyes moderately small, slightly protruding from lateral outline of head, approximately half the length of postgenae in dorsal view (Fig. 9).

Pronotum with moderate sexual dimorphism, approximately 1.15-1.20 times as wide as head. Elytra with rather distinct sexual dimorphism, less than 0.6 times as long as pronotum.

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Abdomen moderately shining; microsculpture much more distinct and composed of much finer meshes posteriorly than anteriorly.

♂: pronotum moderately oblong, approximately 1.1 times as long as wide, and moderately elongated posteriorly, posterior margin strongly convex, in large ♂ in the middle weakly concave, in small ♂ more or less truncate (Fig. 9); elytra with narrow sutural carinae extending over anterior 2/3 or 3/4 of suture, with shallow impressions near lateral margin, and with rather dense, non-granulose puncturation (Figs 9-10); abdominal tergites III and IV with distinct median tubercle near posterior margin of anterior transverse impression; process of tergite VII rather long, stout, erect (Fig. 11), anterior face flattened, and apex rounded in antero-dorsal view; median lobe of aedeagus with very slender and apically very acute cristal process (Fig. 12); apical lobe of paramere shaped as in other species of the subgenus.

♀: pronotum approximately as wide as long or weakly oblong, its posterior margin moderately convex; elytra unmodified and with very fine puncturation; spermatheca as in Fig. 13.

Etymology: The name (Lat., adj.) is derived from Dibek Dağları, the name of the mountain range, where the type locality is situated.

Comparative notes: In the key in ASSING (2005), *G. dibekiana* would key out with *G. brachati* ASSING from Antalya, from which it is distinguished by the shallower microsculpture of head and pronotum, by a less convex pronotum in cross-section, by a less distinctly modified male pronotum with a less pronounced central concavity of the posterior margin, by narrower and longer sutural carinae on the male elytra, by the shallower and less extensive impressions of the male elytra, by the smaller tubercles on the male abdominal tergites III and IV, by the stouter process of the male tergite VII, and by the different shape of the cristal process of the aedeagus.

Distribution and bionomics: The species is known only from the type locality, which is situated in the Dibek Dağları in the north of Adana province, central southern Anatolia (Map 1). The types were collected at an altitude of more than 1500 m.

Geostiba (*Sipalotricha*) *infirma* (WEISE)

Additional type material examined:
G. pacei: Paratypes [all labelled "Paratypus Geostiba pacei Zerche"]: 9 exs.: Deubel Rodnaer-Gb (FMNH); 5 exs.: Siebenbg. / infirma Ws. Rodnaergbg. Schuster (Schuster); 3 exs.: Ganglb. 96, Rodnaer G. (FMNH); 6 exs.: Soca (FMNH); 1 ex.: Tr. Oradna, Korongyos, Bokor (FMNH); 1 ex.: Korongyos, Ost-Karpat. Gö: Zelmann (FMNH); 4 exs.: Koroniez Tr., Alpin (FMNH); 6 exs.: Nagy-Hagymás-Gbg. Deubel (FMNH); 1 ex.: Paring-Gbg., Deubel / subalpin (FMNH); 1 ex.: Schuller, Spaeth (FMNH); 4 exs.: Ganglb. 99, Negoi, Tr. (FMNH); 1 ex.: Ganglbauer, Negoi, Tr. (FMNH).

Geostiba (*Sipalotricha*) *cuneiformis* (KRAATZ)

Additional type material examined:
Sipalia hcejkai: Paralectotype: 1 ex.: Slov., Parkan, Roubal / H. Čejkai Roubal det. / Cejkai Roub. Cotypus don. Roubal / Chicago NHMus. M. Bernhauer Collection (FMNH).
S. gyorffyi: Syntypes: 1 ex.: Budapest, János h., 1916.III.12, Györffy / Sipalia Györffyi Brnh.Typus / Chicago NHMus, M. Bernhauer Collection (FMNH); 1 ex.: Budapest Zugliget / Sipalia Györffyi Brnh. Cotypus / Chicago NHMus., M. Bernhauer Collection (FMNH).
S. kocsii: Paralectotypes: 2 exs.: Nagy-Sziklás, Kocsi / Hung. Trencsén / Kocsii Brh. Cotypus /

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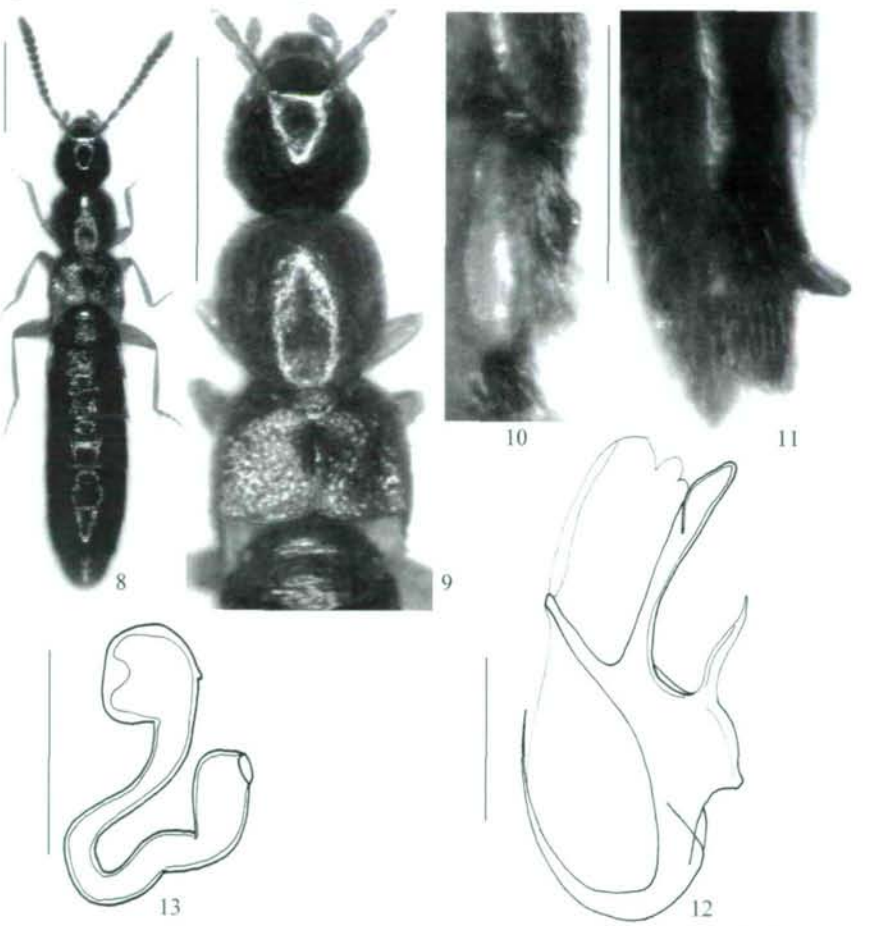
Chicago NHMus. M. Bernhauer Collection (FMNH); 2 exs.: Zsihlavnik, Kocsi / Hung. Trencsén / Kocsii Brh. Typus & Cotypus / Chicago NHMus. M. Bernhauer Collection (FMNH); (FMNH); 1 ex.: Hung. Trencsén / Szelecz, Kocsi / Kocsii Brh. Cotypus / Chicago NHMus. M. Bernhauer Collection (FMNH).

Comments: Based on an examination of the syntypes of *S. gyorffyi*, the previously proposed synonymy of this name with *G. cuneiformis* is confirmed. The lectotypes of *S. hcejkai* and *S. kocsii* were designated by ASSING (2005).



Figs 8-13: *Geostiba dibekiana* sp.n. (8-12: holotype): (**8**) ♂ habitus; (**9**) ♂ forebody; (**10**) ♂ elytra in lateral view; (**11**) ♂ abdominal segments VI-VIII in lateral view; (**12**) median lobe of aedeagus in lateral view; (**13**) spermatheca. Scale bars: 8-11: 0.5 mm; 12-13: 0.1 mm.

Geostiba (*Sipalotricha*) *euboica* PACE

Additional material examined: **Greece:** 22 exs., Flórina, ca. 15 km WNW Florina, Oros Varnous, 40°49′12N, 21°15′15E, 1810 m, N-slope below snowfield, grass sifted, 23.V.2005, leg. Assing, Wunderle (cAss, cWun); 2 exs., Flórina, ca. 15 km WNW Florina, Oros Varnous, 40°49′47N, 21°15′29E, 1820 m, N-slope, grass, moss etc. sifted, partly near snow, 23.V.2005, leg. Assing (cAss).

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Comments: In the localities indicated above, *Geostiba euboica* was found together with *G. torisuturalis* and *G. varnousica* sp.n.

***Geostiba* (*Sipalotricha*) *varnousica* sp.n.** (Figs 14-27)

Holotype ♂: GR [5], Flórina, 15 km WNW Flórina, Oros Varnous, 1810 m, 40°49′13N, 21°15′15E, 23.V.2005, V. Assing / Holotypus ♂ *Geostiba varnousica* sp. n. det. V. Assing 2005 (cAss). Paratypes: 24♂♂, 19♀♀: same data as holotype (OÖML, cAss); 13♂♂, 5♀♀: same data, but leg. Wunderle (cWun).

Description: Very small species, 1.6-2.1 mm (abdomen fully extended). Coloration: body uniformly yellowish to yellowish brown, with abdominal segment VI and often anterior parts of segment VII more or less distinctly, but usually rather weakly infuscate.

Facies as in Fig. 14. Head and pronotum with shallow microreticulation and with very fine, barely noticeable puncturation. Eyes small, not protruding from lateral outline of head, usually less than one third the length of postgenae in dorsal view (Fig. 15). Pronotum approximately 1.15 times as wide as long and 1.05-1.10 times as wide as head. Elytra without sexual dimorphism, approximately as wide and at suture approximately 0.6 times as long as pronotum (Fig. 15); puncturation extremely fine, barely visible; hind wings completely reduced.

Abdomen with shallow microsculpture and extremely fine puncturation; posterior margin of tergite VII without palisade fringe; tergite VIII without appreciable sexual dimorphism, posterior margin in the middle usually weakly concave (Figs 16, 18).

♂: posterior margin of sternite VIII distinctly convex (Fig. 17); median lobe of aedeagus with reduced crista apicalis, without distinct spines in internal sac (Figs 20-22); apical lobe of paramere as in Fig. 23.

♀: sternite VIII posteriorly weakly convex, in the middle at most only indistinctly concave (Fig. 19); spermatheca with relatively long duct (Figs 24-26).

Etymology: The name (Lat., adj.) is derived from Varnous, the name of the mountain range where the type locality is situated.

Comparative notes: In the key in ASSING (2005), *G. varnousica* would key out with *G. breviuter* ASSING from the Oros Voras, northern Greece, and with *G. ahaiaensis* ASSING from the Erimanthos Oros, Peloponnisos. From the former, it is readily distinguished by even smaller body size, by the much less microsculptured and more glossy integument of the forebody, a much finer puncturation of the forebody, by the centrally weakly concave posterior margin of the abdominal tergite VIII, by the reduced crista apicalis of the median lobe of the aedeagus, by the different shape and chaetotaxy of the apical lobe of the paramere, as well as by the completely different shape of the spermatheca, especially the much longer duct. From the latter, it is separated by the weaker microsculpture of the forebody, the somewhat finer puncturation of the elytra, the on average less distinctly infuscate preapical abdominal segments, and by the different shapes of the aedeagus and the spermatheca. For comparison, see the illustrations of the genitalia in ASSING (1999, 2000).

Distribution and bionomics: The type locality is situated in the Varnous Oros, northern Greece. The types were collected by sifting grass roots in a relatively moist depression at an altitude of approximately 1800 m (Fig. 27).

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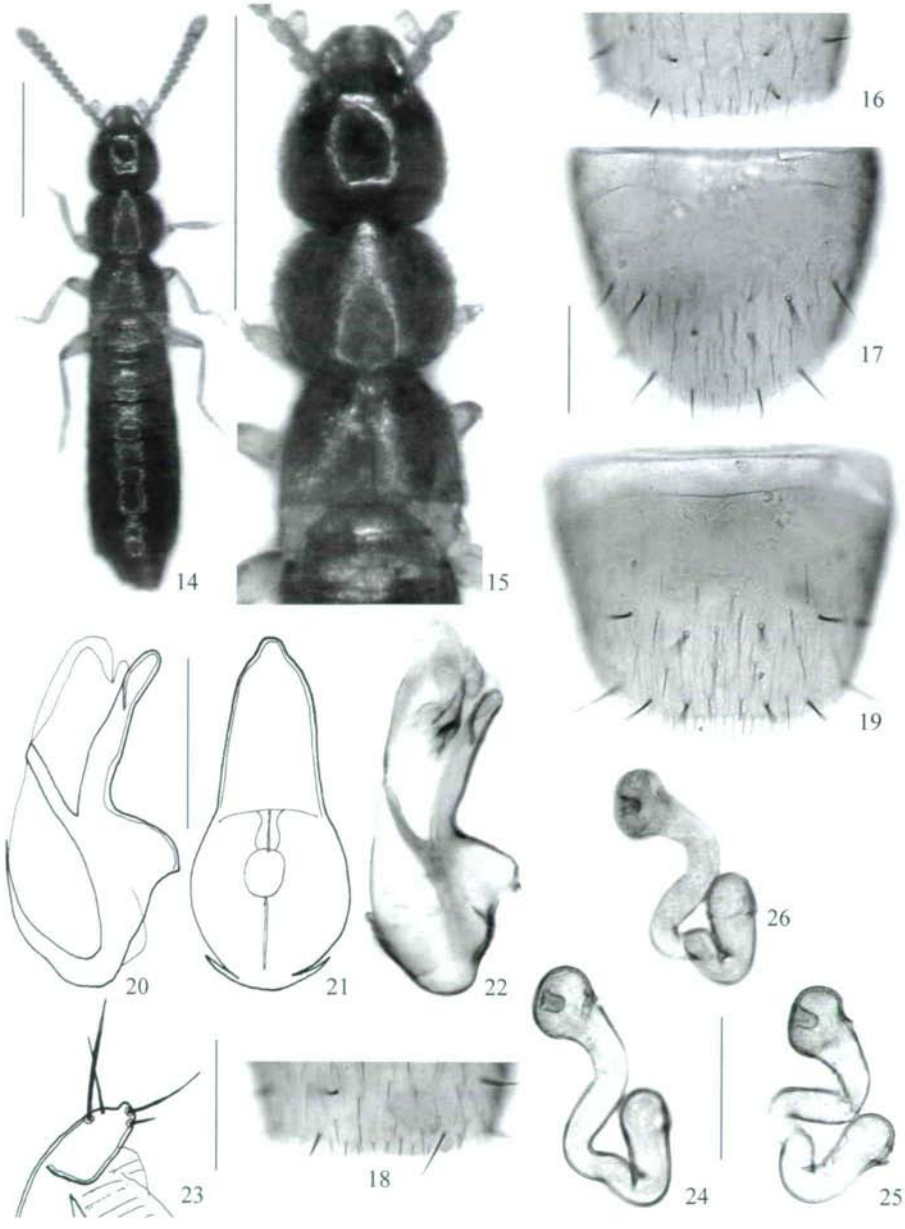

Figs 14-26: *Geostiba varnousica* sp.n. (14-15: holotype): (**14**) ♂ habitus; (**15**) ♂ forebody; (**16**) posterior margin of ♂ tergite VIII; (**17**) ♂ sternite VIII; (**18**) posterior margin of ♀ tergite VIII; (**19**) ♀ sternite VIII; (**20-22**) median lobe of aedeagus; (**23**) apical lobe of paramere; (**24-26**) spermathecae. Scale bars: 14-15: 0.5 mm; 16-22: 0.1 mm; 23-26: 0.05 mm.

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Fig. 27: Type locality of *Geostiba varnousica* sp.n.

Geostiba (*Sipalotricha*) *lucens* (BENICK)

Additional material examined: **Turkey:** 1 ex., Mersin, N Silifke, S Uzuncaburc, 36°33′29N, 33°56′05E, 1100 m, 17.IV.2005, leg. Brachat & Meybohm (cAss); 1 ex., Mersin, N Silifke, 33 km N Silifke, 36°36′07N, 33°53′30E, 1270 m, 18.IV.2005, leg. Brachat & Meybohm (cAss); 1 ex., Mersin, NW Silifke, road Mut-Ermenek, 20 km W Mut, 36°36′26N, 33°16′18E, 230 m, 20.IV.2005, leg. Brachat & Meybohm (cAss); 3 exs., Mersin, N Anamur, road Ermenek-Karaman, 16 km N Ermenek, 36°43′20N, 32°55′35E, 1580 m, 21.IV.2005, leg. Brachat & Meybohm (cAss); 2 exs., Adana, road Kozan-Pinarbaşı, Saimbeyli-Eyüplü, 37°56′45N, 36°06′22E, 1560 m, 27.IV.2005, leg. Brachat & Meybohm (cAss); 2 exs., Adana, road Imamoğlu-Karsantı, W Hassandede Geç., 37°29′52E, 35°22′48E, 1110 m, 28.IV.2005, leg. Brachat & Meybohm (cAss).

Geostiba (*Sipalotricha*) *gontarenkoi* ASSING

Additional material examined: **Ukraine:** 2 exs., ca. 20 km N Odessa, Khuyalnik Liman, 8 km SSE Iljinka, 0 m, 15.VI.2004, leg. Gontarenko (cAss).

Comment: The above specimens were collected together with the types.

Geostiba (*Sipalotricha*) *rhodiensis* PACE (Map 2)

Additional material examined: **Turkey:** 63 exs., Adana, road Imamoğlu-Karsantı, S Hassandede Geç., 37°29′34E, 35°23′56E, 910 m, 28.IV.2005, leg. Brachat & Meybohm (cAss); 5 exs., Adana, road Imamoğlu-Karsantı, W Hassandede Geç., 37°29′52E, 35°22′48E, 1110 m, 28.IV.2005, leg. Brachat & Meybohm (cAss); 2 exs., Adana, road Kozan-Mansurlu, 7 km before Seyhan bridge, 37°35′25N, 35°39′09E, 510 m, 29.IV.2005, leg. Brachat

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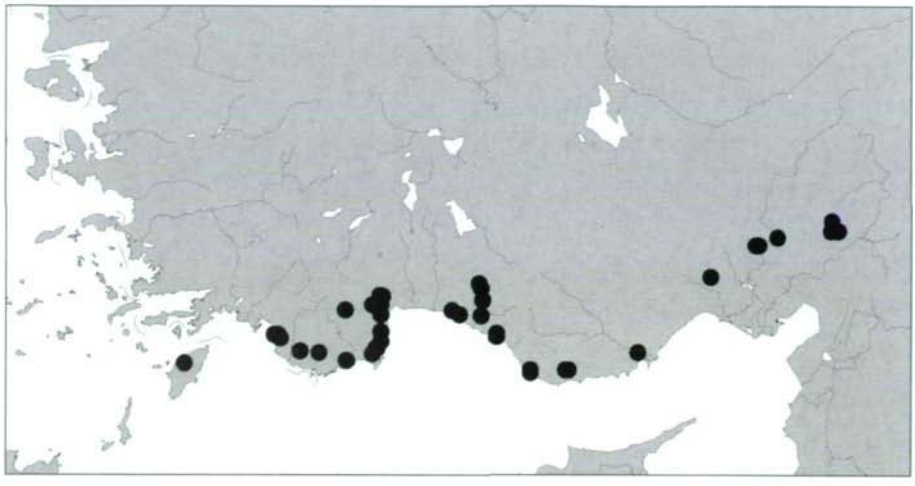
& Meybohm (cAss); 9 exs., Osmaniye, NE Kadirli, 10 km N Andırın, road to Cokak, 37°39′19N, 36°20′51E, 1150 m, 1.-2.V.2005, leg. Brachat & Meybohm (cAss); 9 exs., Osmaniye, NE Kadirli, 11 km NE Andırın, road to Geben, 37°38′42N, 36°25′51E, 1280 m, 3.V.2005, leg. Brachat & Meybohm (cAss); 15 exs., Osmaniye, NE Kadirli, 12.5 km NE Andırın, road to Geben, 37°39′14N, 36°26′27E, 1500 m, 3.V.2005, leg. Brachat & Meybohm (cAss); 26 exs., Osmaniye, ca. 70 km WNW Kahramanmaraş, N Andırın, NE Cokak, 37°44′39N, 36°21′30E, 1540 m, pine and oak litter with grass, sifted, 26.III.2005, leg. Assing, Wunderle (cAss, cWun).

Comment: The above records considerably expand the known distribution of this species further to the east (Map 1). For comparison see the map in ASSING (2003)



Map 2: Distribution of *Geostiba rhodiensis* in the Eastern Mediterranean (southern Anatolia and Rhódos).

Geostiba (*Chondridiosipalia*) *cingulata* (EPPELSHEIM)

Additional type material examined: Paralectotype: 1♂ [without head]: Caukas / typ. / Eppelsh. / cingulata Epp. typ. coll. Hopffg. / Chicago NHMus. M. Bernhauer Collection (FMNH).

Additional material examined: **Azerbaijan:** 2♂♂, 1♀, Xanlar ["Helenendorf"; 40°35N, 46°19E], leg. Reitter (FMNH).

Comment: The lectotype was designated by ASSING (2005).

Geostiba (*Sibiota*) *oertzeni* (EPPELSHEIM)

Additional material examined: **Turkey:** 1 ex., Adana, road Kozan-Pinarbaşı, Saimbeyli-Eyüplü, 37°56′45N, 36°06′22E, 1560 m, 27.IV.2005, leg. Brachat & Meybohm (cAss); 2 exs., Osmaniye, ca. 70 km WNW Kahramanmaraş, N Andırın, NE Cokak, 37°44′39N, 36°21′30E, 1540 m, pine and oak litter with grass, sifted, 26.III.2005, leg. Assing, Wunderle (cAss, cWun).

Geostiba (*Sibiota*) *asperipennis* sp.n. (Figs 28-40, Map 3)

Holotype ♂: TR - Adıyaman [19], 50 km NE Adıyaman, SW Sincik, 1280 m, 38°01′16N, 38°35′54E, 23.III.2005, V. Assing / Holotypus ♂ *Geostiba asperipennis* sp. n. det. V. Assing 2005 (cAss). Paratypes: 5♂♂, 1♀: same data as holotype (cAss, cWun); 2♂♂: TR - Adıyaman [18], 50 km NE Adıyaman, N Sincik, 1470 m, 38°03′02N, 38°35′32E, 23.III.2005, V. Assing (cAss).

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Description: Species of intermediate size, 2.5-3.0 mm (abdomen fully extended). Coloration: body uniformly yellowish to yellowish brown, with abdominal segment VI, the anterior parts of segment VII, sometimes also the posterior parts of segment V more or less distinctly infuscate.

Facies as in Fig. 28. Head and pronotum with shallow microreticulation and with very fine, barely noticeable puncturation. Eyes small, not distinctly protruding from lateral outline of head, less than one third the length of postgenae in dorsal view (Figs 29-30). Pronotum 1.10-1.15 times as wide as long and approximately 1.15 times as wide as head; posterior margin in the middle more or less distinctly concave. Elytra with pronounced sexual dimorphism, approximately 1.15 times as wide and at suture 0.60-0.65 times as long as pronotum (Fig. 29); puncturation very fine; microscupture distinct and sexually dimorphic; hind wings completely reduced.

Abdomen with shallow microsculpture and extremely fine sparse puncturation; posterior margin of tergite VII usually without palisade fringe, occasionally barely noticeable rudiments of a palisade fringe may be visible.

♂: elytra with pronounced and coarsely sculptured sutural carinae, in large ♂ extending over whole length of suture and anteriorly (i. e. on either side of scutellum) very broad; elytral disc with rather deep and extensive impressions; dorsal surface of elytra with pronounced microreticulation and matt (Fig. 29); abdominal tergite VII at posterior margin with pair of very fine carinae, in large ♂ accompanied by additional striae (Fig. 31); posterior margin of tergite VIII truncate to weakly concave (Fig. 32); posterior margin of sternite VIII distinctly convex (Fig. 33); median lobe of aedeagus distinctive, with pronounced crista apicalis and crista proximalis, internal sac with numerous sclerotised spines (Figs 36-38); apical lobe of paramere as in Fig. 39.

♀: elytra unmodified, with moderately distinct microsculpture; posterior margin of tergite VIII weakly convex (Fig. 34); posterior margin of sternite VIII posteriorly weakly convex, in the middle indistinctly concave (Fig. 35); spermatheca of highly distinctive morphology (Fig. 40).

Etymology: The name (Lat., adj.) is composed of the Latin adjectives asper (= rough, coarse) and pennis (pertaining to the wings); it refers to the conspicuously coarse microsculpture of the ♂ elytra.

Comparative notes: In the key in ASSING (2005), *G. asperipennis* would key out with *G. rizensis* PACE from northern Anatolia, from which it is distinguished by the posteriorly weakly concave pronotum (only in the middle!), the more pronounced microsculpture of the male elytra, the shallower impressions of the male elytra, the less pronounced pair of carinae on the male tergite VII (large male!), the different morphology of the aedeagus (especially the more pronounced crista apicalis and the numerous sclerotised spines in the internal sac), as well as by the completely different shape of the spermatheca.

Distribution and bionomics: The type locality is situated in the Nemrut Dağı, southeastern Anatolia (Map 3). The material was collected by sifting litter of oak trees, *Juniperus*, and shrubs on north slopes (Fig. 41) at altitudes of 1280 and 1470 m.

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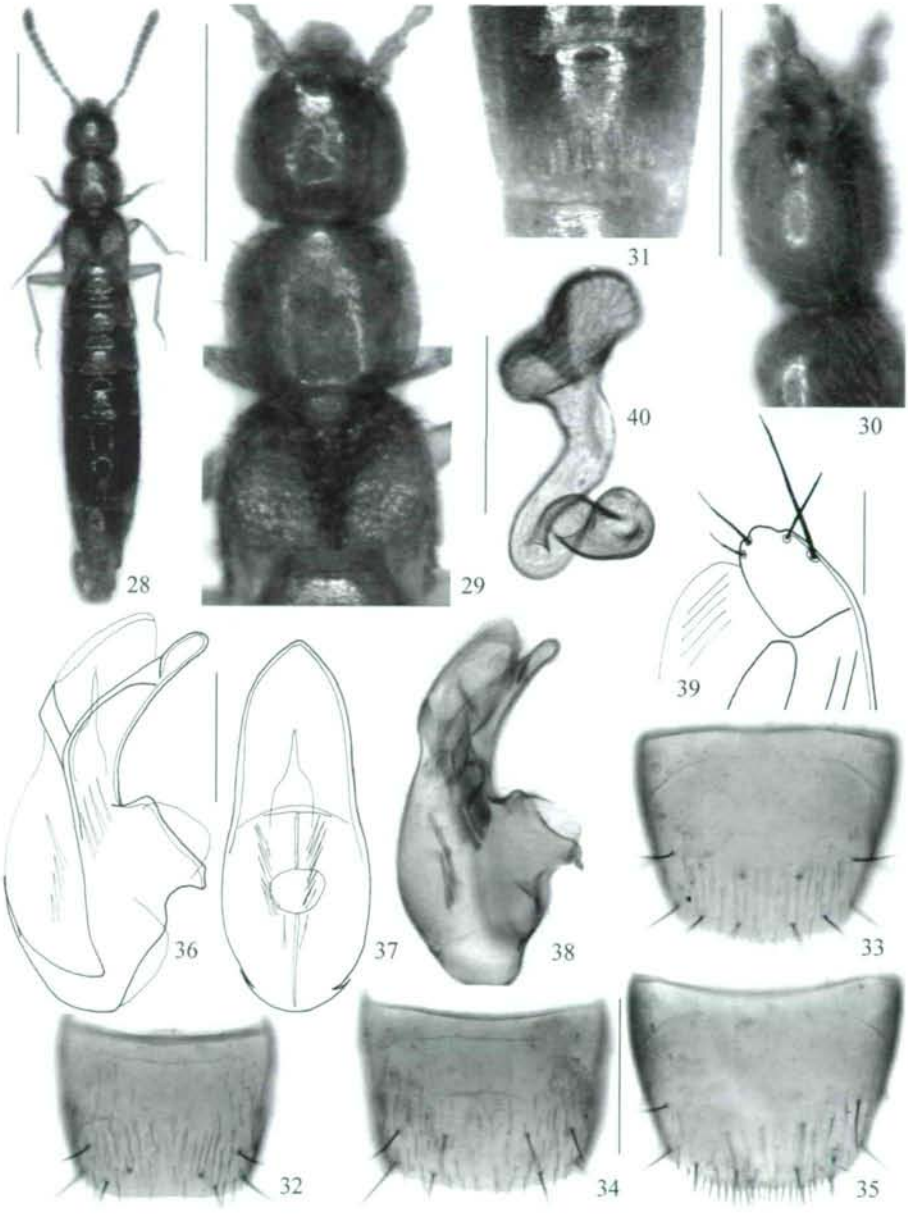

Figs 28-40: *Geostiba asperipennis* sp.n. (28-31: holotype): ♂ Habitus (**28**); ♂ forebody (**29**); head in lateral view (**30**); ♂ tergite VII (**31**); ♂ tergite VIII (**32**); ♂ sternite VIII (**33**); ♀ tergite VIII (**34**); ♀ sternite VIII (**35**); median lobe of aedeagus (**36-38**); apical lobe of paramere (**39**); spermatheca (**40**). Scale bars: 28-31: 0.5 mm; 32-35: 0.2 mm; 36-38, 40: 0.1 mm; 39: 0.05 mm.

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Fig. 41: Type locality of *Geostiba asperipennis* sp.n.

***Geostiba* (*Sibiota*) *tuberosa* ASSING** (Map 3)

Additional material examined: **Turkey:** 8 exs., Osmaniye, ca. 50 km W Kahramanmaraş, 8 km SSE Andırın, Toplar env., 37°34′40N, 36°25′07E, 1180 m, edge of field, under stones and leaf litter of beech, 19.III.2005, leg. Assing, Wunderle (cAss, cWun); 5 exs., same data, but 37°34′54N, 36°24′58E, 1240 m, beech and oak litter (cAss, cWun); 76 exs., same data, but 37°33′17N, 36°25′48E, 1120 m, beech and oak litter, grass roots, sifted (cAss, cWun); 16 exs., same data, but 37°33′27N, 36°25′54E, 1110 m, litter of beech, oak, and other deciduous trees (cAss, cWun); 3 exs., Osmaniye, Toplar near Andırın, 37°33′28N, 36°25′54E, 1110 m, 30.IV.2005, leg. Brachat & Meybohm (cAss); 41 exs., Kahramanmaraş, 51 km W Kahramanmaraş, Baskonus Yaylaşı, 37°33′56N, 36°33′37E, 1250 m, 5.V.2005, leg. Brachat & Meybohm (cAss, cFel).

Comment: This recently described species was previously known only from the type locality, Baskonus Yaylaşı (ASSING 2004). Its distribution is illustrated in Map 3.

***Geostiba* (*Sibiota*) *giaurica* ASSING** (Map 3)

Additional material examined: **Turkey:** 20 exs., Kahramanmaraş, 34 km SW Kahramanmaraş, SW Doluca, 37°22N, 36°40E, 1250 m, N-slope with oak trees, sifted, 27.III.2005, leg. Assing, Wunderle (cAss, cWun).

Comment: The above specimens were collected at the type locality (Map 3).

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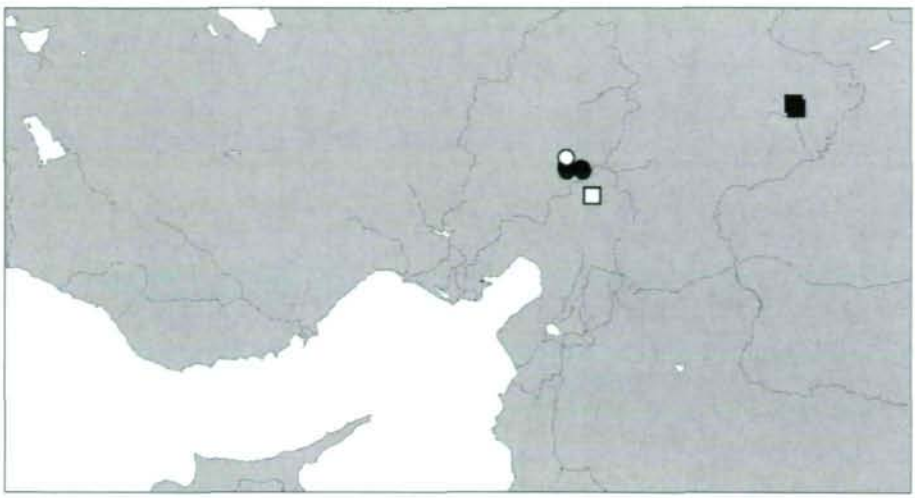

Map 3: Distributions of *Geostiba tuberosa* ASSING (filled circles), *G. giaurica* ASSING (open square), *G. asperipennis* sp.n. (large squares), and *G. excepta* sp.n. (open circle) in central southern Turkey.

***Geostiba bigibbera* sp.n.** (Figs 42-55, Map 4)

Holotype ♂: TR - Kahramanmaraş [1], 20 km SW K. Maraş, Hopurlu env., 560 m, 37°28'21N, 36°48'45E, 18.III.2005, V. Assing / Holotypus ♂ *Geostiba bigibbera* sp. n. det. V. Assing 2005 (cAss). Paratypes: 7♂♂, 10♀♀: same data as holotype (OÖLL, cAss); 2♂♂, 5♀♀: same data, but leg. P. Wunderle (cWun).

Description: Rather small species, 2.2-2.8 mm (abdomen fully extended). Coloration: body uniformly testaceous.

Facies as in Fig. 42. Head and pronotum with shallow microreticulation and with very fine, barely noticeable puncturation. Eyes reduced to minute rudiments, without ommatidia and pigmentation, not distinctly protruding from lateral outline of head (Figs 43-44). Pronotum about 1.1 times as wide as long and approximately 1.05 times as wide as head; posterior margin in the middle more or less distinctly concave. Elytra more or less flattened, with distinct sexual dimorphism, approximately 1.1 times as wide and at suture approximately 0.65 times as long as pronotum (Fig. 32); puncturation very fine; microscupture distinct; hind wings completely reduced. Mesotarsus 5-jointed.

Abdomen with shallow microsculpture and extremely fine sparse puncturation; posterior margin of tergite VII without palisade fringe; tergite VIII without sexual dimorphism, in both sexes posteriorly weakly convex (Fig. 49).

♂: elytra (in large ♂!) at suture with pair of strongly elevated, subcircular to oblong tubercles immediately behind apex of scutellum; lateral margins of elytra (in large ♂) forming a sharp edge, this edge being more pronounced anteriorly than posteriorly (Figs 43, 45); elytral disc with shallow, but more or less extensive impression; abdominal tergites III and IV in the middle with sometimes rather extensive (i. e. extending posteriad), weakly elevated tubercles with more pronounced microsculpture and consequently less shine than the surrounding tergal area (Fig. 46); tergite VII (in large ♂) at posterior margin with long, erect, dorso-ventrally flattened, and apically acute spine (Figs 47-48);

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posterior margin of sternite VIII strongly convex, almost obtusely pointed (similar to Fig. 60); median lobe of aedeagus as in Figs 50-52, with weakly pronounced crista apicalis and without spines in internal sac; apical lobe of paramere small, slender, and with short setae.

♀: elytra often with shallow impressions, but otherwise unmodified; posterior margin of sternite VIII posteriorly weakly convex, in the middle not concave (similar to Fig. 61); spermatheca as in Fig. 54.

Intraspecific variation: The male secondary sexual characters are less pronounced in smaller males. This particularly applies to the process of tergite VII, which may be completely absent. However, the elytral tubercles and the elevations on the anterior tergites are visible in all the male paratypes.

Etymology: The name (Lat., adj.: two-humped) refers to the presence of two elevations on the anterior male abdominal tergites.

Comparative notes: In the key in ASSING (2005), *G. bigibbera* would key out with - the geographically close (see above) - *G. tuberosa*, from which it is, however, easily separated by the morphology of the genitalia (see illustrations in ASSING 2004) and by the male secondary sexual characters, especially by the position of the tubercles on the male elytra (in *G. tuberosa* behind the middle of the suture), the sharply edged elytral margins, the much finer elytra puncturation, the modified anterior tergites, and the process of tergite VII (in *G. tuberosa* with pair of carinae). Among the described species, the closest relative, however, is doubtlessly *G. confusa*, which was recently described from Karatepe (Adana) (ASSING 2001). Both species share several evident synapomorphies (tubercles and sharp margins of the male elytra, elevation on male abdominal tergite III, spine-like process at posterior margin of male tergite VII), but are distinguished by the morphology of the mesotarsus (in *G. confusa*, the 4th and 5th mesotarsomere are partly fused), body size and coloration (*G. confusa*: distinctly smaller and even paler), the more slender head of *G. confusa*, as well as by the sexual characters. The male sexual characters are much less pronounced in *G. confusa* and often reduced.

Distribution and bionomics: Like other southern Anatolian congeners with strongly reduced eyes (*G. seleucica* PACE, *G. confusa* ASSING, *G. occaecata* ASSING, *G. tuberosa*, *G. giaurica*), *G. bigibbera* presumably has a very restricted distribution. The type locality is situated between that of *G. tuberosa* and that of the following species (Map 4). The specimens were collected on a north slope with oak trees (Fig. 55), predominantly by sifting grass roots, at an altitude of only 560 m.

***Geostiba gibbera* sp.n.** (Figs 56-67, Map 4)

Holotype ♂: TR - Kahramanmaraş [8], 30 km SSW K. Maraş, Uzunsöğut, 660 m, 37°23′43N, 36°48′06E, 20.III.2005, V. Assing / Holotypus ♂ *Geostiba gibbera* sp. n. det. V. Assing 2005 (cAss). Paratypes: 4♂♂, 7♀♀: same data as holotype (OÖLL, cAss, cWun); 1♀: same data, but leg. P. Wunderle (cWun).

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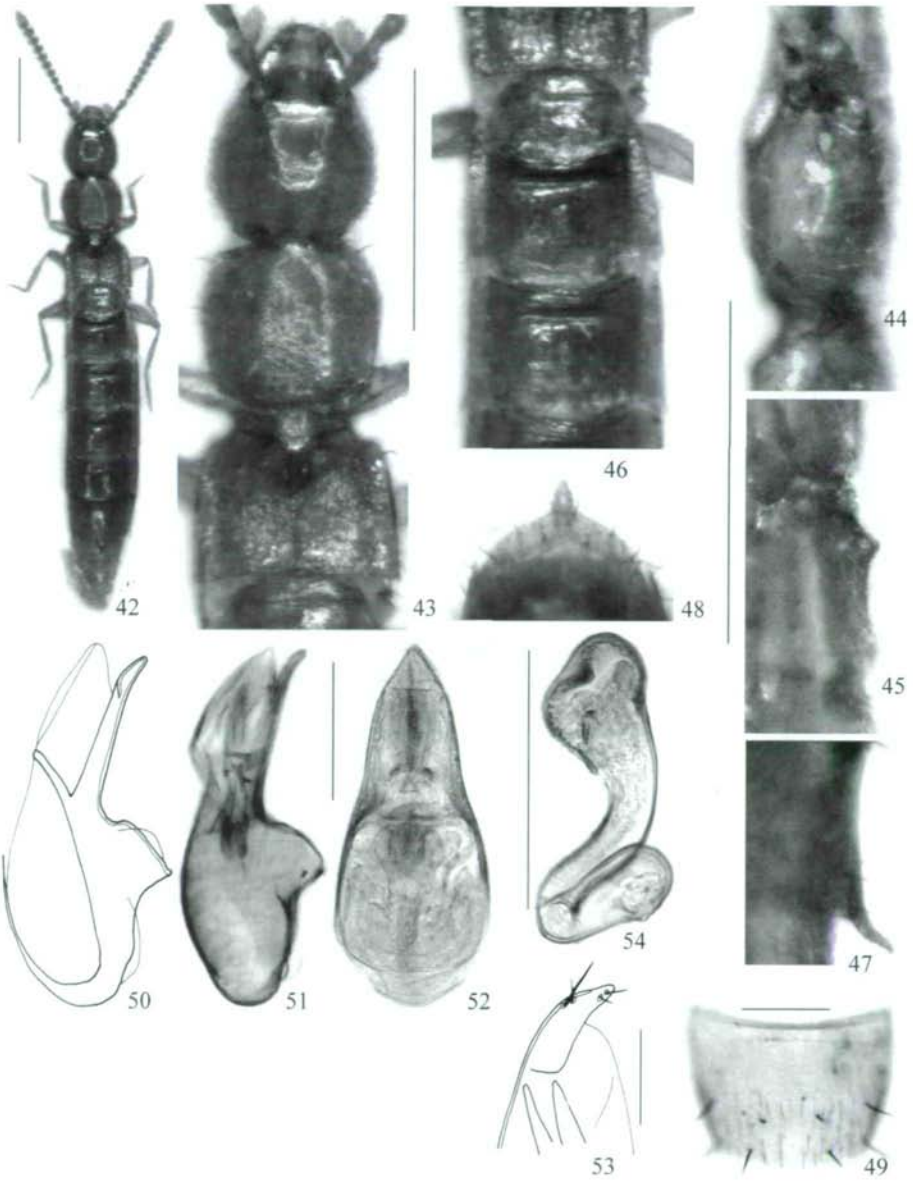

Figs 42-54: *Geostiba bigibbera* sp.n. (42-48: holotype): (**42**) ♂ habitus; (**43**) ♂ forebody; (**44**) head in lateral view; (**45**) ♂ elytra in lateral view; (**46**) ♂ tergite II-III; (**47**) ♂ tergite VII in lateral view; (**48**) ♂ tergite VII in antero-dorsal view; (**49**) ♂ tergite VIII; (**50-52**) median lobe of aedeagus; (**53**) apical lobe of paramere; (**54**) spermatheca. Scale bars: 42-48: 0.5 mm; 49-52, 54: 0.1 mm; 53: 0.1 mm.

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Fig. 55: Type locality of *Geostiba bigibbera* sp.n.

Description: Habitus as in Fig. 56. In external characters such as size, proportions, coloration, microsculpture, and puncturation highly similar to *G. bigibbera*, distinguished only by the primary and secondary sexual characters:

♂: elytral tubercles in similar position, but on average smaller, less elevated, more circular, and more shining (Figs 57-58); elytral surface more distinctly flattened, usually without distinct impressions, with more pronounced microsculpture, and with less shine; elytral lateral margins shaped as in *G. bigibbera*; abdominal tergite III with, tergite IV without median elevation; tergite VII with process of similar general shape as that in *G. bigibbera*, but apically rounded to truncate in lateral view and distinctly convex in cross-section, not dorso-ventrally flattened (Fig. 59); sternite VIII as in Fig. 60; median lobe of aedeagus as in Figs 62-64; apical lobe of paramere as in Fig. 65.

♀: sternite VIII similar to that of *G. bigibbera*, weakly convex posteriorly (Fig. 61); spermatheca with capsule of distinctive shape (Fig. 66).

Intraspecific variation: As in the preceding species, the male secondary sexual characters are usually less pronounced in smaller males. In two of the five male types the process of the abdominal tergite VII is completely absent.

Etymology: The name (Lat., adj.: humped) refers to the presence of an elevation on the male abdominal tergite III, a character distinguishing this species from all other subanophthalmous congeners occurring in southern Anatolia, except for *G. bigibbera* and *G. confusa*.

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Comparative notes and phylogenetics: For characters separating this species from other subanophthalmous congeners from southern Anatolia see the comparative notes below *G. bigibbera* and the key in ASSING (2005). Regarding the male secondary sexual characters, *G. gibbera* is similar only to *G. bigibbera* and *G. confusa*; Several evident synapomorphies suggest that *G. gibbera*, *G. bigibbera*, and *G. confusa* form a monophylum; for details see the notes below *G. bigibbera*. The phylogenetic relationship of this species group to other species groups is still not clear, which is why *G. gibbera*, *G. bigibbera*, and *G. confusa* are treated as species incertae sedis and, for the time being, not attributed to any of the described subgenera. It does not seem unlikely, however, that they will eventually have to be assigned to *Sibiota*.

Distribution and bionomics: The type locality of this species is only some 10 km south of that of *G. bigibbera* (Map 4). The types were collected in a pasture with shrubs on a calcareous slope (Fig. 67) at an altitude of 660 m by sifting grass roots, moss, and shrub litter.

***Geostiba excepta* sp.n.** (Figs 68-73, Map 3)

Holotype ♀: TR [45]- Osmaniye, 12.5 km NE Andırın, -> Geben, 37°39'14N, 36°26'27E, 1500 m, 3.V.2005, Brachat & Meybohm / Holotypus ♀ *Geostiba excepta* sp. n. det. V. Assing 2005 (cAss).

Description: Habitus as in Fig. 68. Relatively small species, 2.5 mm. Coloration: whole body uniformly testaceous.

Head and pronotum with shallow microreticulation and with extremely fine, barely noticeable puncturation. Head oblong, approximately 1.1 times as long as wide (Fig. 69); eyes almost completely obsolete, rudiments barely visible. Pronotum weakly transverse, approximately 1.05 times as wide as long and 1.15 times as wide as head. Elytra about 1.15-1.20 times as wide and at suture approximately 0.6 times as long as pronotum, with fine puncturation and very shallow microculpture (Fig 69). Hind wings completely reduced. Mesotarsus 5-jointed (Fig. 70).

♂: unknown.

♀: tergite VIII weakly convex posteriorly (Fig. 71); posterior margin of sternite VIII in the middle distinctly concave and with distinctly modified marginal setae (Fig. 72); spermatheca highly distinctive, with somewhat flattened capsule and with uncoiled, short, and proximally enlarged duct (Fig. 73).

Etymology: The name (Lat., adj.) denotes that this species is exceptional in several respects, i. e. the extreme reduction of the eyes, the unparalleled shape of the spermatheca, and finally also the fact that it forms an exception to my rule never to describe a *Geostiba* species based only on females.

Comparative notes: The species is readily distinguished from all its congeners by the extremely reduced eyes - no other W-Palaearctic *Geostiba* species has similarly minute eye rudiments - and by the conspicuous shape of the spermatheca.

Distribution and bionomics: The adaptive reductions of the eyes, wings, the pigmentation, and the altidude (1500 m) suggest that *G. excepta* may be locally endemic to the vicinity of the type locality, which is situated some 50 km WNW of Kahramanmaraş, central southern Anatolia (Map 4). According to the collector (BRACHAT, pers. comm.), the type was found in deep soil in crevices between rocks.

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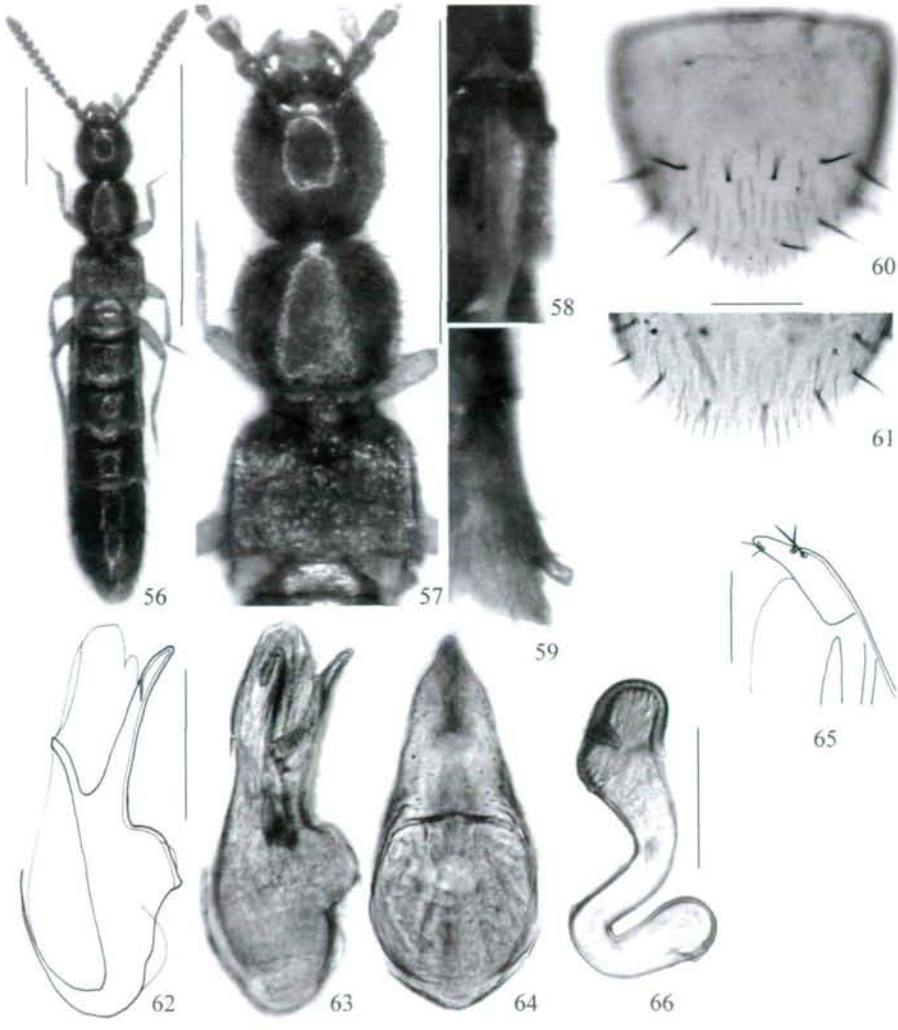

Figs 56-66: *Geostiba gibbera* sp.n. (56-59: holotype): ♂ Habitus (**56**); ♂ Forebody (**57**); ♂ elytra in lateral view (**58**); ♂ tergite VII in lateral view (**59**); ♂ sternite VIII (**60**); posterior margin of ♀ sternite VIII (**61**); median lobe of aedeagus (**62-64**); apical lobe of paramere (**65**); spermatheca (**66**). Scale bars: 56-59: 0.5 mm; 60-64: 0.1 mm; 65-66: 0.1 mm.

Geostiba (*Typhlusida*) *flava* (KRAATZ)

Additional material examined: **Slovenia:** 2 exs., Črni les, Lenart-Carpinetum, 8.XII.2000, leg. Drovenik (cDro, cAss); 4 exs., Zg. Ščavnica, Carpinetum, 8.XII.2000, leg. Drovenik (cDro, cFel).

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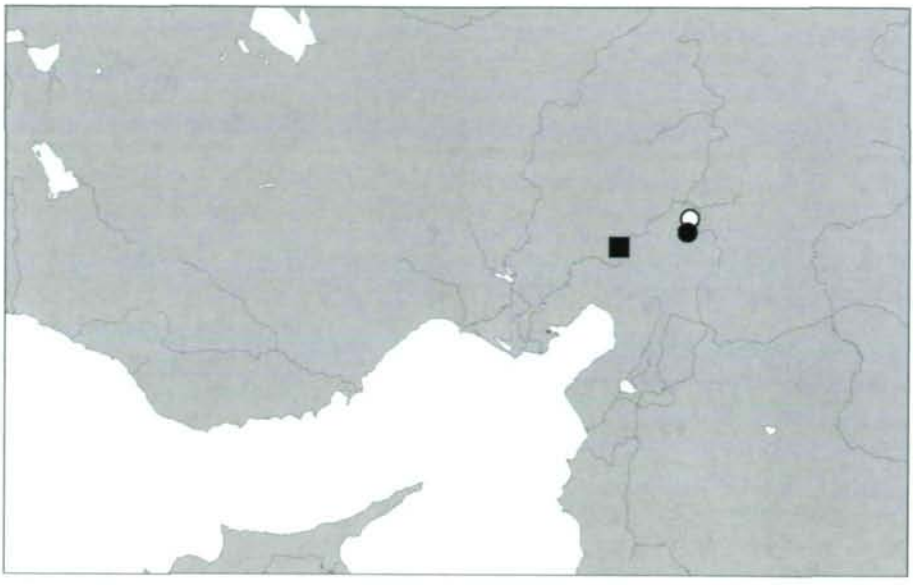

Map 4: Distributions of the species of the *Geostiba confusa* group: *G. confusa* ASSING (square), *G. G. gibbera* sp.n. (filled circle), and *G. bigibbera* sp.n. (open circle) in central southern Turkey.

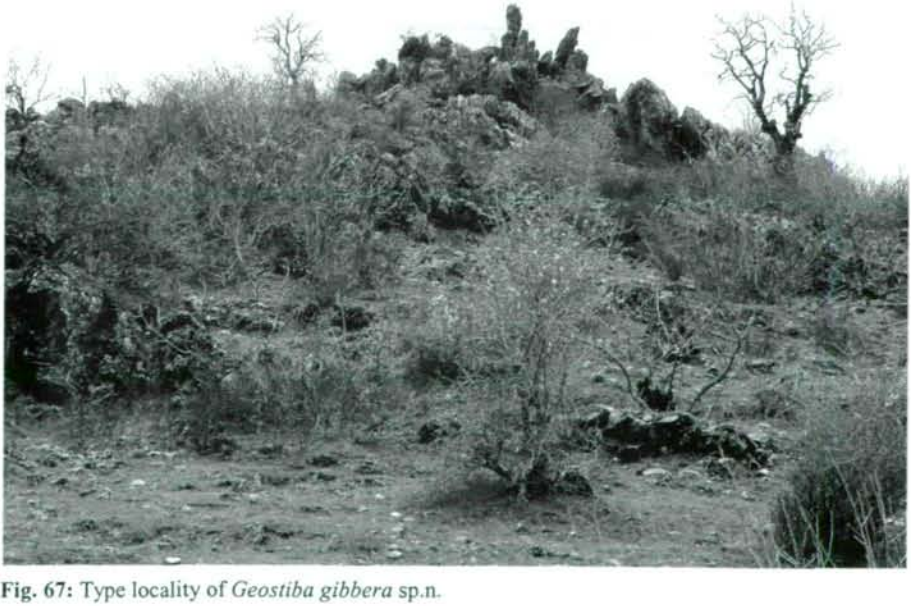

Fig. 67: Type locality of *Geostiba gibbera* sp.n.

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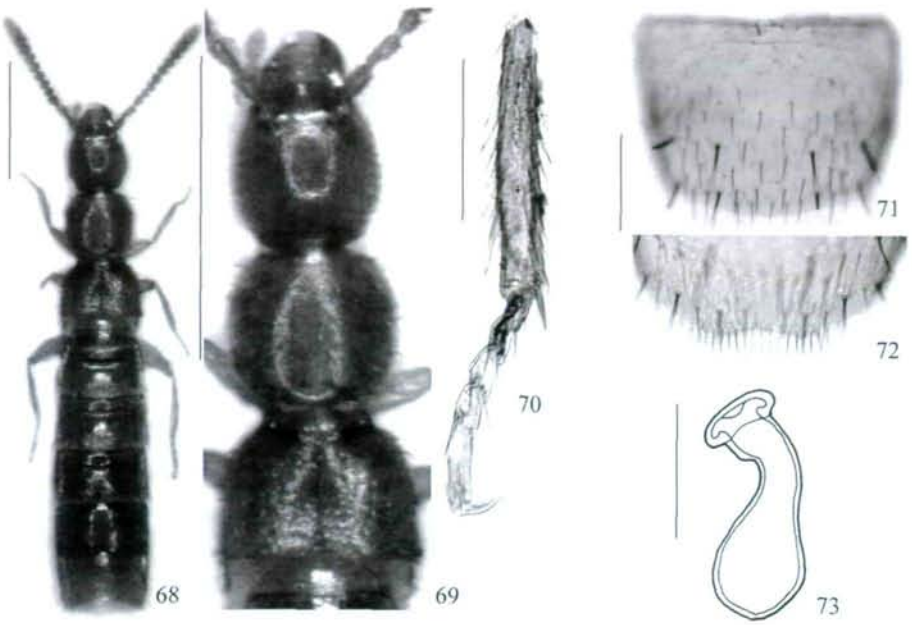

Figs 68-73: *Geostiba excepta* sp.n. (holotype): ♀ habitus (**68**); ♀ forebody (**69**); mesotarsus and mesotibia (**70**); ♀ tergite VIII (**71**); posterior part of ♀ sternite VIII (**72**); spermatheca (**73**). Scale bars: 68-69: 0.5 mm; 70-72: 0.1 mm; 73: 0.1 mm.

Acknowledgements

I am indebted to Paul Wunderle, Mönchengladbach, for providing the habitat photos, and to Benedikt Feldmann, Münster, for proof-reading the manuscript.

Zusammenfassung

Sieben *Geostiba*-Arten werden beschrieben und abgebildet: *G.* (*Tropogastrosipalia*) *nemrutica* sp.n. (Südtürkei: Adıyaman), *G.* (*T.*) *dibekiana* sp.n. (Südtürkei: Adana), *G.* (*Sipalotricha*) *varnousica* sp.n. (Nordgriechenland: Varnous Oros), *G.* (*Sibiota*) *asperipennis* sp.n. (Südtürkei: Adıyaman), *G. gibbera* sp.n. (Südtürkei: Kahramanmaraş), *G. bigibbera* sp.n. (Südtürkei: Kahramanmaraş), and *G. excepta* sp.n. (Südtürkei: Osmaniye). Weitere Nachweise werden gemeldet, insbesondere aus Griechenland und der Türkei. Für mehrere Arten werden Verbreitungskarten erstellt.

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