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

V. ASSING

**Abstract:** 13 species of *Geostiba* from Turkey and Greece are described and illustrated: *G. (Tropogastrosipalia) nifica* sp.n. (Turkey: Izmir), *G. (T.) anlasi* sp.n. (Turkey: Izmir), *G. (T.) solodovnikovi* sp.n. (Turkey: Erzurum), *G. (T.) atromontis* sp.n. (Turkey: Manisa), *G. (T.) renneri* sp.n. (Turkey: Muğla), *G. (T.) aydinica* sp.n. (Turkey: Aydın), *G. (T.) biformis* sp.n. (Turkey: Muğla, Denizli), *G. (T.) calcidica* sp.n. (Greece: Chalkidike), *G. (T.) elmaica* sp.n. (Turkey: Ankara), *G. (T.) priva* sp.n. (Turkey: Gümüşhane), *G. (Sibiota) aucta* sp.n. (Turkey: Rize), *G. (Sipalotricha) orduica* sp.n. (Turkey: Ordu), and *G. (S.) soganlica* sp.n. (Turkey: Trabzon). Supplements to a recent key to the *Geostiba* species of the Eastern Mediterranean and adjacent regions are provided. The distribution of the highly diverse subgenus *Tropogastrosipalia* SCHEERPELTZ in the study region is mapped and discussed. Additional records of various described species are presented, among them first records of *G. euboica* PACE from Turkey and of *G. oertzeni* (EPPELSHEIM) from Ukraine. The distributions of 16 species are mapped.

**Key words:** Coleoptera, Staphylinidae, Aleocharinae, *Geostiba*, Eastern Mediterranean, Turkey, Greece, new species, new records.

### 1. Introduction

The Holarctic genus *Geostiba* currently includes approximately 400 species. Only 15 species are known from the Nearctic region, one of them an introduction from the Old World (GUSAROV 2002). While a modest 15 species have been recorded from the Eastern Palaearctic, as many as some 365 species and subspecies are listed for the Western Palaearctic region, with 22 species occurring in the Atlantic Islands (ASSING 1997, ASSING & WUNDERLE 1996) and nearly 200 – mostly unrevised – taxa in the Western Mediterranean (from Italy and Tunisia to Spain and Morocco). The *Geostiba* fauna of the Eastern Mediterranean and adjacent regions was revised in several steps (ASSING 2005a, 2005c, and references therein); for a map delimiting the study region see ASSING (2005a). Altogether, 143 species were recognised, which are currently attributed to five subgenera. A catalogue and a key to species are provided by ASSING (2005a). The highest diversity – by far – was observed in Turkey (50 species) and Greece (43 species).

With several undescribed species being discovered every year and vast regions especially in Turkey still largely unexplored, it seemed likely that the species inventory was still

rather incomplete. Therefore, it did not come as a complete surprise that, in the course of three field trips to western and northeastern Turkey in December 2005, April 2006, and July/August 2006, as many as twelve undescribed species were discovered. Another novelty was found among staphylinid material collected in Chalkidike (Greece). The material examined also yielded various additional records of previously described species, among them two first records from Turkey and Ukraine. Including the taxa recorded in this paper, 63 species (58 of them exclusive) and 44 species (40 of them exclusive) are now known from Turkey and Greece, respectively.

## 2. Material, methods, and abbreviations

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

OÖLL..... Oberrösterreichisches Landesmuseum Linz (Biologiezentrum)  
 cAss..... author's private collection  
 cGon..... private collection A. Gontarenko, Odessa  
 cSch..... private collection M. Schülke, Berlin  
 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](http://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.

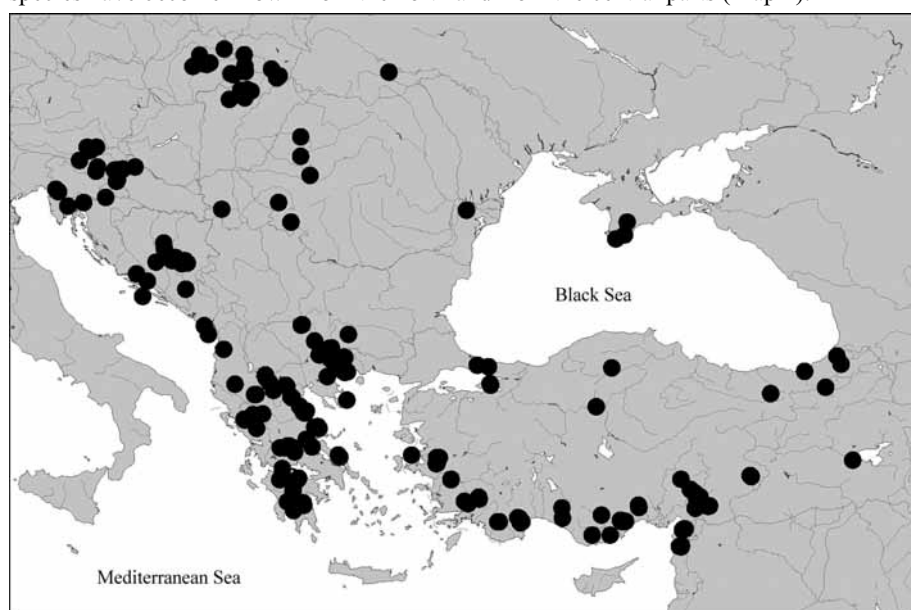
In the supplements to the key in ASSING (2005a), the references to figures and maps in previous papers are abbreviated as follows: A99 = ASSING (1999), A00a = ASSING (2000), A01a = ASSING (2001a), A01b = ASSING (2001b), A03 = ASSING (2003), A04a = ASSING (2004a), A04b = ASSING (2004b); P83b = PACE (1983); P02 = PACE (2002).

## 3. The species of the subgenus *Tropogastrosipalia* SCHEERPELTZ

With a total of 80 species, this subgenus alone accounts for more than half of the 156 species of *Geostiba* now known from the Eastern Mediterranean and adjacent regions (ASSING 2005a, 2005c, and present paper); for a map illustrating the area under study see Map 1 in ASSING (2005a). All the species of this subgenus are micropterous. Two zoogeographic trends were observed: from north to south (1) species diversity increases and (2) the average ranges of individual species decrease (ASSING 2005a). The majority of *Tropogastrosipalia* species occur in Greece and Turkey (Map 1). They are unknown from the Middle East south of Turkey and from North Africa. Remarkably, they also appear to be absent from the Mediterranean islands, even those of greater dimensions – such as Crete and Cyprus – and those that are close to the mainland. The only exceptions

to this rule are the Greek island Evvoia (2 species) and the Croatian island Korčula (1 species).

In Greece and Turkey, *Tropogastrosipalia* species generally have very restricted distributions; only *G. armata* (EPPELSHEIM) is relatively widespread in northern and central Greece. Very few species are known to occur in more than one mountain range. In Turkey, the vast majority of species have been recorded from the south, whereas only few species have become known from the north and from the central parts (Map 1).



**Map 1:** Distribution of the subgenus *Tropogastrosipalia* in the Eastern Mediterranean and adjacent regions, based on examined records. In Greece and Turkey, almost all the dots represent different species, since, with few exceptions, all the species are known only from a single locality.

#### 4. 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 (Tropogastrosipalia) spinicollis* (KRAATZ)

**Additional material examined:** **Croatia:** 4 exs., Zagreb, Orehovački ogranak, 21.V.2006, leg. Hlaváč (cAss).

##### *Geostiba (Tropogastrosipalia) winkleri* (BERNHAEUER)

**Additional material examined:** **Ukraine:** 3 exs., Crimea, Alushta distr., N Demerdzhi, 1300 m, *Pinus* litter, leg. Gontarenko (cGon); 2 exs., Crimea, Alushta distr., Izobilnoye, under stones, 6.V.2006, leg. Gontarenko (cAss).

***Geostiba (Tropogastrosipalia) ossaica* ASSING**

**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 :** **Greece:** 4 exs., Thessalia, Ossa, Kissavos Oros, E Ambelakia, 600 m, 13.-18.IV.2006, leg. Vit (cAss).

This very recently described species is apparently endemic to the Ossa Oros (ASSING 2004b).

***Geostiba (Tropogastrosipalia) nifica* sp.n. (Figs 1-12, Map 3)**

**Holotype** ♂: TR - Izmir [9], 20 km E Izmir, Nif Dağı, 1370-1400 m, *Pinus*, grass, 38°22'55N, 27°21'30E, 26.XII.2005, V. Assing / Holotypus ♂ *Geostiba nifica* sp.n. det. V. Assing 2005 (cAss). **Paratypes:** 3♂♂, 8♀♀: same data as holotype (cAss); 4♂♂, 8♀♀: N38°23'30, E027°24'01 (16), Türkei, Izmir, Nif Dagi, 1010 m, 23.4.2006, l. Brachat & Meybohm (OÖLL, cAss); 1♂, 1♀: TR Prov.: Izmir (16), Umgeb.: Kemalpaşa, Nif Dagi, 1010 m, 23.IV.2006, N38°23'30", E027°24'01", leg. Meybohm & Brachat (cAss); 5♀♀: N38°24'19, E027°23'31 (17), Türkei, Izmir, Nif Dagi, 970 m, 24.4.2006, l. Brachat & Meybohm (cAss); 2♂♂: TR Prov.: Izmir (17), Umgeb.: Kemalpaşa, Nif Dagi, 972 m, 24.IV.2006, N38°24'19", E027°23'32", leg. Meybohm & Brachat (cAss); 2♀♀: TR Prov.: Izmir (18), Umgeb.: Kemalpaşa, Nif Dagi, 1078 m, 24.IV.2006, N38°24'13", E027°23'05", leg. Meybohm & Brachat (cAss); 1♂, 2♀♀: N38°24'13, E027°23'05 (18), Türkei, Izmir, Nif Dagi, 1080 m, 24.4.2006, l. Brachat & Meybohm (cAss); 1♀: N38°23'50, E027°23'50 (19), Türkei, Izmir, Nif Dagi, 920 m, 24.4.2006, l. Brachat & Meybohm (cAss).

**Description:** Species of moderately large size, 2.7-3.7 mm (abdomen fully extended). Coloration: head dark brown to blackish; pronotum brown to blackish brown; elytra yellowish brown to dark brown; abdomen blackish, often with the apex and segments III-V paler; legs testaceous; antennae brown to dark brown.

Facies as in Fig. 1. Head and pronotum with shallow microreticulation (Fig. 2). Eyes moderately small (Fig. 3), weakly protruding from lateral outline of head, approximately half the length of postocular region in dorsal view.

Pronotum without sexual dimorphism, in both sexes approximately 1.15 times as wide as head and approximately as long as wide or indistinctly oblong (Fig. 2). Elytra with rather weakly pronounced sexual dimorphism, less than 0.6 times as long as pronotum.

Abdomen rather shining; puncturation relatively dense and coarse on anterior tergites, sparse and fine on posterior tergites; microsculpture composed of transverse striae and transverse meshes, more distinct on tergites VI and VII than on tergites III-V; posterior margin of tergite VII without or with very narrow rudiment of a palisade fringe.

♂ (large): elytra with somewhat granulose puncturation especially near posterior angles, a short distance anterior to posterior angles with short fold (Figs 2, 4); abdominal tergites III-V unmodified; process of tergite VII long, acute, and erect (Figs 5-6); sternite VIII as in Fig. 7; median lobe of aedeagus with thin cristal process (Figs 8-9); apical lobe of paramere shaped as in other species of the subgenus.

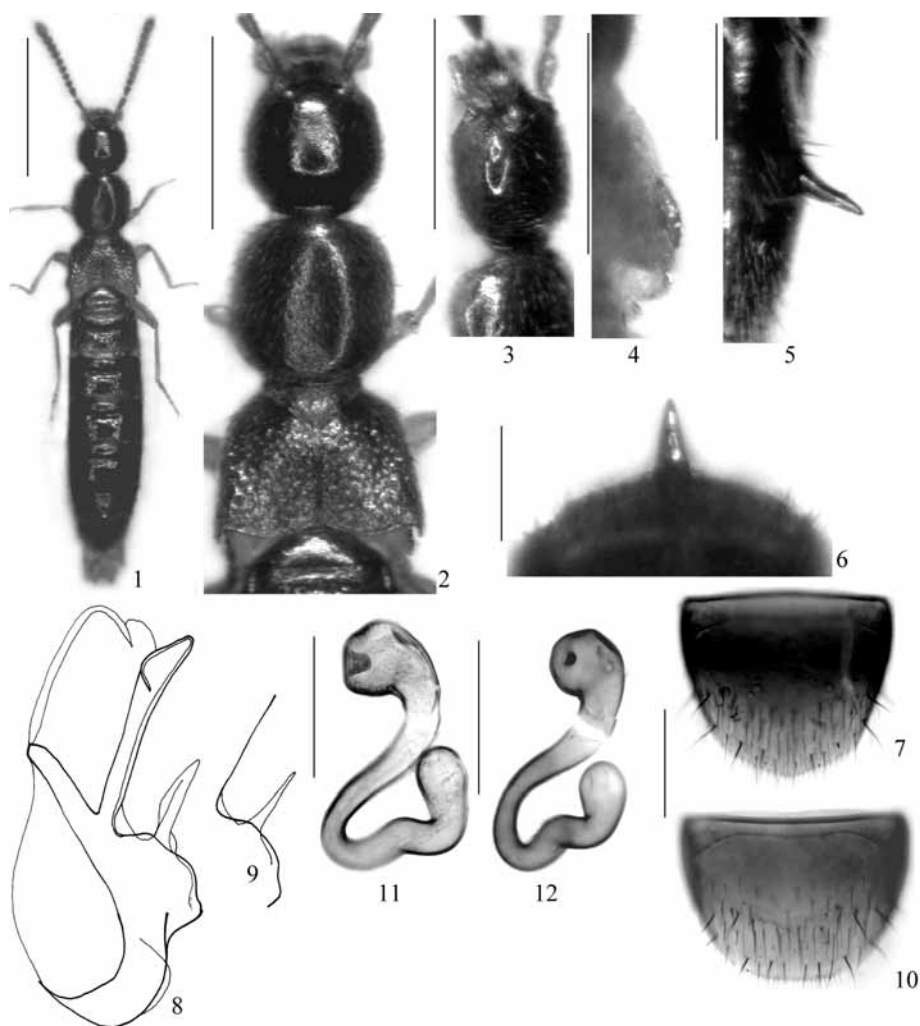
♀: elytra with unmodified fine puncturation, near posterior angles at most with indistinct indication of fold; sternite VIII as in Fig. 10; spermatheca as in Figs 11-12.

**Etymology:** The name (Lat., adj.) is derived from the name of the mountain where the species is probably endemic.

**Intraspecific variation:** The male secondary sexual characters are pronounced only in seven of the twelve male type specimens. In the other males, the elytral puncturation is only indistinctly granulose, the elytral folds are weakly elevated, the process of tergite VII is completely absent or nearly so, and the cristal process of the median lobe of the aedeagus is thinner (Fig. 9).

**Comparative notes:** See comparative notes in section on *G. atromonis* sp.n. and supplementary key in the section on *G. renneri* sp.n.

**Distribution and bionomics:** As can be inferred from the restricted distributions of other species of the subgenus, *G. nifica* is probably endemic to the Nif Dağı to the east of Izmir (Map 3). The types were sifted from grass roots and litter below scattered old pine trees and from litter in rocky crevices at altitudes of 920-1400 m.



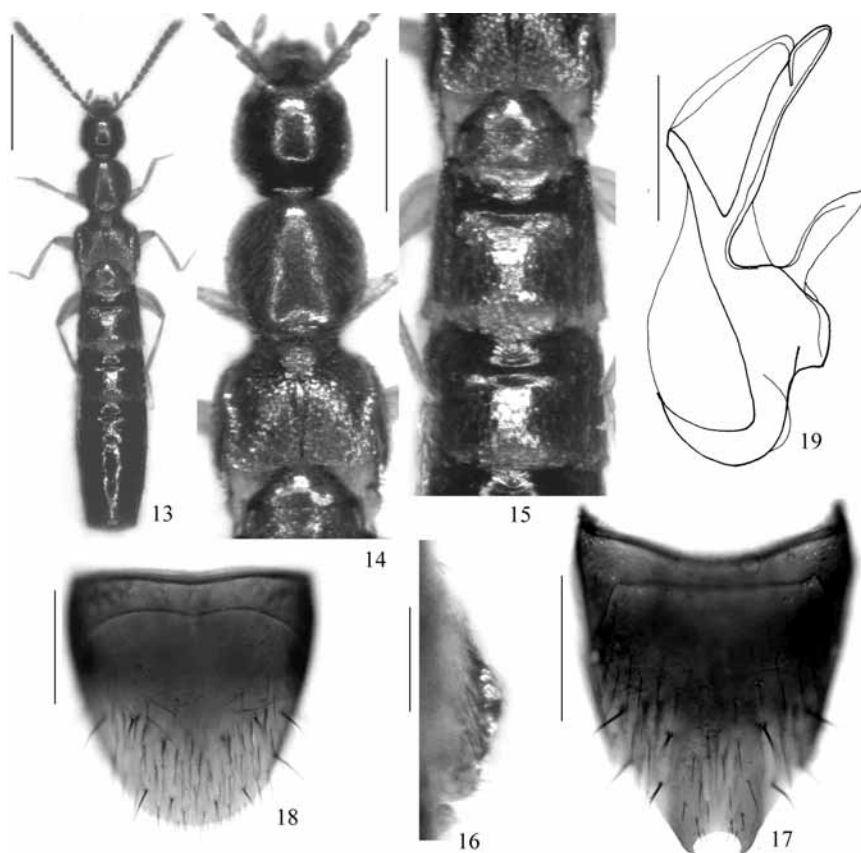
**Figs 1-12:** *Geostiba nifica* sp.n. (1-8: holotype): (1) ♂ habitus; (2) ♂ forebody; (3) head in lateral view; (4) ♂ right elytron in lateral view; (5) ♂ abdominal tergites VII-VIII in lateral view; (6) process of ♂ tergite VII in antero-dorsal view; (7) ♂ sternite VIII; (8) median lobe of aedeagus in lateral view; (9) cristal process of median lobe of aedeagus in lateral view (♂ without pronounced secondary sexual characters); (10) ♀ sternite VIII; (11-12) spermatheca. Scale bars: 1: 1.0 mm; 2-4: 0.5 mm; 5-7, 10: 0.2 mm; 8-9, 11-12: 0.1 mm.

***Geostiba (Tropogastrosipalia) anlasi* sp.n. (Figs 13-19, Map 3)**

Holotype ♂: TR - Izmir [14], ca. 60 km WNW Izmir, 420 m SW Karaburun, meadow, 38°37'40N, 26°29'26E, 27.XII.2005, leg. Anlaş / Holotypus ♂ *Geostiba anlasi* sp.n. det. V. Assing 2005 (cAss).

**Description:** Large species, 3.9 mm (abdomen fully extended). Coloration: head blackish; pronotum and elytra reddish brown; abdomen blackish, with the apex and segments III-IV slightly paler; legs testaceous; antennae dark brown.

Facies as in Fig. 13. Head and pronotum with shallow fine microreticulation (Fig. 14). Eyes moderately small, weakly protruding from lateral outline of head, slightly less than half the length of postocular region in dorsal view.



**Figs 13-19:** *Geostiba anlasi* sp.n. (holotype): (13) ♂ habitus; (14) ♂ forebody; (15) anterior part of ♂ abdomen; (16) ♂ right elytron in lateral view; (17) ♂ tergite VIII; (18) ♂ sternite VIII; (19) median lobe of aedeagus in lateral view. Scale bars: 13: 1.0 mm; 14-15: 0.5 mm; 16-18: 0.2 mm; 19: 0.1 mm.

Pronotum apparently without appreciable sexual dimorphism, distinctly convex in cross-section, approximately 1.15 times as wide as head and 1.05 times as long as wide (Fig. 14). Elytra with pronounced sexual dimorphism, approximately 0.55 times as long as pronotum.

Abdomen rather shining; puncturation relatively sparse and fine on anterior tergites, very sparse and very fine on posterior tergites; microsculpture on tergites VI-VII very shallow, barely noticeable, on tergites III-V obsolete; segment III conspicuously elongated, ratio of width (across posterior margin) and length (from anterior margin of paratergite to posterior margin of tergite): 1.23 (Fig. 15); posterior margin of tergite VII with very indistinct narrow rudiment of a palisade fringe.

♂: elytra with ill-defined, somewhat granulose puncturation (Fig. 14); laterally with pronounced (long and strongly elevated, especially posteriorly) fold (Fig. 16); suture slightly elevated (Fig. 14); abdominal tergites III-V without tubercles; tergite VII without process; tergite VIII highly distinctive: posterior margin with pair of pronounced processes (Fig. 17); sternite VIII as in Fig. 18; median lobe of aedeagus with dagger-shaped cristal process (Fig. 19); apical lobe of paramere shaped as in other species of the subgenus.

♀: unknown.

**E t y m o l o g y :** This remarkable species is dedicated to Sinan Anlaş, Izmir, who discovered the holotype.

**C o m m e n t :** The question whether the conspicuously long abdominal segment III is a character shared by both sexes or confined to males can be clarified only when females become available for examination.

**C o m p a r a t i v e n o t e s :** This highly distinctive species is easily identified among its congeners by several unique characters: the morphology of the male elytra (pronounced lateral folds, absence of pronounced sutural carinae), the elongated abdominal segment III, the absence of a process on the male tergite VII, and the shape of the male tergite VIII with a pair of pronounced processes at the posterior margin.

In order to account for this species, the key in ASSING (2005a) is modified as follows:

- |      |   |      |
|------|---|------|
| 107  | Abdominal segment III conspicuously elongated, ratio of width (across posterior margin) and length (from anterior margin of paratergite to posterior margin of tergite): <1.3 (Fig. 15). ♂: elytra with pronounced lateral folds (Figs 14, 16); posterior margin of tergite VIII with pair of pronounced processes (Fig. 17); median lobe of aedeagus as in Fig. 19. Western Anatolia: Izmir province (Map 3) .....<br>..... <i>G. anlasi</i> sp.n. |      |
| -    | Abdominal segment III strongly transverse, at least 1.5-1.6 times as wide as long. ♂: elytra without pronounced lateral folds; tergite VIII without pair of pronounced processes; aedeagus of different morphology, without cristal process.....  | 107a |
| 107a | ♂: tergite VII near posterior margin with – often weakly defined – subcircular median tubercle (Fig. 162 in Assing 2005a and Fig. A99: 200), which may be reduced to various degrees; elytra with distinct microsculpture and almost or completely matt. Species confined to the Taygetos range (Greece: Pelopónnisos) or the Caucasus region .....   | 108  |
| -    | ♂ tergite VII unmodified .....  | 109  |

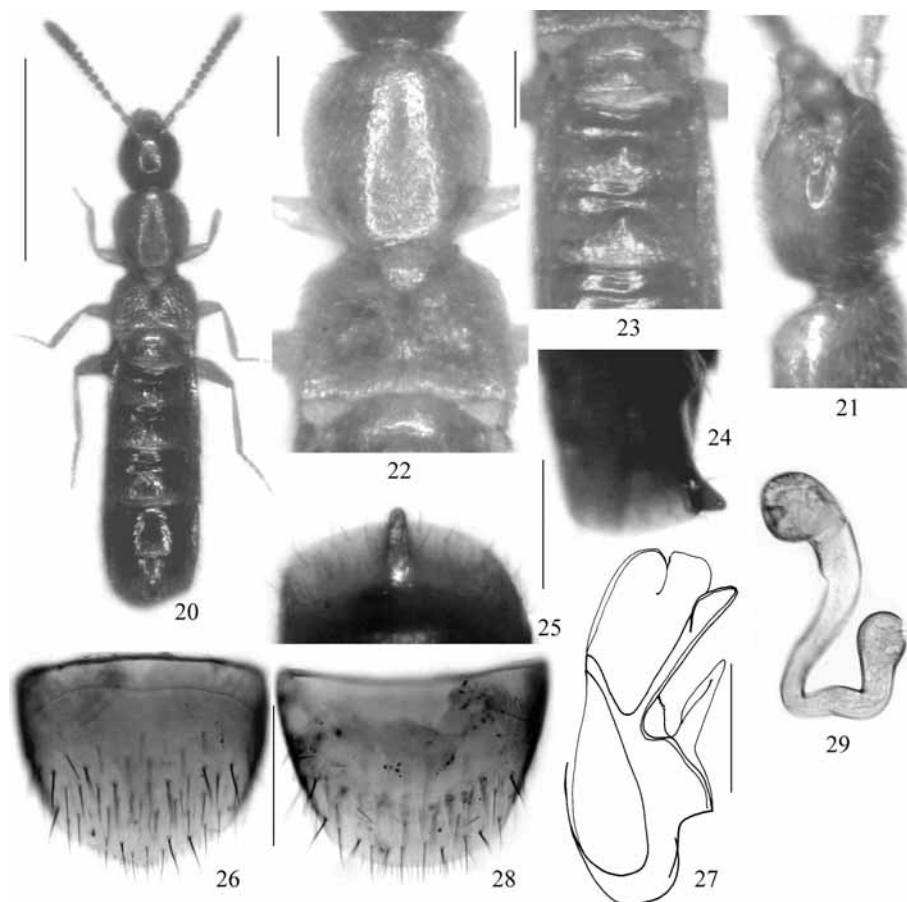
**D i s t r i b u t i o n a n d b i o n o m i c s :** *Geostiba anlasi* may be endemic to the Ak Dağ and adjacent mountains on the peninsula approximately 60 km WNW Izmir (Map 3), a conclusion mainly based on the restricted distributions of its Turkish consubgenera. The holotype was found under a stone on a grassy slope at an elevation of only 420 m. Subsequent sifting of the surrounding area yielded some specimens of *G. euhoica*, but no additional material of *G. anlasi*.

***Geostiba (Tropogastrosipalia) solodovnikovi* sp.n. (Figs 20-29, Map 4)**

Holotype ♂: TR - Erzurum, 35-40 km NW Tortum, 2600 m, Mescit Dağları, ca. 40°30'N, 41°17'E, 19.VI.1998, leg. Solodovnikov / Holotypus ♂ *Geostiba solodovnikovi* sp.n. det. V. Assing 2006 (cAss). Paratypes: 4 ♂♂, 2 ♀♀: same data as holotype (cAss).

**Description:** Small species, 2.1-2.6 mm (abdomen fully extended). Coloration: forebody yellowish red to reddish brown; abdomen reddish brown to brown, with segment VI and the anterior half of segment VII infuscate; legs testaceous; antennae rufous, with the basal 2-3 antennomeres yellowish to pale reddish.

Facies as in Fig. 20. Head and pronotum with shallow fine microreticulation. Eyes small, not protruding from lateral outline of head, approximately one third the length of post-ocular region in dorsal view (Fig. 21).



**Figs 20-29:** *Geostiba solodovnikovi* sp.n. (20-23: holotype): (20) ♂ habitus; (21) head in lateral view; (22) ♂ pronotum and elytra; (23) anterior part of ♂ abdomen; (24) ♂ abdominal segment VII in lateral view; (25) ♂ tergite VII in antero-dorsal view; (26) ♂ sternite VIII; (27) median lobe of aedeagus in lateral view; (28) ♀ sternite VIII; (29) spermatheca. Scale bars: 20: 1.0 mm; 21-26, 28: 0.2 mm; 27, 29: 0.1 mm.



Pronotum with weakly pronounced sexual dimorphism, weakly oblong ( $\delta$ ) (Fig. 22) to weakly transverse ( $\varphi$ ). Elytra with moderate sexual dimorphism, 0.51 ( $\delta$ ) to 0.57 ( $\varphi$ ) times as long as pronotum; puncturation fine, shallow, and relatively sparse; microsculpture very shallow.

Abdomen rather shining; puncturation moderately sparse on tergite III-V, very sparse on tergites VI-VIII; microsculpture present, but very shallow; tergites III-IV and VII with sexual dimorphism; posterior margin of tergite VII with indistinct narrow rudiment of a palisade fringe.

$\delta$ : pronotum weakly elongated posteriorly, posterior margin broadly and shallowly concave, occasionally truncate; elytra with relatively short and weakly elevated sutural carina extending along anterior half of suture; each elytron with extensive, but ill-defined and shallow impression; elytral puncturation weakly granulose (Fig. 22); abdominal tergites III-IV each with moderately pronounced median tubercle (Fig. 23); tergite VII with relatively short, stout (lateral view), slender (antero-dorsal view), erect, and apically rounded (antero-dorsal view) process (Figs 24-25); posterior margin of sternite VIII indistinctly angled in middle (Fig. 26); median lobe of aedeagus with dagger-shaped cristall process (Fig. 27).

$\varphi$ : posterior margin of pronotum more or less truncate in the middle; elytra without impressions and with very fine sparse puncturation; sternite VIII broadly convex posteriorly (Fig. 28); spermatheca as in Fig. 29.

**E t y m o l o g y**: This species is dedicated to Alexey Solodovnikov, Chicago, who collected the type series.

**C o m p a r a t i v e n o t e s**: *Geostiba solodovnikovi* is readily separated from most other Turkish representatives of *Tropogastrosipalia* by its small size, the pale coloration, and the small eyes. From all its consubgenera it is distinguished by the male primary and secondary sexual characters. For a supplementary key see the comparative notes in section on *G. bififormis* sp.n.

**D i s t r i b u t i o n a n d b i o n o m i c s**: *Geostiba solodovnikovi* is known only from one locality in the Mescit Dağları (Erzurum) in northeastern Anatolia (Map 4), where the types were collected at an altitude of 2600 m.

### ***Geostiba (Tropogastrosipalia) atromontis* sp.n. (Figs 30-35, Map 3)**

**Holotype**  $\delta$ : TR [30] - Manisa, 10 km S Manisa, Karadağ, 1200 m, roadside, 38°33'26N, 27°23'13E, 15.IV.2006, V. Assing / Holotypus  $\delta$  *Geostiba atromontis* sp.n. det. V. Assing 2006 (cAss).

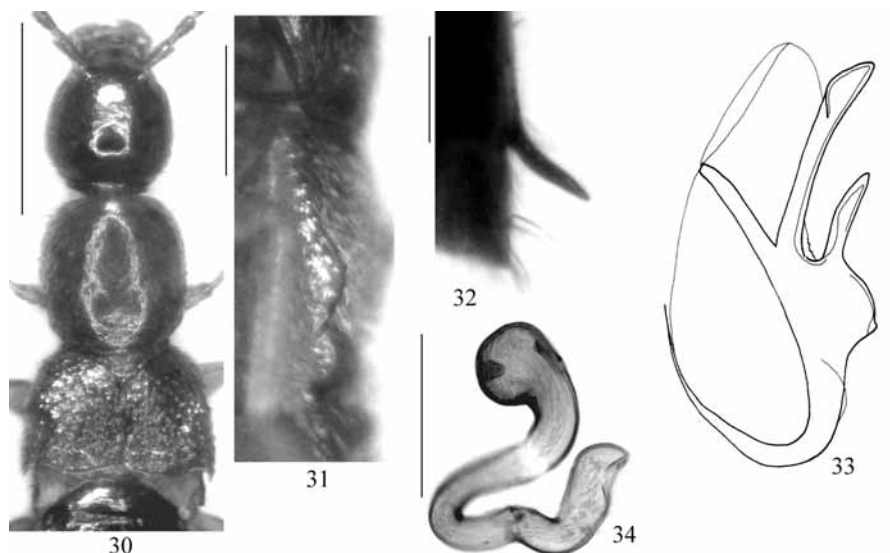
**Paratypes**: 3  $\varphi$   $\varphi$ : same data as holotype (cAss); 2  $\varphi$   $\varphi$ : same data, but leg. P. Wunderle (cWun); 3  $\varphi$   $\varphi$ : N38°32'31", E027°27'44", (21), Türkei, Manisa, Sipil Dagı, Milli Parkı, 1080 m, 25.4.2006, I. Brachat & Meybohm (cAss); 2  $\delta$   $\delta$ : TR Prov.: Manisa (21), Umgeb.: Manisa, Nat. Park Sipil Dagı, 1250 m, N38°32'32", E027°27'44", leg. Meybohm & Brachat (cAss); 3  $\delta$   $\delta$ , 6  $\varphi$   $\varphi$ : N38°32'51", E027°25'14" (20), Türkei, Manisa, Sipil Dagı, Milli Parkı, 1250 m, 25.4.2006, I. Brachat & Meybohm (OÖLL, cAss); 1  $\delta$ , 1  $\varphi$ : TR Prov.: Manisa (20), Umgeb.: Manisa, Nat. Park Sipil Dagı, 1250 m, N38°32'51", E027°25'14", leg. Meybohm & Brachat (cAss).

**D e s c r i p t i o n**: This species is extremely similar to *G. nifica*, so that a detailed description would be redundant. Instead, only the primary and secondary sexual characters are described:

$\delta$  (large): pronotum weakly oblong, up to 1.1 times as long as wide (Fig. 30); elytra with similar modifications as in *G. nifica*, but the carinae in posterior angles broader, of more irregular shape, and covered with more or less coarse granules (Figs 30-31); process of

tergite VII of similar shape as in *G. nifica*, but slightly less erect (Fig. 32); aedeagus similar to that of *G. nifica* (Fig. 33).

♀: spermatheca as in Fig. 34.



**Figs 30-34:** *Geostiba atromontis* sp.n. 30-33: holotype): (30) ♂ forebody; (31) ♂ elytra in lateral view; (32) process of ♂ tergite VII in lateral view; (33) median lobe of aedeagus in lateral view; (34) spermatheca. Scale bars: 30: 0.5 mm; 31-32: 0.2 mm; 33-34: 0.1 mm.

**E t y m o l o g y :** The name (Lat.: of the black mountain) refers to the Turkish name of the mountain range, where the species was discovered.

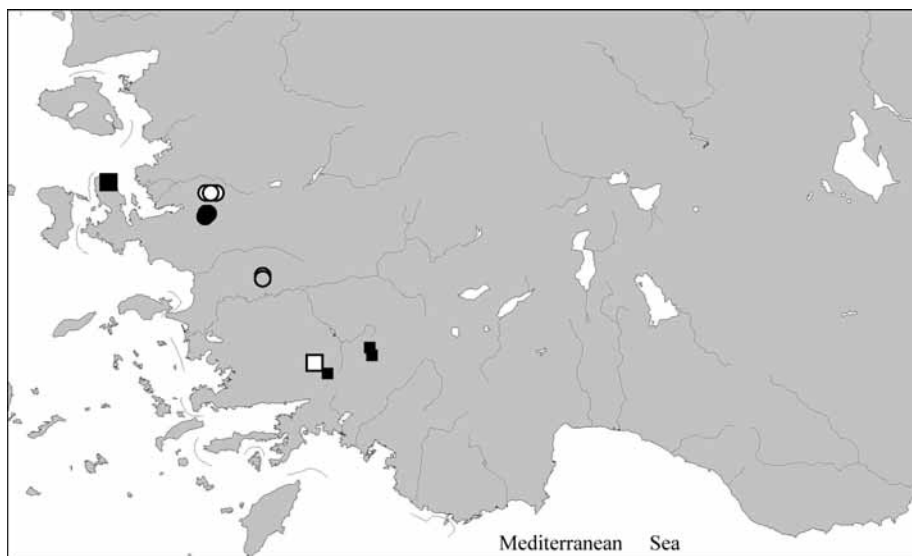
**I n t r a s p e c i f i c v a r i a t i o n :** The male secondary sexual characters are subject to considerable intraspecific variation; they are fully developed only in four of the seven male type specimens.

**C o m p a r a t i v e n o t e s :** As indicated above, *G. atromontis* is extremely similar to *G. nifica*; both species can be distinguished only based on the modifications of the elytra and tergite VII of large males with pronounced secondary sexual characters. Although these differences are slight, they are interpreted as evidence of interspecific rather than intraspecific variation, not only because they seem to be constant, but also because the ranges of both populations are separated by a considerable stretch of low-altitude plain. Using the key in ASSING (2005a), both *G. nifica* and *G. atromontis* would key out at couplet 77 (see supplementary key in section on *G. renneri* sp.n.).

**D i s t r i b u t i o n a n d b i o n o m i c s :** The species is probably endemic to the Karadağ range (Spil [=Sipil] nature reserve) to the south of Manisa (Map 3). The types were found under stones on limestone grassland (Fig. 35) and sifted from litter below bushes and near rocks at altitudes of 1080-1250 m.



**Fig. 35:** Locality where the holotype and some paratypes of *Geostiba atromontis* sp.n. were found. Photo by P. Wunderle.



**Map 3:** Distributions of *Geostiba nifica* (black circles), *G. atromontis* (white circles), *G. aydinica* (grey circles), *G. anlasi* (large black square), *G. biformis* (small black squares), and *G. renneri* (white square) in western and southwestern Anatolia.

***Geostiba (Tropogastrosipalia) renneri* sp.n. (Figs 36-44, Map 3)**

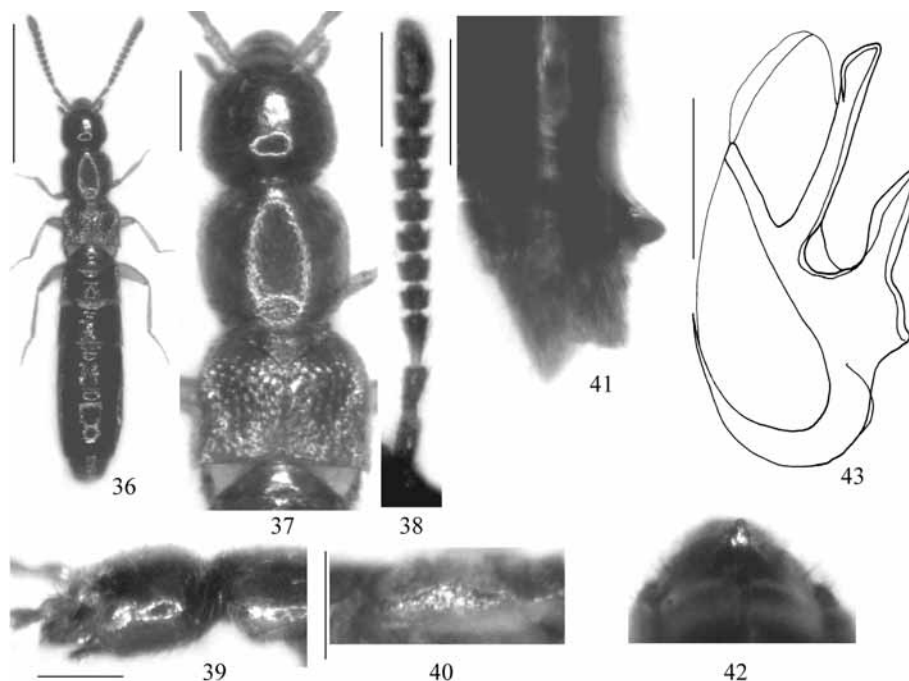
Holotype ♂: TR [25] - Muğla, 12 km NNE Muğla, 1620 m, grass roots, pine litter, 37°19'02N, 28°22'26E, 12.IV.2006, P. Wunderle / Holotypus ♂ *Geostiba renneri* sp.n. det. V. Assing 2006 (cAss).

**Description:** Species of relatively small size, 2.8 mm (abdomen fully extended). Coloration: head dark brown; pronotum and elytra light brown; abdomen blackish, with the apex and the anterior segments indistinctly paler; legs testaceous; antennae brown, with the basal two antennomeres light brown.

**Facies** as in Fig. 36. Head with very shallow microreticulation (Fig. 37). Eyes moderately small (Fig. 39), weakly protruding from lateral outline of head, approximately half the length of postocular region in dorsal view. Antenna as in Fig. 38.

Pronotum apparently with weakly pronounced sexual dimorphism, approximately 1.15 times as wide as head (Fig. 37). Microreticulation slightly more distinct than that of head. Elytra with moderately pronounced sexual dimorphism, less than 0.6 times as long as pronotum.

Abdomen shiny; puncturation moderately dense and relatively coarse on tergites III-V, sparse and fine on posterior tergites; microsculpture composed of transverse striae and transverse meshes, more distinct on tergites VI and VII than on tergites III-V; posterior margin of tergite VII without palisade fringe; tergites III-VI without sexual dimorphism.



**Figs 36-43:** *Geostiba renneri* sp.n. (holotype): (36) ♂ habitus; (37) ♂ forebody; (38) antenna; (39) head in lateral view; (40) ♂ left elytron in lateral view; (41) ♂ abdominal segments VII-VIII in lateral view; (42) process of ♂ tergite VII in antero-dorsal view; (43) median lobe of aedeagus in lateral view. Scale bars: 36: 1.0 mm; 37-42: 0.2 mm; 8-9, 43: 0.1 mm.

♂: pronotum approximately as long as wide, posterior margin distinctly convex (Fig. 37); elytra flat, with rather dense and coarse granulate puncturation, without sutural carina, but with distinct lateral carinae (Figs 37, 39); anterior abdominal tergites unmodified; process of tergite VII stout, massive, and short (Figs 41-42); sternite VIII with broadly convex posterior margin; median lobe of aedeagus as in Fig. 43; apical lobe of paramere shaped as in other species of the subgenus.

♀: unknown

**E t y m o l o g y :** The species is dedicated to Klaus Renner, Bielefeld, in appreciation of his life-long enthusiasm as a coleopterist and friend. Paul Wunderle discovered the holotype on 13 April, 2006, Klaus Renner's 70<sup>th</sup> birthday, in a sample collected on the previous day.



**Fig. 44:** Type locality of *Geostiba renneri* sp.n. (photo by P. Wunderle).

**C o m p a r a t i v e   n o t e s :** Using the key in ASSING (2005a), *G. renneri*, as well as *G. nifica* and *G. atromontis* would key out at couplet 77:

- 77     ♂: elytra with fold-like elevation or tubercle near posterior angles, or with bulging lateral margins..... 77a
- ♂: elytra without fold-like elevation or tubercle, lateral margins not bulging..... 80
- 77a    Pronotum without or with weakly pronounced sexual dimorphism (up to 1.15 times as long as wide, posterior margin broadly convex) in large males, posterior margin more or less distinctly convex (Figs 2, 30, 37). Western Anatolia..... 77b

- Pronotum with more pronounced sexual dimorphism, either distinctly elongated posteriorly (and covering scutellum) or posterior margin pointed in the middle. Southern Anatolia (Antalya, Mersin).....78
- 77b ♂: process of tergite VII short, stout, and apically obtuse (Figs 41-42); aedeagus with larger cristal process (Fig. 43). Muğla: Oyuklu Dağ (Map 3).....*G. renneri* sp.n.
- ♂: process of tergite VII long, slender, and apically acute (Figs 5, 32). median lobe of aedeagus with smaller and more slender cristal process (Figs 8-9, 33). Distribution different .....77c
- 77c Pronotum without appreciable sexual dimorphism (Fig. 2). ♂: carina in posterior angles of elytra narrow and not covered with coarse granula (Figs 2, 4); process of tergite VII more erect (Fig. 5). Izmir: Nif Dağı (Map 3) ..... *G. nifica* sp.n.
- ♂: pronotum in large ♂ weakly oblong (Fig. 30); carina in posterior angles of elytra broader, of more irregular shape, and usually with more or less coarse granula (Figs 30-31); process of tergite VII less erect (Fig. 32). Manisa: Karadağ (Spil Dağ) (Map 3)..... *G. atromontis* sp.n.

**Distribution and bionomics:** *Geostiba renneri* is probably endemic to the Oyuklu Dağ, north of Muğla (Map 3), and possibly also adjacent mountain ranges. The holotype was collected by sifting grass roots and pine litter in a limestone cirque at an altitude of slightly more than 1600 m (Fig. 44).

***Geostiba (Tropogastrosipalia) aydinica* sp.n. (Figs 45-53, Map 3)**

**Holotype** ♂: TR Prov.: Aydın (8), N Aydın, Str. -> Pasayaylasi, 1460 m, 20.IV.2006, N37°56'47", E27°53'53", leg. Meybohm & Brachat / Holotypus ♂ *Geostiba aydinica* sp.n. det. V. Assing 2006 (cAss). **Paratypes:** 1 ♂, 3 ♀: same data as holotype (cAss); 1 ♂, 4 ♀: N37°56'47", E027°53'53" (8), Türkei, Aydın, Pasayaylasi, 1460 m, 20.4.2006, I. Brachat & Meybohm (cAss); 1 ♂, 4 ♀: N37°55'45", E027°53'46" (9), Türkei, Aydın, Pasayaylasi, 1115 m, 20.4.2006, I. Brachat & Meybohm (OÖLL, cAss); 1 ♀: TR Prov.: Aydın (9), N Aydın, Str. -> Pasayaylasi, 1115 m, 20.IV.2006, N37°55'46", E27°53'46", leg. Meybohm & Brachat (cAss); 1 ♂, 2 ♀: TR [5], Aydın, 15 km NNE Aydın, Imambaba T., 1410 m, 37°56'38N, 27°53'40E, 5.IV.2006, V. Assing (cAss); 2 ♀: same data, but leg. Wunderle (cWun); 1 ♀: TR [7], Aydın, 15 km NNE Aydın, Imambaba T., 1480 m, 37°56'29N, 27°53'55E, 5.IV.2006, V. Assing (cAss); 2 ♂: TR [6] - Aydın, 15 km NNE Aydın, Imambaba T., 1420 m, under stones, 37°56'43N, 27°53'45E, 5.IV.2006, P. Wunderle (cWun).

**Description:** Species of moderately large size, 2.5-3.2 mm (abdomen fully extended). Coloration: head dark brown to blackish; pronotum brown to dark brown; elytra yellowish brown to reddish brown; abdomen blackish, often with the apex and segments III-IV partly paler; legs testaceous; antennae reddish brown to dark brown.

**Facies** as in Fig. 45. Head and pronotum with shallow microreticulation (Fig. 46). Eyes relatively small (Fig. 47), weakly protruding from lateral outline of head, less than half – usually slightly more than one third – the length of postocular region in dorsal view.

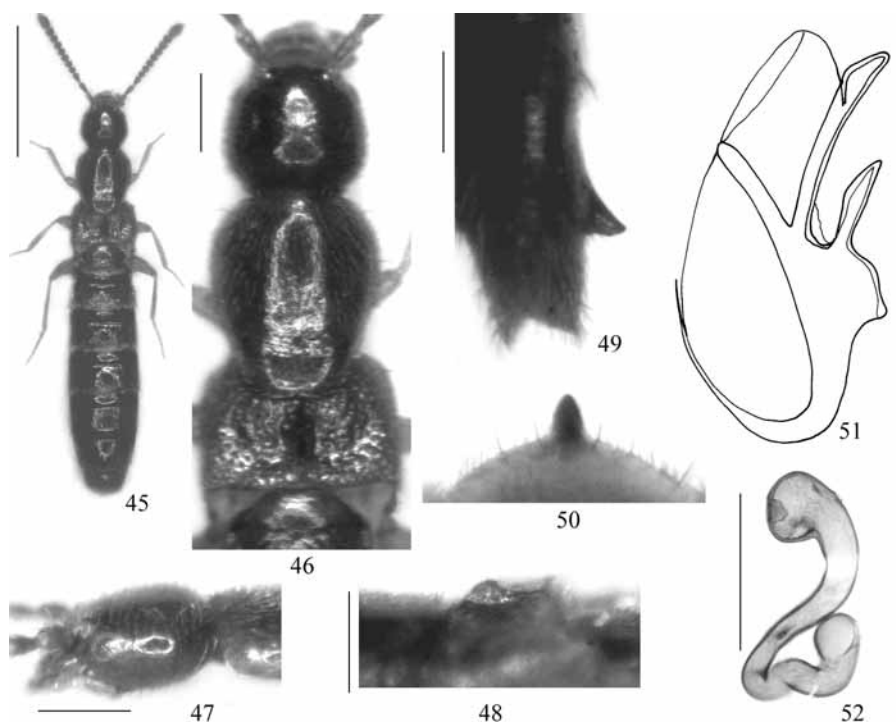
Pronotum with pronounced sexual dimorphism. Elytra, too, with pronounced sexual dimorphism, less than 0.6 times as long as pronotum.

Abdomen moderately glossy; puncturation fine, moderately dense on tergites III-V, sparse on posterior tergites; microsculpture moderately distinct; posterior margin of tergite VII without or with very narrow rudiment of a palisade fringe.

♂ (large): pronotum large and oblong, 1.15-1.20 times as wide as head and up to 1.26 times as long as wide, distinctly elongated posteriorly and covering scutellum, lateral margins not sinuate, posterior margin truncate to weakly concave (Fig. 46); elytra with pronounced (i. e. distinctly elevated) sutural carina extending almost over full length of suture (Fig. 48); elytral surface with distinct and relatively extensive impression, punctu-

ration coarsely granulose (Fig. 46); anterior abdominal tergites unmodified; process of tergite VII short and stout (Figs 49-50); posterior margin of tergite VIII often somewhat pointed in the middle; sternite VIII broadly convex posteriorly; median lobe of aedeagus as in Fig. 51; apical lobe of paramere shaped as in other species of the subgenus.

♀: pronotum approximately 1.15 times as wide as head and approximately as wide as long or weakly oblong; elytra unmodified, without carina, without impressions, and with fine puncturation; posterior margins of tergite and sternite VIII weakly convex; spermatheca as in Fig. 52.



**Figs 45-52:** *Geostiba aydinica* sp.n.: (45) ♂ habitus; (46) ♂ forebody; (47) head in lateral view; (48) ♂ elytra in lateral view; (49) ♂ abdominal segments VII-VIII in lateral view; (50) process of ♂ tergite VII in antero-dorsal view; (51) median lobe of aedeagus in lateral view; (52) spermatheca. Scale bars: 45: 1.0 mm; 46-50: 0.2 mm; 51-52: 0.1 mm.

**E t y m o l o g y :** The name (Lat., adj.) is derived from the name of the mountain range (Aydın Dağları) where the species is probably endemic.

**I n t r a s p e c i f i c v a r i a t i o n :** The male secondary sexual characters are subject to considerable variability. They are fully developed in two of the seven male type specimens. While the elytral suture is at least weakly modified (slightly elevated) in all of them, the process of tergite VII is completely absent in two males. Also, the elytral impressions may be absent, the elytral puncturation may not be distinctly granulose, and the pronotum may be only weakly modified in smaller males.

**C o m p a r a t i v e n o t e s :** Using the key in ASSING (2005a), *G. aydinica* would

key out at couplets (69-71). For a supplementary key see comparative notes in section on *G. biformis* sp.n.

**Distribution and bionomics:** *Geostiba aydinica* is currently known only from the Imambaba Tepesi (synonym: Paşayaylası), NNE Aydın, in the Aydın Dağları (Map 3). The type specimens were collected under stones, by sifting grass roots and litter at the margin of pine forests (Fig. 53), and by sifting litter below bushes on grassy slopes at altitudes of 1115-1460 m; one specimen was found in a nest of *Camponotus* sp. (Formicidae).



**Fig. 53:** Locality where several paratypes of *Geostiba aydinica* sp.n. were found (photo by P. Wunderle).

***Geostiba (Tropogastrosipalia) biformis* sp.n. (Figs 54-63, Map 3)**

**Holotype** ♂: TR [20] - Muğla, 15 km ENE Muğla, 1190 m, pasture with stones, 37°14'58N, 28°30'07E, 10.IV.2006, V. Assing / Holotypus ♂ *Geostiba biformis* sp.n. det. V. Assing 2006 (cAss).  
**Paratypes:** 5♂♂, 4♀♀: same data as holotype (cAss, OÖLL); 2♂♂, 1♀: same data, but leg. Wunderle (cWun); 3♂♂, 2♀♀: TR [21] - Denizli, 60 km E Muğla, S Kale, 1280 m, 37°25'39N, 28°53'18E, 11.IV.2006, V. Assing (cAss); 6♂♂, 10♀♀: same data, but leg. Wunderle (cWun, cAss); 1♀: TR [22] - Denizli, 60 km E Muğla, S Kale, 1240 m, 37°23'12N, 28°53'41E, 11.IV.2006, V. Assing (cAss).

**Description:** Small species, 2.2-3.0 mm (abdomen fully extended). Coloration: head dark brown; pronotum and elytra yellowish red to brown; abdomen blackish, with the apex and often also the anterior segments paler; legs testaceous; antennae yellowish brown to reddish brown.

Facies as in Fig. 54. Head and pronotum with variable, shallow to distinct microreticula-

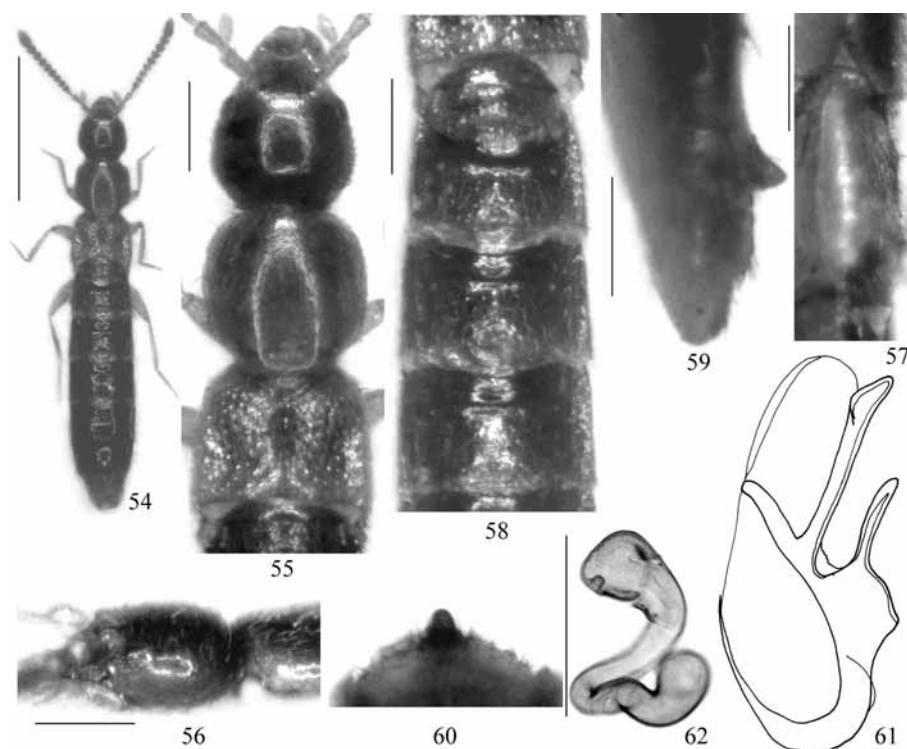


tion (Fig. 55). Eyes relatively small (Fig. 56), weakly protruding from lateral outline of head, approximately 1/3 the length of postocular region in dorsal view or even smaller.

Pronotum with moderately pronounced sexual dimorphism. Elytra with weak sexual dimorphism, less than 0.6 times as long as pronotum.

Abdomen with distinct, but shallow microsculpture, with fine and moderately sparse puncturation; posterior margin of tergite VII with or without very narrow rudiment of a palisade fringe.

♂ (large): pronotum approximately as long as wide or weakly oblong, 1.15-1.20 times as wide as head; posterior margin of pronotum in the middle broadly and weakly concave, postero-laterally sinuate (Fig. 55); elytra with moderately dense and somewhat granulose puncturation, with distinct extensive impression, elevated (somewhat bulging) lateral margins, and with narrow and weakly elevated sutural carina extending along anterior 2/3 of suture (Figs 55, 57); abdominal tergites III-IV with (Fig. 58) or without indistinct tubercles; process of tergite VII short and stout (Figs 59-60); posterior margins of tergite



**Figs 54-62:** *Geostiba biformis* sp.n. (54-57, 59-61: holotype): (54) ♂ habitus; (55) ♂ forebody; (56) head in lateral view; (57) ♂ elytra in lateral view; (58) ♂ abdominal segments VII-VIII in lateral view; (59) ♂ abdominal segments VII-X in lateral view; (60) process of ♂ tergite VII in antero-dorsal view; (61) median lobe of aedeagus in lateral view; (62) spermatheca. Scale bars: 54: 1.0 mm; 55-60: 0.2 mm; 61-62: 0.1 mm.

and sternite VIII broadly convex; median lobe of aedeagus with slender cristal process (Fig. 61); apical lobe of paramere shaped as in other species of the subgenus.

♀: pronotum approximately 1.10 times as wide as head and about as wide as long, posterior margin broadly convex; elytra unmodified, without carina, at most with very shallow impressions, and with fine puncturation; posterior margins of tergite and sternite VIII weakly convex; spermatheca as in Fig. 62. **E t y m o l o g y**: The name (Lat., adj.) alludes to the dimorphism of the male abdominal tergites III-IV (see comments on intraspecific variation).

**I n t r a s p e c i f i c v a r i a t i o n**: As in other species of the subgenus, the male secondary sexual characters are subject to considerable intraspecific variation. In smaller males, the pronotum may be almost unmodified, the elytral puncturation may be weakly granulose, the elytral impression are often very shallow, and the sutural carinae and the process of the ♂ tergite VII may be completely absent.

Remarkably, the two sampled populations, one (1) from the area to the northeast of Muğla and the other (2) from the area approximately 60 km to the east of Muğla, are distinguished by a constant character. The abdominal tergites III-IV of the males from population 2 each have a minute median tubercle (Fig. 58), which is absent in the males from population 1. However, since no additional distinguishing characters were found and since these populations are not separated by deep valleys, this difference is here attributed to intra- (possibly clinal) rather than interspecific variation.



**Fig. 63:** Locality where the holotype and several paratypes of *Geostiba biformis* sp.n. were found (photo by P. Wunderle).

**C o m p a r a t i v e n o t e s**: Using the key in ASSING (2005a), *G. biformis* would key out at couplets (67-71). In order to account for the new species, as well as for *G.*

*aydinica* sp.n. and *G. solodovnikovi* sp.n., the key is modified as follows:

- 67 ♂: abdominal tergites III and IV each with smooth subcircular tubercle near anterior impression. Species from western, southern or eastern Anatolia. (*G. biformis*, in which tergites III and IV may or may not have indistinct tubercles, will key out in both alternatives.).....67a
- ♂: abdominal tergites III and IV unmodified. Species from northern or western Turkey, or from Konya .....69
- 67a ♂: tubercles on tergites III and IV minute, almost indistinct (Fig. 58); process of tergite VII apically rounded in antero-dorsal view (Figs 59-60); median lobe of aedeagus as in Fig. 61. Western Anatolia (Muğla, W-Denizli) (Map 3).....*G. biformis* sp.n.
- ♂: tubercles on tergites III and IV distinct; process of tergite VII apically acute in antero-dorsal view. Eastern and southern Anatolia.....68
- 68 Pronotum with more pronounced microreticulation. ♂: elytra with wider sutural carinae (Fig. A00a: 10); aedeagus larger and with more slender cristal process (Figs A00a: 11-12). Southern Anatolia (Antalya).....*G. brachati* ASSING
- Pronotum with rather shallow microreticulation. ♂: aedeagus smaller and with stouter cristal process. Eastern and northeastern Anatolia .....68a
- 68a Eyes smaller (Fig. 21), approximately one third the length of postocular region in dorsal view. ♂: posterior margin of pronotum usually broadly concave, margins between this concavity and posterior angles straight, i. e. pronotum posteriorly gradually tapering (Fig. 22); tubercles on tergites III-IV less pronounced and not more shining than surrounding area; process of tergite VII more slender, with almost parallel sides, and apically rounded in antero-dorsal view (Fig. 25); median lobe of aedeagus with slightly stouter cristal process (Fig. 27). Northeastern Anatolia (Erzurum: Mescit Dağları) (Map 4).....*G. solodovnikovi* sp.n.
- Eyes larger, approximately half the length of postocular region in dorsal view or nearly so (Fig. A01a: 44). ♂: posterior margin of pronotum indistinctly concave to smoothly convex, margins between this concavity and posterior angles sinuate, i. e. pronotum posteriorly more abruptly tapering (Fig. A01a: 44); tubercles on tergites III-IV more pronounced and with somewhat more shine than surrounding area; process of tergite VII broad-based and apically acute (i. e. of triangular shape) in antero-dorsal view (Fig. 43 in Assing 2001a); median lobe of aedeagus with more slender cristal process (Figs A01a: 40-41). Eastern Anatolia (Bitlis: surroundings of Tatvan).....*G. bitlisensis* ASSING
- 69 ♂: pronotum (in large ♂ ♂!) distinctly oblong, more or less extensively depressed, strongly projecting posteriorly, and with broadly and distinctly concave hind margin (Fig. P83b: 1); elytra with distinctly elevated (bulging) lateral margins; process of tergite VII wide-based, apically rounded, and in lateral view rather slender; aedeagus: Figs. P83b: 2-3. Southern Anatolia (Konya).....*G. iconiensis* PACE
- ♂: lateral margins of elytra not distinctly elevated. Species from northern and western Turkey (Thrace, northern Anatolia).....70
- 70 ♂: pronotum (in large ♂ ♂!) distinctly oblong and strongly projecting posteriorly, its posterior margin in the middle narrowly concave (Fig. A00b: 1); elytra with relatively long sutural carinae; process of tergite VII in antero-dorsal view slender and apically rounded, in lateral view more massive (Figs. A00b: 3-4); aedeagus with cristal process of median lobe of characteristic shape (Figs. A00b: 2, P83b: 25-26). Northern Anatolia (Kastamonu) .....*G. kastamonuensis* PACE
- ♂: pronotum often less oblong, its posterior margin broadly concave or truncate; aedeagus with cristal process much smaller or of different shape.....70a
- 70a ♂: pronotum (even in large ♂ ♂) usually about as long as wide, at most 1.05 times as long as wide, its posterior margin in the middle weakly concave and laterally sinuate (Fig. 55); elytra with weakly pronounced (i. e. weakly elevated) sutural carina (Figs 55, 57); median lobe of aedeagus as in Fig. 61. West Anatolia: Muğla, W-Denizli.....*G. biformis* sp.n.

- ♂: pronotum in large ♂♂ moderately to distinctly oblong and of different shape; elytra with more pronounced sutural carina; median lobe of aedeagus with cristal process of different shape ..... 70b
- 70b ♂: pronotum (in large ♂♂) more oblong (up to 1.25 times as long as wide) and more strongly projecting posteriorly (Fig. 46); elytra with more strongly elevated and longer sutural carina and with coarser and more distinctly granulose puncturation (Figs 46, 48); process of tergite VII and median lobe of aedeagus as in Figs 49-51. West Anatolia (Aydın): Aydın Dağları.....*G. aydinica* sp.n.
- ♂: pronotum less oblong and less strongly projecting posteriorly; elytra with less pronounced sutural carina and with finer and less distinctly granulose puncturation. Species from Thrace and northeastern Anatolia..... 71
- 71 ♂: pronotum (in large ♂♂) slightly more strongly projecting posteriorly and with weakly concave lateral margins near posterior angles (Fig. A01a: 14); abdomen less finely punctate; process of tergite VII wide-based and apically rounded or obtuse (Fig. A01a: 19); cristal process of aedeagus much longer and larger (Figs. A01a: 12-13). Northeastern Anatolia (Artvin).....*G. artvinensis* ASSING
- ♂: pronotum in large ♂♂ less strongly projecting posteriorly, lateral margins near posterior angles not distinctly concave, hind margin in the middle truncate or broadly concave; abdomen very finely punctate; process of tergite VII more slender and apically more acute; aedeagus with cristal process of median lobe very short and thin. Thrace (surroundings of Istanbul) .....*G. turcica* (BERNHAEUER)

**Distribution and bionomics:** *Geostiba biformis* was recorded from three localities, one in Muğla province, in the vicinity of Muğla, and two in the west of Denizli province, some 60 km to the east of Muğla (Map 3). The type specimens were found under stones and sifted from grass roots in pastures on calcareous soil (Fig. 63) at altitudes of 1190-1280 m.

***Geostiba (Tropogastrosipalia) calcidica* sp.n. (Figs 64-70)**

Holotype ♂: Greece: Chalkidiki, 12 km NW Megali Panagia, 1000 m, 40°48'01"N, 23°33'52", 21.5.2005, leg. Ch. Bayer / Holotypus ♂ *Geostiba calcidica* sp.n. det. V. Assing 2006 (cAss).

**Description:** 2.8 mm (abdomen fully extended). Coloration: head blackish brown; pronotum and elytra castaneous brown; abdomen blackish, with segments III and IV paler; legs testaceous; antennae brown, with the two basal antennomeres yellowish brown.

**Facies** as in Fig. 64. Head with very shallow microreticulation, shiny (Fig. 65); puncturation very fine and very sparse, barely noticeable. Eyes relatively small (Fig. 66), weakly protruding from lateral outline of head, approximately 1/3 the length of postocular region in dorsal view.

Pronotum with weak sexual dimorphism; puncturation very sparse and very fine. microsculpture shallow, surface with distinct shine. Elytra with moderate sexual dimorphism, less than 0.6 times as long as pronotum.

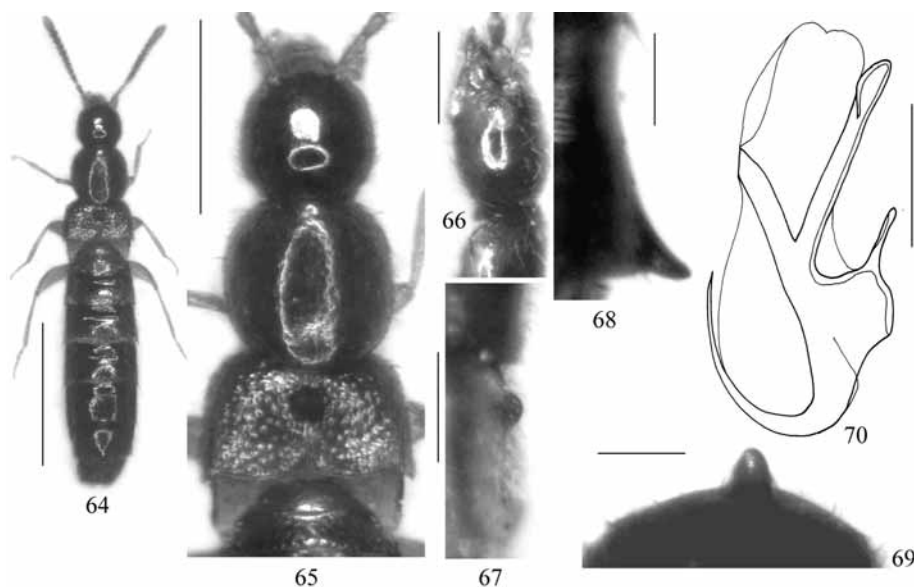
Abdomen with distinct, but shallow microsculpture, with fine and sparse puncturation; anterior tergites without sexual dimorphism; posterior margin of tergite VII with barely noticeable rudiment of a palisade fringe.

♂: pronotum approximately as long as wide, posterior margin distinctly convex (Fig. 65); elytra with moderately dense, rather coarsely granulose puncturation and with shallow impression, sutural carina near apex of scutellum short, abruptly elevated, and relatively broad (Figs 65, 67); process of tergite VII short, in lateral view rather acute apically and in antero-dorsal view broad and apically rounded (Figs 68-69); posterior mar-

gins of tergite and sternite VIII broadly convex; median lobe of aedeagus with very slender cristal process (Fig. 70); apical lobe of paramere shaped as in other species of the subgenus.

♀: unknown.

**E t y m o l o g y :** The name (Lat., adj.) is latinised from Chalkidike, the area where the type locality is situated.



**Figs 64-70:** *Geostiba calcidica* sp.n. (holotype): (64) ♂ habitus; (65) ♂ forebody; (66) head in lateral view; (67) ♂ elytra in lateral view; (68) ♂ abdominal tergite VII in lateral view; (69) process of ♂ tergite VII in antero-dorsal view; (70) median lobe of aedeagus in lateral view. Scale bars: 64: 1.0 mm; 65: 0.5 mm; 66-67: 0.2 mm; 68-70: 0.1 mm.

**C o m p a r a t i v e   n o t e s :** Using the key in ASSING (2005a), *G. calcidica* would key out at couplet 63, together with *G. menikioensis* ASSING from northeastern Greece. From this species it is separated by the broader and more abruptly elevated sutural carinae, by the sparser and coarser puncturation of the male elytra, and by the broader and apically rounded process of the male tergite VII (antero-dorsal view). To accommodate the new species, the key is modified as follows:

- |    |   |     |
|----|---|-----|
| 62 | ♂: elytra with short sutural carinae or indistinct elevations near apex of scutellum...   | 63  |
| -  | ♂: elytra with pronounced sutural carinae extending almost to posterior margin of elytra .....  | 65  |
| 63 | ♂: process of tergite VII in large ♂♂ shorter (e. g. Figs 68-69); cristal process of aedeagus short and slender. Species from northeastern Greece .....   | 64  |
| -  | ♂: process of tergite VII in large ♂♂ longer and more erect (e. g. Figs A04b: 45-46); cristal process of aedeagus larger. Species from northwestern or central Greece .....   | 64a |
| 64 | ♂: process of tergite VII in antero-dorsal view slender and apically rather acute (Figs A99: 59-60); elytra with relatively dense and not particularly coarse puncturation, and with more slender and less abruptly elevated carina near apex of scutellum; aedeagus as in Figs A99: 53-56. Menikio, Vrontóus (NE-Greece) ..... |     |
|    | ..... <i>G. menikioensis</i> ASSING   |     |

- ♂: process of tergite VII in antero-dorsal view broader and apically rounded (Figs 68-69); elytra with sparser, coarse, and somewhat granulose puncturation; sutural carinae near apex of scutellum abruptly elevated and relatively broad (Figs 65, 67); median lobe of aedeagus as in Fig. 70. Chalkidiki.....*G. calcidica* sp.n.
- 64a ♂: aedeagus with larger cristall process (Figs A99: 20, 22). Ipiros: Xerovuni Oros .....*G. xerovuniana* (SCHEERPELTZ)
- ♂: aedeagus with more slender cristall process (Fig. A04b: 48). Thessalia: Ossa Oros.....*G. ossaica* ASSING
- 65 ♂: process of tergite VII very long, not distinctly erect, almost horizontally projecting caudad (Figs. A00a: 11-12); sutural carinae long and broad, not closer to apex of scutellum than to posterior elytral margin; aedeagus as in Figs A00a: 7-8. Northern Greece (Flórina, Kozani) .....*G. torisuturalis* ASSING
- ♂: process of tergite VII distinctly erect; sutural carinae shorter and narrower, closer to apex of scutellum than to posterior elytral margin; aedeagus as in Figs A99: 91-93. Fthiótis, Fokis (Map A01b: 1).....*G. itiensis* ASSING

**Distribution and bionomics:** The species is known only from one locality in the Chalkidike (=Khalkidhiki) peninsula, Greece, where the holotype was collected at an altitude of 1000 m.

***Geostiba (Tropogastrosipalia) elmaica* sp.n. (Figs 71-77, Map 4)**

**Holotype** ♂: TR - SE Ankara, N-Elma Dağı, 1200 m, *Crataegus* litter, 31.X.1995, leg. S. Vit / Holotypus ♂ *Geostiba elmaica* sp.n. det. V. Assing 2006 (cAss). **Paratypes:** 1 ♂, 1 ♀: same data as holotype (cAss).

**Description:** Relatively small species, 2.5-2.8 mm. Coloration: head dark brown; pronotum and elytra reddish brown; abdomen reddish brown to brown, with segments V-VI or V-VII somewhat infuscate; legs yellowish brown; antennae reddish brown. Facies as in Fig. 71. Head with very shallow microreticulation, shiny (Fig. 72); puncturation very fine and very sparse, barely noticeable. Eyes relatively small (Fig. 73), very weakly protruding from lateral outline of head, slightly less than half the length of post-ocular region in dorsal view.

Pronotum with moderate sexual dimorphism; puncturation very sparse and very fine; microsculpture shallow, surface with some shine. Elytra with distinct sexual dimorphism, less than 0.6 times as long as pronotum.

Abdomen with shallow microsculpture, with fine and sparse puncturation; anterior tergites without sexual dimorphism; posterior margin of tergite VII without palisade fringe.

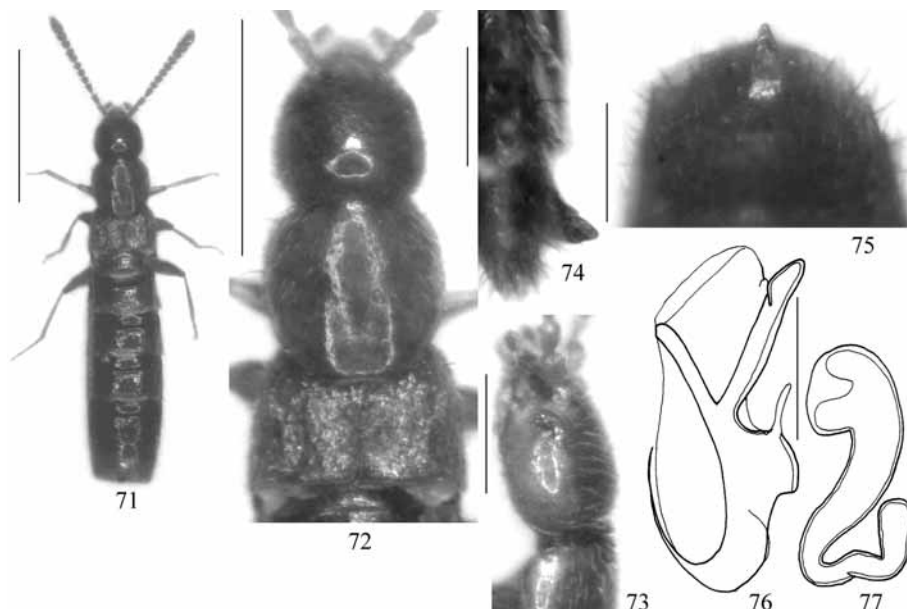
♂: pronotum weakly oblong, approximately 1.05 times as long as wide, posterior margin broadly truncate to indistinctly concave (Fig. 72); elytra with rather sparse and fine puncturation, near apex of scutellum with few small tubercles, without sutural carina, lateral margins with long, slightly diagonal folds (Fig. 72); process of tergite VII moderately long, in lateral view rather massive, and in antero-dorsal view slender and apically acute (Figs 74-75); posterior margin of tergite VIII truncate, that of sternite VIII broadly convex to indistinctly obtuse in the middle; median lobe of aedeagus small, with short and slender cristall process (Fig. 76); apical lobe of paramere shaped as in other species of the subgenus.

♀: pronotum approximately as wide as long, posterior margin broadly convex; posterior margins of tergite and sternite VIII weakly convex; spermatheca with relatively large capsule (Fig. 77).

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

**Comparative notes:** Using the key in ASSING (2005a), *G. elmaica* would key out at couplet 69, together with *G. iconiensis* PACE. To account for the new species, the key is modified as follows:

- 69 ♂: elytra with distinctly elevated (bulging) lateral margins or with distinct lateral folds. Species from Konya and Ankara provinces ..... 69a
- ♂: lateral margins of elytra not distinctly modified. Species from northern Turkey (Thrace, northern Anatolia)..... 70
- 69a ♂: pronotum (in large ♂!) distinctly oblong, more or less extensively depressed, strongly projecting posteriorly, and with broadly and distinctly concave hind margin (Fig. P83b: 1); elytra with distinctly elevated (bulging) lateral margins; process of tergite VII wide-based, apically rounded, and in lateral view rather slender; aedeagus: Figs. P83b: 2-3. Southern Anatolia (Konya)..... *G. iconiensis* PACE
- ♂: pronotum not depressed, weakly oblong, and with truncate or indistinctly concave posterior margin (Fig. 72); process of tergite VII in antero-dorsal view slender and apically somewhat acute, in lateral view rather massive (Figs 74-75); median lobe of aedeagus as in Fig. 76. Ankara: Elma Dağı (Map 4).... *G. elmaica* sp.n.



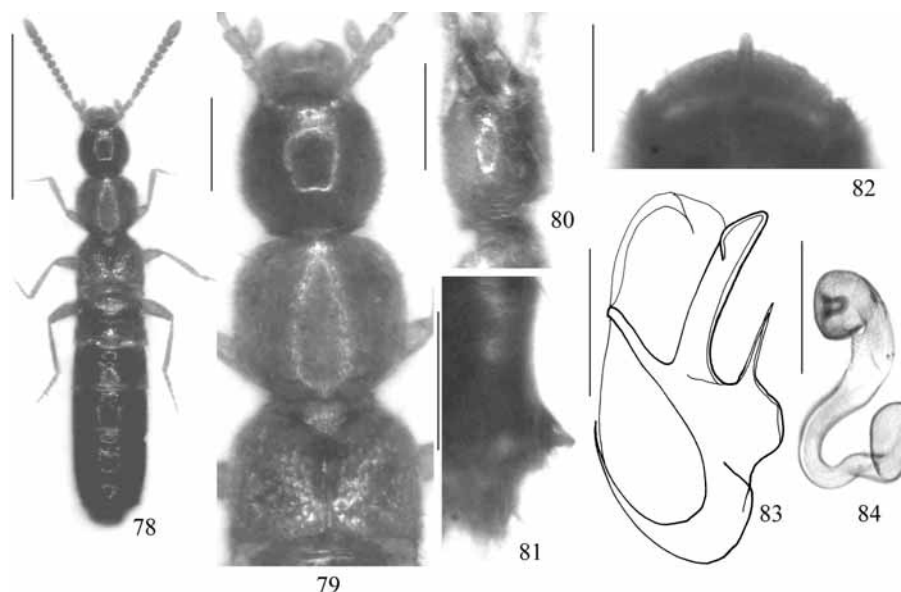
**Figs 71-77:** *Geostiba elmaica* sp.n.: (71) ♂ habitus; (72) ♂ forebody; (73) head in lateral view; (74) ♂ abdominal tergites VI-VII in lateral view; (75) process of ♂ tergite VII in antero-dorsal view; (76) median lobe of aedeagus in lateral view; (77) spermatheca. Scale bars: 71: 1.0 mm; 72: 0.5 mm; 73-75: 0.2 mm; 76-77: 0.1 mm.

**Distribution and bionomics:** *Geostiba elmaica* is the first representative of the subgenus to become known from the surroundings of Ankara and one of the few Turkish *Tropogastrosipalia* species recorded at some distance from the coastal areas. The type specimens were discovered in the Elma Dağı to the southeast of Ankara (Map 4) at an altitude of 1200 m, where they were sifted from *Crataegus* leaf litter.

***Geostiba (Tropogastrosipalia) priva* sp.n. (Figs 78-85, Map 4)**

Holotype ♂: TR [3] - Gümüşhane, ca. 25 km SW Gümüşhane, Tersundağı Geç., 2070 m, 40°17'38N, 39°18'05E, 24.VII.2006, V. Assing / Holotypus ♂ *Geostiba priva* sp.n. det. V. Assing 2006 (cAss).  
Paratype ♀: same data as holotype (cAss).

**Description:** Small species, 2.4-2.7 mm (abdomen fully extended). Coloration: pale reddish, with abdominal segment VI and adjacent segments more or less distinctly infusate; legs yellowish.



**Figs 78-84:** *Geostiba priva* sp.n.: (78) ♂ habitus; (79) ♂ forebody; (80) head in lateral view; (81) ♂ abdominal tergites VII-VIII in lateral view; (82) ♂ tergite VII in antero-dorsal view; (83) median lobe of aedeagus in lateral view; (84) spermatheca. Scale bars: 78: 1.0 mm; 79-82: 0.2 mm; 83-84: 0.1 mm.

Facies as in Fig. 78. Head with very shallow microreticulation, somewhat shiny (Fig. 79); puncturation very fine and very sparse, barely noticeable. Eyes small (Fig. 80), not protruding from lateral outline of head, less than 1/3 the length of postocular region in dorsal view.

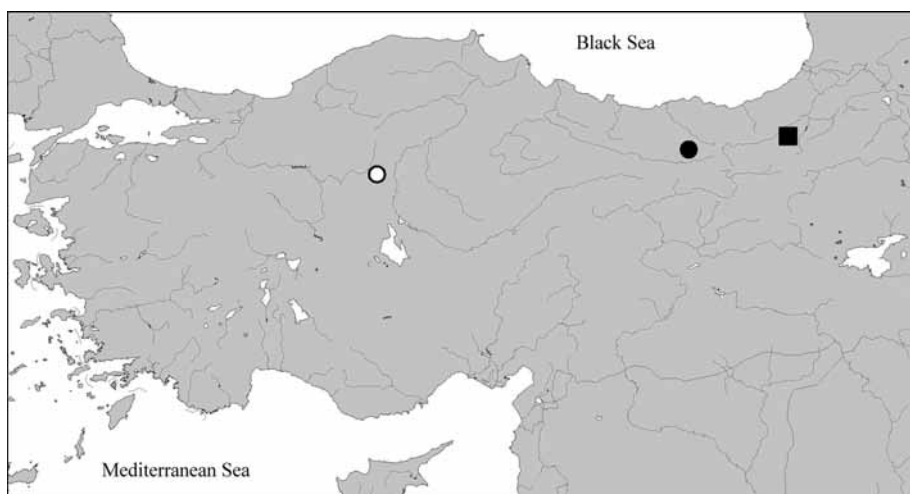
Pronotum with weak sexual dimorphism, in both sexes weakly transverse, 1.05-1.10 times as wide as long; puncturation very sparse and very fine; microsculpture similar to that of head. Elytra less than 0.6 times as long as pronotum, with moderate sexual dimorphism, in both sexes weakly impressed and with indistinctly granulose puncturation.

Abdomen with shallow microsculpture, with fine and sparse puncturation; anterior tergites without sexual dimorphism; posterior margin of tergite VII with or without indistinct rudiment of a palisade fringe.





**Fig. 85:** Type locality of *G. priva* (photo by M. Schülke).



**Map 4:** Distributions of *Geostiba solodovnikovi* (square), *G. elmaica* (open circle), and *G. priva* (filled circle) in Turkey.

♂: posterior margin of pronotum weakly pointed in the middle (Fig. 79); elytra with narrow, moderately elevated and rather long sutural carinae extending along anterior 2/3 of suture; process of tergite VII short, in lateral view broad-based, and in antero-dorsal view slender (Figs 81-82); posterior margin of tergite VIII weakly, that of sternite VIII distinctly convex; median lobe of aedeagus with very slender needle-shape cristal process (Fig. 83); apical lobe of paramere shaped as in other species of the subgenus.

♀: posterior margin of pronotum weakly convex; posterior margins of tergite and sternite

VIII weakly convex; spermatheca similar to that of other consubgenera (Fig. 84).

**E t y m o l o g y :** The name (Lat., adj.: free of) refers to the absence of tubercles on the anterior male tergites, the most evident character distinguishing this species from the similar *G. solodovnikovi*.

**C o m p a r a t i v e n o t e s :** In size, coloration, and sexual characters, *G. priva* is highly similar to *G. solodovnikovi*, from which it is distinguished especially by the shape of the male pronotum (in *G. solodovnikovi* weakly oblong, posteriorly more strongly convex, not pointed in the middle) and by the absence of tubercles on the male abdominal tergites III and IV. In order to account for the new species, the key in ASSING (2005a) is modified as follows:

- 80 ♂: elytra with enormous, in lateral view crescent-shaped sutural carinae .....81
- ♂: elytra near apex of scutellum only with tubercles, or with short or with weakly elevated sutural carinae ..... 82a
- 82a Eyes very small, less than 1/3 the length of postocular region in dorsal view (Fig. 80). ♂: elytra with long sutural carinae; elytra with long (but weakly elevated) sutural carinae; median lobe of aedeagus with needle-shaped cristate process (Fig. 83). NE-Anatolia: Gümüşhane (Map 4) ..... *G. priva* sp.n.
- Eyes more than 1/3 the length of postocular region in dorsal view. ♂: elytra without or with short sutural carinae. Species from NW-Turkey or from central southern Anatolia .....83

**D i s t r i b u t i o n a n d b i o n o m i c s :** The type locality is situated to the southwest of Gümüşhane, northeastern Anatolia (Map 4). The two specimens were sifted from litter and grass on the margin of a spruce forest at an altitude of 2070 m (Fig. 85).

#### ***Geostiba (Sibiota) oertzeni* (EPPELSHEIM) (Map 5)**

**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 :** **Turkey: Izmir:** 25♂♂, 16♀♀, Boz Dağlar, above Bozdağ, road to ski resort, 38°21N, 28°06E, 1480 m, N-slope with grass and stones, sifted and under stones, 3.IV.2006, leg. Assing (cAss); 1 ex., above Bozdağ, 38°20N, 28°06E, 1300-1560 m, 21.IV.2006, leg. Brachat & Meybohm (cAss); 6 exs., Nif Dağı, 38°24N, 27°24E, 1010 m, 23.IV.2006, leg. Brachat & Meybohm (cAss); 1 ex., Nif Dağı, 38°24N, 27°24E, 970 m, 24.IV.2006, leg. Brachat & Meybohm (cAss); 11 exs., Nif Dağı, 38°24N, 27°23E, 1080 m, 24.IV.2006, leg. Brachat & Meybohm (cAss); 2 exs., Nif Dağı, 38°24N, 27°24E, 920 m, 24.IV.2006, leg. Brachat & Meybohm (cAss); 1♀, ca. 25 km NE Aydın, WSW Hamamköy, Murtat Dağı, 38°01N, 27°57E, 1230 m, N-slope with scattered old oak, sifted grass and oak litter, 9.IV.2006, leg. Assing (cAss). **Aydın:** 6♂♂, 14♀♀, ca. 15 km NE Aydın, Imambaba Tepesi, 37°57N, 27°54E, below peak 1600 m, edge of pine forest with grass, shrubs, sifted, 5.IV.2006, leg. Assing (cAss); 1♀, ca. 20 km NE Kuyucak, Bayrak Tepe, 37°58N, 28°33E, 850 m, N-slope, oak litter and grass sifted, 7.IV.2006, leg. Assing (cAss); 2♂♂, 1♀, ca. 20 km NE Kuyucak, Bayrak Tepe, 37°58N, 28°34E, 900 m, N-slope, oak litter and grass sifted, 7.IV.2006, leg. Assing (cAss); 1♂, 1♀, ca. 10 km WSW Karakasu, Karıncalı Dağı, 37°42N, 28°34E, 1230 m, N-slope, grass roots and litter of shrubs sifted, 8.IV.2006, leg. Assing (cAss); 3 exs., Dilek Dağı, Kanyon, 37°41N, 27°10E, 50 m, *Platanus* litter, 2006, leg. Meybohm (cAss); 37 exs., Dilek Dağı, Kanyon, 37°41N, 27°10E, 70-370 m, 16.IV.2006, leg. Brachat & Meybohm (cAss); 2 exs., Dilek Dağı, S Kanyon, 37°40N, 27°11E, 670 m, 17.IV.2006, leg. Brachat & Meybohm (cAss); 4 exs., Dilek Dağı, 37°41N, 27°09E, 13 m, 27.IV.2006, leg. Brachat & Meybohm (cAss); 4 exs., Dilek Dağı, S Güzelçamlı, 37°41N, 27°14E, 410 m, 28.IV.2006, leg. Brachat & Meybohm (cAss); 6 exs., Dilek Dağı, S Güzelçamlı, 37°41N, 27°14E, 440 m, 28.IV.2006, leg. Brachat & Meybohm (cAss); 9 exs., Dilek Dağı, Kanyon, 37°41N, 27°10E, 70-200 m, 29.IV.2006, leg. Brachat & Meybohm (cAss). **Gümüşhane:** 4 exs., ca. 25 km SW Gümüşhane, Tersundağı Geç., 40°18N, 39°18E, 2070 m, N-slope, spruce forest, litter and dead wood sifted, 24.VII.2006, leg. Assing (cAss).

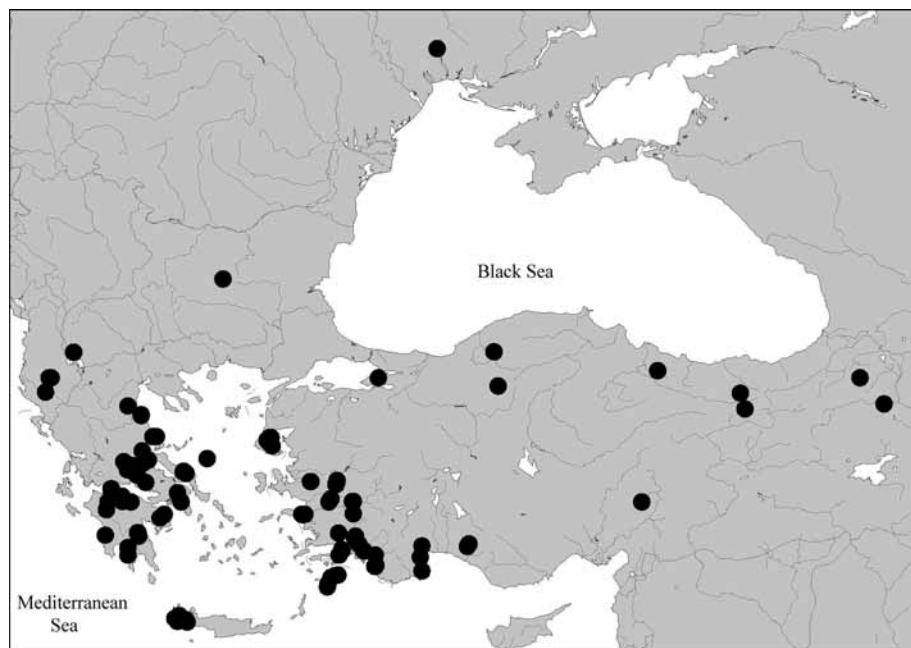
**Ukraine:** 3 exs., Odessa, Berezovka, forest "Berezovskiy", 26.III.2006, leg. Gontarenko (cGon, cAss).

**Comments:** The species is widespread in the eastern Mediterranean; in western Anatolia, it appears to be very common (Map 5). It is here recorded from Ukraine for the first time.

***Geostiba (Sibiota) rizensis* PACE**

**Additional material examined:** **Turkey: Rize:** 17 exs., 50 km SSE Rize, S Çamlık, 40°43'N, 40°38'E, 1380 m, *Alnus* forest, sifted, 1.VIII.2006, leg. Assing, Schülke (cAss, cSch); 29 exs., 50 km SSE Rize, W Sivrikaya, 40°41'N, 40°39'E, 2050 m, natural fir forest, litter and dead wood sifted, 1.VIII.2006, leg. Assing, Schülke (cAss, cSch).

**Comments:** The species has become known only from the area to the south of İkizdere, Rize province, northeastern Anatolia (ASSING 2001a, 2001b, 2003). The record of the holotype of the junior synonym *G. trapezusensis* from Trabzon ("20 km S İkizdere") (PACE 2002) refers to Rize province.

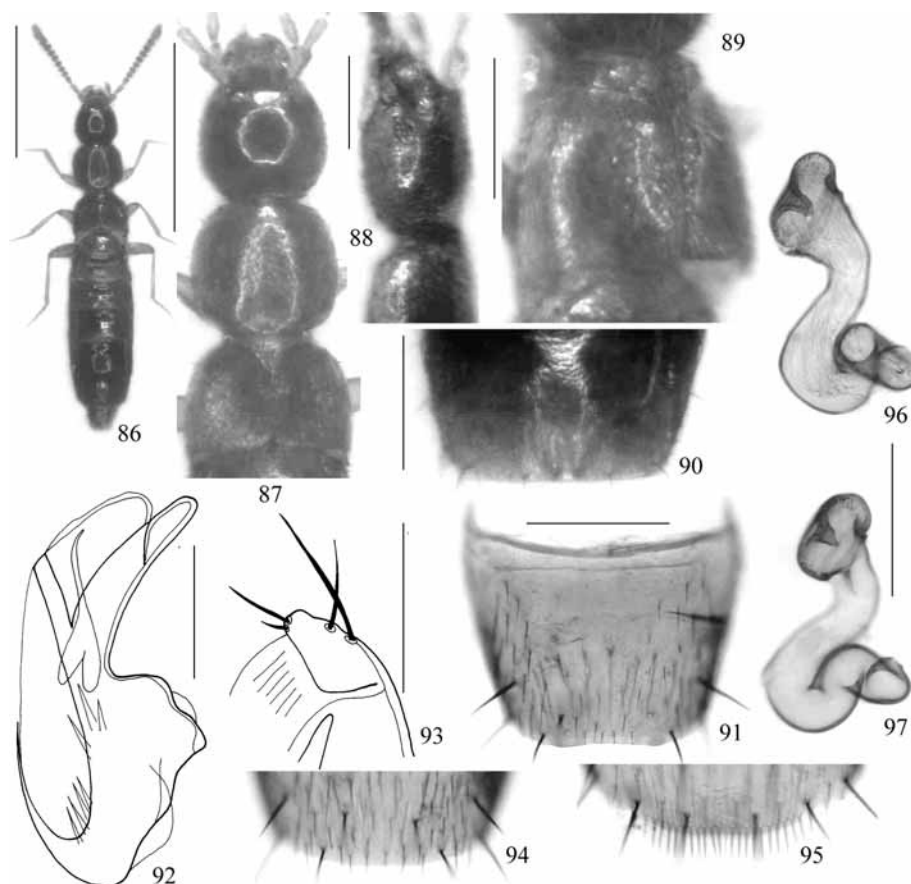


**Map 5:** Distribution of *Geostiba oertzeni* (EPPELSHEIM) in the Eastern Mediterranean region, based on examined records.

***Geostiba (Sibiota) aucta* sp.n. (Figs 86-97, Map 8)**

**Holotype** ♂: TR [24] - Rize, 25 km SSE Rize, 7 km E İkizdere, 1030 m, 40°47'01"N, 40°38'18"E, 31.VII.2006, V. Assing / Holotypus ♂ *Geostiba aucta* sp.n. det. V. Assing 2006 (cAss). **Paratypes:** 2♂♂, 1♀: same data as holotype (cAss); 8 exs.: same data, but leg. Schülke (cSch, OÖLL); 2♀♀: TR [23] - Rize, 25 km SSE Rize, 4 km E İkizdere, 750 m, 40°47'14"N, 40°35'31"E, 31.VII.2006, V. Assing (cAss); 2 exs., same data, but leg. Schülke (cSch); 1♂: same data, but "[23a] ... 1.VIII.2006, V. Assing" (cAss); 3 exs.: same data, but leg. Schülke (cSch).

**Description:** Moderately small species, 2.4-3.0 mm (abdomen fully extended). Coloration: body reddish brown to brown, with abdominal segment VI and adjacent segments more or less distinctly infusate and sometimes also the head slightly darker; legs yellowish; antennae yellowish brown.



**Figs 86-97:** *Geostiba aucta* sp.n.: (86) ♂ habitus; (87) ♂ forebody; (88) head in lateral view; (89) ♂ elytra in dorso-lateral view; (90) ♂ abdominal tergite VII in dorsal view; (91) ♂ tergite VIII; (92) median lobe of aedeagus in lateral view; (93) apical lobe of paramere; (94) posterior margin of ♀ sternite VIII; (95) posterior margin of ♀ sternite VIII; (96-97) spermatheca. Scale bars: 86: 1.0 mm; 87: 0.5 mm; 88-91, 94-95: 0.2 mm; 92-93, 96-97: 0.1 mm.

Facies as in Fig. 86. Head with very shallow microreticulation and some shine (Fig. 87); puncturation very fine and very sparse, barely noticeable. Eyes small (Fig. 88), not projecting from lateral outline of head, approximately 1/4 the length of postocular region in dorsal view.

Pronotum weakly transverse, approximately 1.1 times as wide as long and 1.2 times as wide as head (Fig. 87); microsculpture similar to that of head or slightly more pronounced; puncturation similar to that of head.

Elytra approximately 0.6 times as long as pronotum (Fig. 87), with pronounced sexual dimorphism; microsculpture similar to that of head and pronotum; puncturation weakly granulose.

Abdomen approximately 1.2 times as wide as elytra (Fig. 86), with distinct microsculpture, and with sparse fine puncturation; posterior margin of tergite VII without palisade fringe.

♂: elytral disc with pronounced impression, on either side of suture distinctly elevated, these elevation broader anteriorly than posteriorly and granulosely sculptured (Fig. 89); tergite VII near posterior margin with pair of short and rather weakly elevated carinae (Fig. 90); posterior margin of tergite VIII in the middle almost truncate and with only few setae (Fig. 91); posterior margin of sternite VIII weakly convex; median lobe of aedeagus with reduced crista apicalis and with series of semitransparent spines in internal sac (Fig. 92); apical lobe of paramere as in Fig. 93.

♀: elytra very shallowly impressed; posterior margin of tergite VIII weakly convex (Fig. 94); posterior margin of sternite VIII weakly convex and with row of numerous modified marginal seta, in the middle not distinctly concave (Fig. 96); spermatheca with distinctly dilated capsule (Figs 96-97).

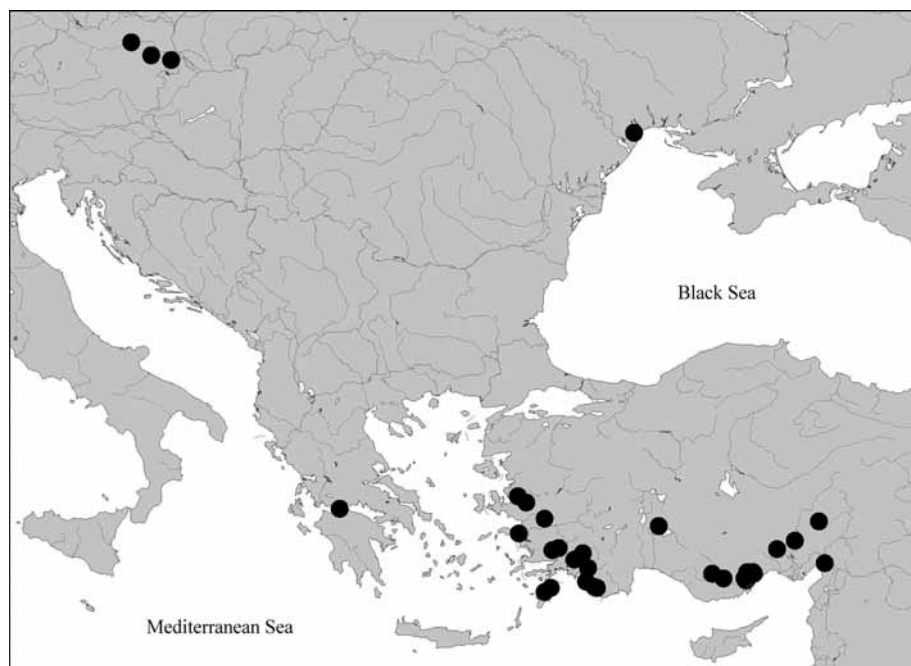
**E t y m o l o g y :** The name (Lat., adj.: enlarged) alludes to the shape of the capsule of the spermatheca, one of the characters distinguishing this species from *G. rizensis*.

**C o m p a r a t i v e   n o t e s :** In general appearance, the new species is highly similar to the parapatric *G. rizensis*, its geographically closest consubgener. From this species, *G. aucta* is separated especially by the broader, more granulosely sculptured, and less sharply delimited sutural elevations on the male elytra, the (on average) less pronounced carinae on the male tergite VII, by the reduced crista apicalis of the median lobe (in *G. rizensis* pronounced), the more numerous and shorter spines in the internal sac, the different shape and chaetotaxy of the apical lobe of the paramere (in *G. rizensis* with one very long median and three much shorter apical and subapical setae), as well as by the much larger spermathecal capsule. For illustrations of the aedeagus and the spermatheca of *G. rizensis* see PACE (1983) and ASSING (2001a). In order to account for *G. aucta*, the key in ASSING (2005a) is modified as follows:

100. ♂: sutural carinae anteriorly narrower, less strongly elevated, and without coarse puncturation or sculpture; tergite VII with usually pronounced, though relatively short pair of carinae, these carinae separated by a distance distinctly less than their width and posteriorly merging (Fig. A01a: 56); median lobe of aedeagus apically more acute (ventral view) and less slender (Figs. A01a: 51-52). ♀: spermatheca as in Figs. A01a: 54-55. Northeastern Anatolia: Artvin ..... *G. fabaeformis* ASSING
- ♂: sutural carinae anteriorly wider and strongly elevated, decreasing in width and elevation posteriad, coarsely and granulosely sculptured, and mat; pair of carinae at posterior margin of tergite VII almost straight and parallel, sometimes separated by a distance greater than their width (Figs 90, A01a: 59). Northeastern Anatolia: Rize ..... 100a
- 100a. ♂: sutural carinae narrower, less granulosely sculptured, and more sharply delimited; median lobe of aedeagus with pronounced crista apicalis and with fewer and longer spines in internal sac (Figs P83b: 90-91); apical lobe of paramere with one very long basal and three much shorter subapical and apical setae. ♀: spermatheca with slender capsule of conical shape (Fig. A01a: 58). Rize: area to the south of İkizdere ..... *G. rizensis* PACE

- ♂: sutural carinae broader, more granulosely sculptured, and less sharply delimited (Figs 87, 89); median lobe of aedeagus with reduced crista apicalis and with more numerous and shorter spines in internal sac (Fig. 92); apical lobe of paramere as in Fig. 93, with long subapical and apical setae. ♀: spermathecal capsule distinctly enlarged (Figs 96-97). Rize: area to the east of İkizdere (Map 8)..... *G. aucta* sp.n.

**Distribution and bionomics:** The type specimens were found in two localities in the area to the east of İkizdere (Map 8). They were collected by sifting the leaf litter in mixed forests with chestnut, alder, beech and *Rhododendron* at altitudes of 750 and 1030 m.



**Map 6:** Distribution of *Geostiba lucens* (BENICK) in the Eastern Mediterranean region, based on examined records.

#### *Geostiba (Sipalotricha) lucens* (BENICK) (Map 6)

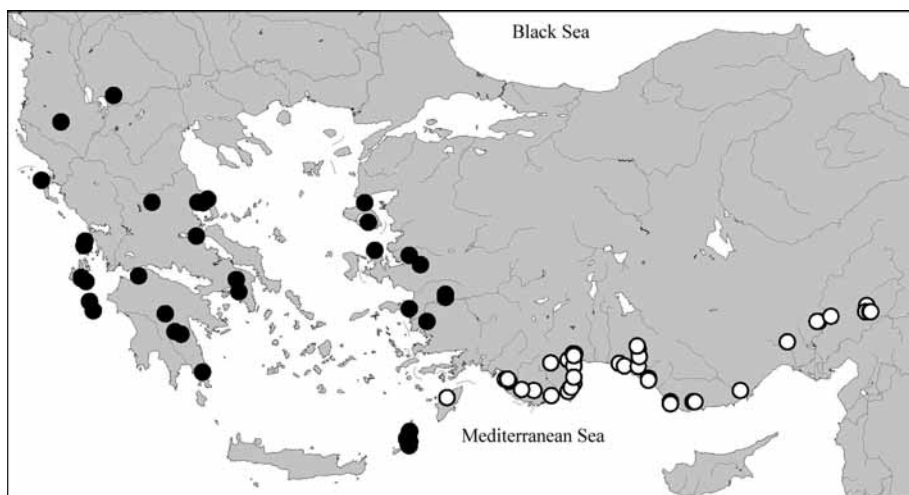
**Additional material examined:** **Turkey:** **Izmir:** 19 ♀ [all macropterous], 20 km E Izmir, Nif Dağı, 38°24N, 27°24E, 920 m, plateau, sifted grass roots between stones under shrubs, 26.XII.2005, leg. Assing (cAss); 1 ♀ [macropterous], N Izmir, Yamanlar Dağı, 38°33N, 27°09E, 940 m, grassy patch in pine forest, under stones, sifted grass roots, 28.XII.2005, leg. Assing (cAss); 1 ♀ [macropterous], ca. 25 km NE Aydın, WSW Hamamköy, Murtat Dağı, 38°01N, 27°57E, 1330 m, N-slope with scattered old oak, sifted grass and oak litter, 9.IV.2004, leg. Assing (cAss). **Aydın:** 1 ♂, 1 ♀ [macropterous], Dilek Dağı, S Kanyon, 37°40N, 27°11E, 670 m, 17.IV.2006, leg. Brachat & Meybohm (cAss). **Muğla:** 1 ♂, ca. 12 km NNE Muğla, 37°19N, 28°22E, 1620 m, N-slope, roots of grass, herbs, and pine litter sifted, 12.IV.2006, leg. Assing (cAss). **Denizli:** 1 ♀, ca. 35 km SE Kale, above Alpa, 37°12N, 29°05E, 1340 m, N-slope with old cedar, grass roots and cedar litter sifted, 13.IV.2006, leg. Assing (cAss). **Ankara:** 1 ex. [macropterous], SE Ankara, N-Elma Dağı, 1300 m, hollow *Salix* trunk, 31.X.1995, leg. Vit (cAss).

**Comments:** This widespread species is relatively common in southern and western

Anatolia; records from other regions in the Eastern Mediterranean are very rare (Map 5). Remarkably, all 26 specimens are macropterous and the sex ratio is 3 : 23 (males : females).

***Geostiba (Sipalotricha) euboica* PACE (Map 7)**

**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 :** **Turkey: Izmir:** 1 ex., 20 km E Izmir, Nif Dağı, 38°24N, 27°24E, 920 m, plateau, sifted grass roots between stones under shrubs, 26.XII.2005, leg. Assing (cAss); 7 exs., ca. 60 km WNW Izmir, SW Karaburun, 38°38N, 26°29E, 420 m, N-slope, meadow, under stones, sifted, 27.XII.2005, leg. Assing (cAss); 1 ex., N Izmir, Yamanlar Dağı, 38°33N, 27°10E, 680 m, road margin, under stones and sifted *Messor* nest; 28.XII.2005, leg. Assing (cAss). **Aydın:** 5 exs., ca. 110 km S Izmir, WSW Söke, Dilek Dağı, 37°42N, 27°10E, 50 m, grassy patch in forest, under stones and sifted roots, 25.XII.2005, leg. Assing (cAss); 2 exs., ca. 15 km NE Aydın, Imambaba Tepesi, 37°56N, 27°54E, 1115 m, 20.IV.2006, leg. Brachat & Meybohm (cAss); 2 exs., Imambaba Tepesi, 37°53N, 27°54E, 250 m, 20.IV.2006, leg. Brachat & Meybohm (cAss). **Muğla:** 4 exs., Bafa lake, Kapikiri, 37°30N, 27°32E, 120 m, 20.III.2006, leg. Meybohm (cAss).



**Map 7:** Distributions of *Geostiba euboica* PACE (filled circles) and *G. rhodiensis* PACE (open circles) in the Eastern Mediterranean region, based on examined records.

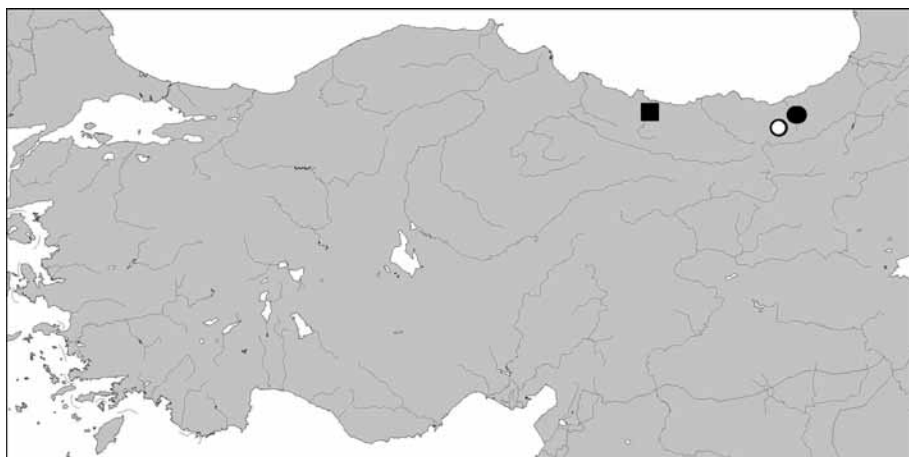
**C o m m e n t s :** *Geostiba euboica* is here recorded from Turkey for the first time. The previously known distribution of this widespread species comprised the southern Balkans, including various Greek islands. Since it was recently recorded also from Lesbos (ASSING 2005b), an occurrence in western Anatolia was likely. Apparently, its distribution does not overlap with that of the *G. rhodiensis* PACE, another widespread species of the subgenus *Sipalotricha* SCHEERPELTZ, which is common in southern Anatolia (Map 7).

***Geostiba (Sipalotricha) euxina* PACE**

**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 :** **Turkey: Trabzon:** 2 exs., ca. 50 km S Trabzon, 20 km S Maçka, Altındere Milli Park, 40°40N, 39°40E, 1560 m, spruce forest with *Rhododendron*, sifted, 26.VII.2006, leg. Assing (cAss).

**C o m m e n t s :** The original description is based on 3 specimens from the surroun-

dings of Maçka and from "Soumela, Meriemana" (= Sumela, Meryemana) (PACE 1983), very close to the locality where the above specimens were collected. This is the second record of the species.



**Map 8:** Distributions of *Geostiba aucta* (filled circles), *G. orduica* (square), and *G. soganlica* (open circle) in Turkey.

***Geostiba (Sipalotricha) orduica* sp.n. (Figs 98-107, Map 8)**

Holotype ♂: TR [22] - Ordu, 15 km S Ordu, S Kabaduz, 990 m, mixed forest, 40°48'59N, 37°54'28E, 30.VII.2006, V. Assing / Holotypus ♂ *Geostiba orduica* sp.n. det. V. Assing 2006 (cAss).

Paratypes: 1♂, 4♀ ♀: same data as holotype (cAss); 6 exs.: same data, but leg. Schülke (cSch, OÖLL).

**Description**: Small species, 2.0-2.3 mm (abdomen extended). Coloration: body reddish brown to brown, with abdominal segment VI and adjacent segments more or less extensively infuscate and sometimes also the head slightly darker; legs yellowish; antennae yellowish brown.

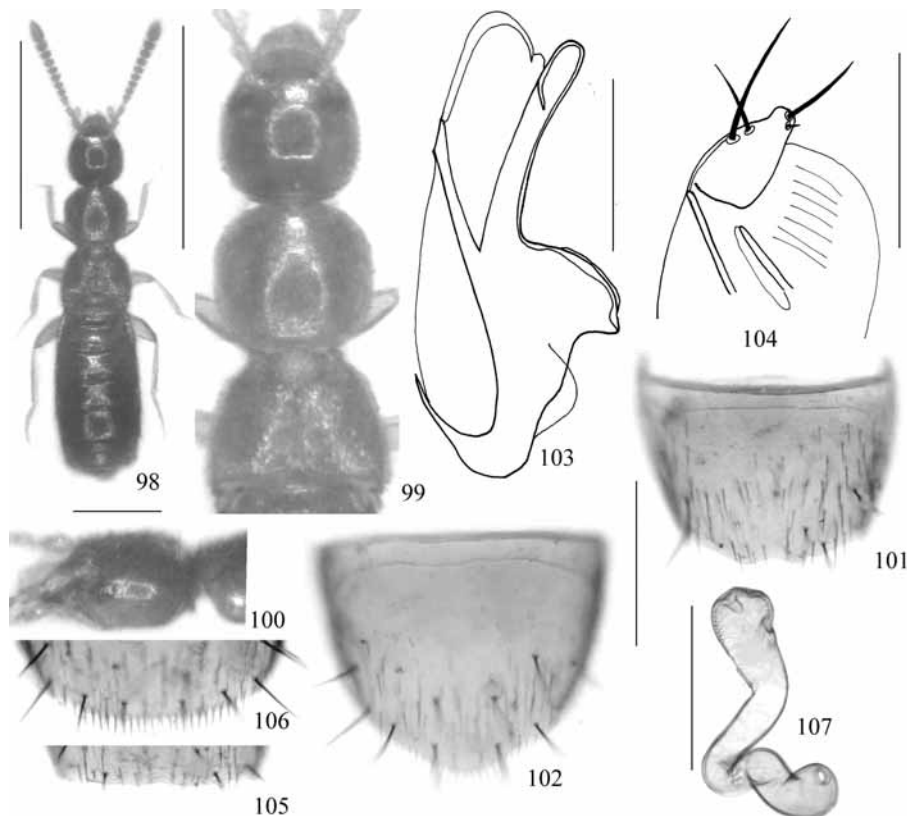
**Facies** as in Fig. 98. Head with very shallow microreticulation and some shine (Fig. 99); puncturation very fine and very sparse, barely noticeable. Eyes moderately small (Fig. 100), not distinctly projecting from lateral outline of head, approximately 0.35-0.4 times the length of postocular region in dorsal view.

**Pronotum** weakly transverse, approximately 1.1 times as wide as long and 1.15 times as wide as head (Fig. 99); microsculpture similar to that of head or slightly more pronounced; puncturation similar to that of head.

**Elytra** 0.50-0.55 times as long as pronotum (Fig. 99), without sexual dimorphism; microsculpture similar to that of head and pronotum; puncturation very fine, but slightly more distinct than that of head and pronotum.

**Abdomen** approximately 1.15 times as wide as elytra (Fig. 98), with distinct microsculpture, and with sparse fine puncturation; posterior margin of tergite VII with or without narrow rudiment of a palisade fringe.





**Figs 98-107:** *Geostiba orduica* sp.n.: (98) habitus; (99) forebody; (100) head in lateral view; (101) ♂ tergite VIII; (102) ♂ sternite VIII; (103) median lobe of aedeagus in lateral view; (104) apical lobe of paramere; (105) posterior margin of ♀ tergite VIII; (106) posterior margin of ♀ sternite VIII; (107) spermatheca. Scale bars: 98: 1.0 mm; 99: 0.5 mm; 100-102, 105-106: 0.2 mm; 103-104, 107: 0.1 mm.

♂: posterior margin of tergite VIII in the middle weakly concave (Fig. 101); posterior margin of sternite VIII obtusely angled in the middle (Fig. 102); median lobe of aedeagus with strongly reduced crista apicalis (Fig. 103); apical lobe of paramere as in Fig. 104.

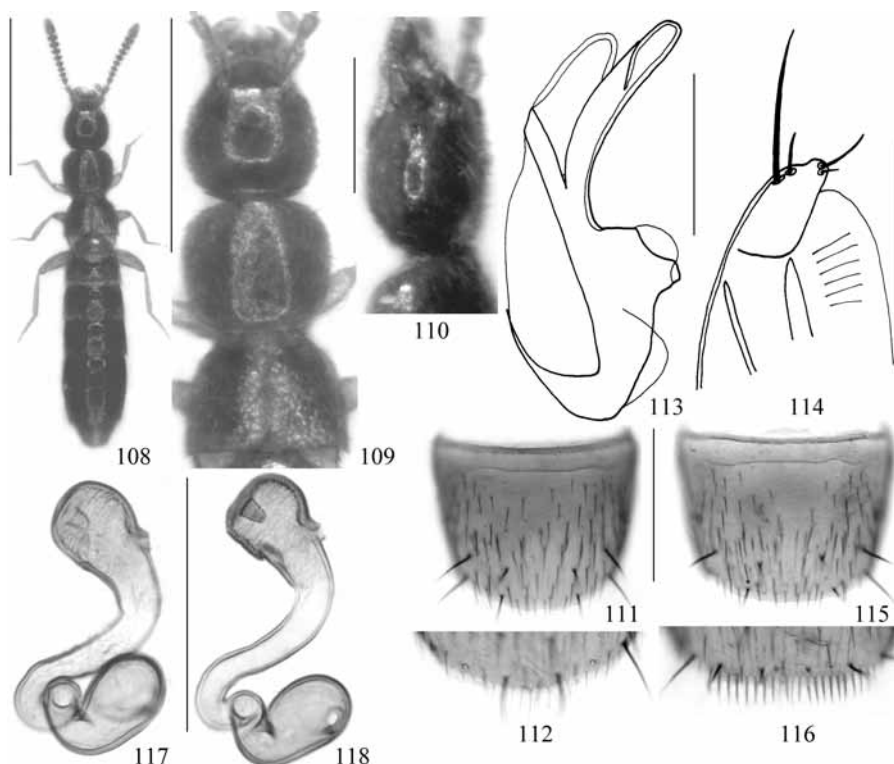
♀: posterior margin of tergite VIII in the middle very weakly concave (Fig. 105); posterior margin of sternite VIII weakly convex and with row of numerous modified marginal seta, in the middle not distinctly concave (Fig. 106); spermatheca as in Fig. 107.

**E t y m o l o g y :** The name (adj.) is derived from Ordu, the province where the type locality is situated.

**C o m p a r a t i v e   n o t e s :** The geographically closest consubgenera are *G. euxina* PACE and *G. macronorum* PACE from the surroundings of Maçka in Trabzon. From both species, *G. orduica* is distinguished especially by the concave posterior margin of the male and female tergite VIII, the posteriorly obtusely angled male sternite VIII, the reduced crista apicalis of the median lobe of the aedeagus, the shape and

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chaetotaxy of the paramere, as well as by the shape of the spermatheca. From *G. euxina*, it is additionally separated by slightly larger eyes. For a supplement to the key in ASSING (2005a) see the following section on *G. soganlica*.



**Figs 108-118:** *Geostiba soganlica* sp.n.: (108) habitus; (109) forebody; (110) head in lateral view; (111) – ♂ tergite VIII; (112) posterior margin of ♂ sternite VIII; (113) – median lobe of aedeagus in lateral view; (114) apical lobe of paramere; (115) ♀ tergite VIII; (116) posterior margin of ♀ sternite VIII; (117-118) spermatheca. Scale bars: 108: 1.0 mm; 109: 0.5 mm; 110-112, 115-116: 0.2 mm; 113-114, 117-118: 0.1 mm.

**Distribution and bionomics:** The type locality is situated in the mountains to the south of Ordu in Ordu province, northeastern Anatolia (Map 8). The specimens were collected by sifting the leaf litter and soil in a mixed forest with alder, spruce, bramble, and ivy at an altitude of almost 1000 m.

***Geostiba (Sipalotricha) soganlica* sp.n. (Figs 108-118, Map 8)**

**Holotype** ♂: TR [34] - Trabzon, ca. 40 km S Of, S Uzungöl, 2050 m, grass, moss, sift., 40°35'57N, 40°16'56E, 4.VIII.2006, V. Assing / Holotypus ♂ *Geostiba soganlica* sp.n. det. V. Assing 2006 (cAss). **Paratypes:** 6 ♂ ♂, 7 ♀ ♀: same data as holotype (OÖLL, cAss); 2 exs.: same data, but leg. Schülke (cSch); 1 ♂, 6 ♀ ♀: TR [35] - Trabzon, ca. 40 km S Of, S Uzungöl, 2280 m, grass & herbs, 40°36'N, 40°16'E, 4.VIII.2006, V. Assing (cAss).

**Description:** Small species, 1.8-2.3 mm (abdomen extended). Coloration: body reddish brown to brown, with abdominal segment VI and adjacent segments more or less extensively infusate and occasionally also the head slightly darker; legs yellowish; antennae light brown to dark brown.

**Facies** as in Fig. 108. Head with distinct microreticulation and reduced shine (Fig. 109); puncturation very fine and very sparse, barely noticeable. Eyes small (Fig. 110), not projecting from lateral outline of head, approximately 1/4 the length of postocular region in dorsal view.

**Pronotum** weakly transverse, 1.10-1.15 times as wide as long and approximately 1.1 times as wide as head (Fig. 109); microsculpture similar to that of head; puncturation similar to that of head.

**Elytra** 0.55-0.60 times as long as pronotum (Fig. 109), without sexual dimorphism; microsculpture less pronounced than that of head and pronotum; puncturation very fine, but more distinct than that of head and pronotum.

**Abdomen** approximately 1.15 times as wide as elytra (Fig. 108), with distinct microsculpture, and with sparse fine puncturation; posterior margin of tergite VII without palisade fringe.

♂: posterior margin of tergite VIII convex, in the middle indistinctly concave (Fig. 111); posterior margin of sternite VIII convex (Fig. 112); median lobe of aedeagus as in Fig. 113; apical lobe of paramere with one very long and three short setae (Fig. 114).

♀: posterior margin of tergite VIII convex (Fig. 115); posterior margin of sternite VIII weakly convex and with row of numerous long modified marginal seta, in the middle not distinctly concave (Fig. 116); spermatheca as in Figs 117-118.

**Etymology:** The name (adj.) is derived from Soğanlı Dağları, the mountain range where the type specimens were found.

**Comparative notes:** From the geographically closest consubgenera, *G. euxina* and *G. macronorum*, *G. soganlica* is separated by smaller size, darker coloration (especially of the antennae), smaller eyes, and additionally by the following characters:

from *G. macronorum* by shorter antennae, a distinctly smaller median lobe of the aedeagus, shorter apical and subapical setae of the paramere, and a much more slender spermathecal capsule;

from *G. euxina* by a smaller median lobe of the aedeagus, shorter apical and subapical setae of the paramere, as well as by a longer, distally more slender, and proximally more strongly dilated spermathecal duct.

In order to account for both *G. soganlica* and *G. orduica*, the following modifications of the key in ASSING (2005a) are suggested:

- 135    Posterior margin of tergite VIII concave in the middle, especially in ♂ (Figs 101, 105). ♂: median lobe of aedeagus with strongly reduced crista apicalis (Fig. 103); apical lobe of paramere as in Fig. 104. ♀: spermatheca as in Fig. 107. Ordu (Map 8)..... *G. orduica* sp.n.
- Posterior margin of tergite VIII even in ♂ not or only very indistinctly concave in the middle. ♂: crista apicalis of median lobe not reduced. Trabzon..... 135a
- 135a    Smaller, width of pronotum <0.35 mm; coloration of antennae darker, usually brown to dark brown; eyes smaller, composed of few ommatidia (Fig. 110), at most about 1/4 the length of postocular region in dorsal view. ♂: median lobe of aedeagus smaller, 0.25-0.26 mm long (Fig. 113); apical lobe of paramere with very

- short apical and subapical setae (Fig. 114). ♀: spermatheca with longer, distally more slender, and proximally more strongly dilated duct (Figs 117-118). Trabzon: Soğanlı Dağları (Map 8) ..... *G. soganlica* sp.n.
- Larger, width of pronotum >0.35 mm; coloration of antennae paler, usually yellowish to yellowish brown; eyes larger, more than 1/4 the length of postocular region in dorsal view. ♂: median lobe of aedeagus larger, >0.26 mm long; apical lobe of paramere with longer apical and subapical setae. ♀: spermatheca with shorter, distally less slender, and proximally less strongly dilated duct. Trabzon: surroundings of Maçka..... 135b
  - 135a Eyes slightly larger, maximal diameter approximately equal to the length of antennomere III; antennomere III only slightly shorter than antennomere II. ♀: capsule of spermatheca distally enlarged (Figs. P02: 36) ..... *G. macronorum* PACE
  - Eyes slightly smaller, maximal diameter shorter than antennomere III; antennomere III distinctly shorter than antennomere II. ♀: spermathecal capsule somewhat coniform (Fig. P83b: 173)..... *G. euxina* PACE

**Distribution and bionomics:** The type locality is situated in the eastern part of the Soğanlı Dağları, near the pass between Of and Bayburt. The specimens were collected by sifting the roots of grass and herbs, moss, and fern litter, mostly near rocks, at altitudes of 2050 and 2280 m.

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### Zusammenfassung

13 *Geostiba*-Arten aus der Türkei und Griechenland werden beschrieben und abgebildet: *G. (Tropogastrosipalia) nifica* sp.n. (Türkei: Izmir), *G. (T.) anlasi* sp.n. (Türkei: Izmir), *G. (T.) solodovnikovi* sp.n. (Türkei: Erzurum), *G. (T.) atromontis* sp.n. (Türkei: Manisa), *G. (T.) renneri* sp.n. (Türkei: Muğla), *G. (T.) aydinica* sp.n. (Türkei: Aydın), *G. (T.) biformis* sp.n. (Türkei: Muğla, Denizli), *G. (T.) calcidica* sp.n. (Griechenland: Chalkidike), *G. (T.) elmaica* sp.n. (Türkei: Ankara), *G. (T.) priva* sp.n. (Türkei: Gümüşhane), *G. (Sibiota) aucta* sp.n. (Türkei: Rize), *G. (Sipalotricha) orduica* sp.n. (Türkei: Ordu) und *G. (S.) soganlica* sp.n. (Türkei: Trabzon). Eine aktuelle Bestimmungstabelle der *Geostiba*-Arten der Ostmediterraneis und angrenzender Gebiete wird ergänzt. Die Verbreitung der ausgesprochen artenreichen Untergattung *Tropogastrosipalia* SCHERPELTZ im Untersuchungsgebiet wird diskutiert. Weitere Nachweise beschriebener Arten werden gemeldet, darunter Erstnachweise von *G. euboica* PACE aus der Türkei und von *G. oertzeni* (EPPELSHEIM) aus der Ukraine. Für 16 Arten werden Verbreitungskarten erstellt.

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Author's address: Dr. Volker ASSING  
Gabelsbergerstr. 2  
D-30163 Hannover, Germany  
E-Mail: [vassing.hann@t-online.de](mailto:vassing.hann@t-online.de)

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