Revision of *Geostiba* of the West Palaearctic region. XXVIII. New species and records from the Georgian Caucasus (Coleoptera: Staphylinidae: Aleocharinae)

With 6 figures

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**Abstract**

A study of 485 specimens of *Geostiba* Thomson, 1858, 482 of which were collected during three field trips to West Georgia conducted in 2021, yielded eleven species, two of which are described and illustrated: *Geostiba* (*Sibiota*) *brevifistula* spec. nov. (Georgia: Kvemo Svaneti) and *G. (S.)* *egrisica* spec. nov. (Georgia: Samegrelo-Zemo Svaneti). Both species belong to the *G. bituberculata* group. *Geostiba* (*Geostiba*) *sororcula* Assing, 2001, a species previously known only from Northeast Turkey and Armenia, is reported from Georgia for the first time. The distributions of five species are mapped. The *Geostiba* fauna of the Caucasus region sensu lato is now represented by a total of 50 species, 30 of which belong to the subgenus *Sibiota* Casey, 1906.

**Taxonomic acts**

*Geostiba brevifistula* spec. nov. – urn:lsid:zoobank.org:act:C9599E3F-3AB0-4C10-980C-862F374E3EE8
*Geostiba egrisica* spec. nov. – urn:lsid:zoobank.org:act:267A9CC9-F7A1-4CED-8594-1CE8CF16C0E9

**Keywords**

Coleoptera, Staphylinidae, Aleocharinae, *Geostiba*, *Sibiota*, taxonomy, new species, Caucasus region, Georgia, new records, distribution map

**Zusammenfassung**

Die Bearbeitung von 485 Individuen der Gattung *Geostiba* Thomson, 1858, von denen allein 482 während dreier Forschungsreisen nach West-Georgien im Juni, Juli/August und Oktober 2021 gesammelt wurden, ergab elf Arten. Zwei Arten der Untergattung *Sibiota* Casey, 1906 werden beschrieben und abgebildet: *Geostiba* (*Sibiota*) *brevifistula* spec. nov. (Georgien: Kvemo Svaneti) und *G. (S.)* *egrisica* spec. nov. (Georgien: Samegrelo-Zemo Svaneti). Beide Arten gehören in die *G. bituberculata*-Gruppe. *Geostiba* (*Geostiba*) *sororcula* Assing, 2001 wird erstmals aus Georgien nachgewiesen. Die Verbreitungsgebiete von fünf Arten werden anhand von Karten illustriert. Aus der Kaukasusregion sensu lato sind gegenwärtig insgesamt 50 *Geostiba*-Arten bekannt, von denen 30 zur Untergattung *Sibiota* gehören.
Introduction

Unlike the East Palaearctic region, from where only few species have been recorded, the southern West Palaearctic region is remarkably rich in species of *Geostiba* Thomson, 1858. While the species of West Mediterranean have never been revised, those from the region east of Italy (East Mediterranean, Middle East, Caucasus region) eastwards to Middle Asia have been treated comprehensively in numerous contributions in the past two decades (e.g., Assing 2005, 2016b, 2017b, 2019). More than two hundred species, with few exceptions all of them locally or regionally endemic, are now known from this region.

The first comprehensive revision of the Caucasian fauna was conducted by Assing (2005). Since then, the fauna of the Caucasus region sensu lato (i.e., the region including the Russian part of the Greater Caucasus, Georgia, Northeast Turkey, Armenia, and Azerbaijan) has been addressed in several articles adding new species, reporting additional records, and establishing synonymies (Assing 2016a, b, 2017a, c, 2018, 2019). Prior to the present study, 48 species had been recorded from this region, 28 of them belonging to the subgenus *Sibiota* Casey, 1906, eleven to *Tropogastrosipalia* Scheerpeltz, 1951, seven to *Sipalotricha* Scheerpeltz, 1951, and two to the nominal subgenus. Two wing-dimorphic species are widespread, the remainder, with one exception micropterous, is represented by regional or local endemics.

Three field trips conducted to West Georgia in 2021, one by Volker Brachat (Geretsried) and Heinrich Meybohm (Großhansdorf) in June and two by Michael Schülke (Berlin) and the author in July/August and October, yielded a total of 482 specimens of *Geostiba*. A study of this material revealed that it was composed of ten species, two of them undescribed. Three additional specimens from Northeast Georgia representing an eleventh species were made available by Matúš Kocian (Prague).

Material and methods

The material examined in the present study is deposited in the following collections:

- **MNB** Museum für Naturkunde, Berlin (including coll. Schülke)
- **cAss** author’s private collection
- **cKoc** private collection Matúš Kocian, Prague

The morphological studies were conducted using Stemi SV 11 (Zeiss) and Discovery V12 (Zeiss) microscopes, and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using digital cameras (AxioCam ERC 5s, Nikon Coolpix 995), as well as Labscope and Picosw software. The map was created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the labrum to the apex of the abdomen, the length of the forebody from the anterior margin of the labrum to the posterior margin of the elytra, head length from the anterior margin of the clypeus to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Results

**Geostiba (Geostiba) sororcula** Assing, 2001

*Material examined:* Georgia: Imereti: 1 ♂, 2 ♀, pass 25 km SE Sachkhere, 42°09′54″N, 43°35′44″E, 1190 m, deciduous forest with predominant *Fagus* and *Carpinus*, litter sifted, 23.X.2021, leg. Assing (cAss); 1 ♀, 6 km W Surami, 42°01′34″N, 43°29′49″E, 940 m, margin of *Fagus* and *Carpinus* forest, litter sifted, 24.X.2021, leg. Assing (cAss).

*Geostiba sororcula* was originally described based on material from Northeast Turkey (Gümüşhane, Ardahan) and subsequently reported also from Armenia (Assing 2001, 2003, 2017a, 2018, Assing & Schülke 2019). The above specimens represent the first records from Georgia.

**Geostiba (Sipalotricha) cingulata** (Eppelsheim, 1878)

*Material examined:* Georgia: Guria: 1 ex., Vakijvari, 41°54′06″N, 42°09′40″E, 430 m, deciduous forest, litter sifted, 12.VI.2021, leg. Brachat & Meybohm. *Zemo Svaneti:* 35 exs., S Khaishi, 42°54′45″N, 42°11′39″E, 840 m, alder forest, litter near logs sifted, 7.VIII.2021, leg. Assing & Schülke; 28 exs., S Mestia, 43°01′09″N, 42°42′19″E, 1860 m, secondary mixed forest, litter under hazelnut,
undergrowth, and spruce sifted, 8.VIII.2021, leg. Assing & Schülke; 1 ex., N Khaishi, 43°05'41"N, 42°11'09"E, 1110 m, alder forest, moist litter sifted 10.VIII.2021, leg. Assing: 1 ex., N Martvili, Lebarde valley, 42°35'54"N, 42°21'02"E, 400 m, margin of mixed forest, litter sifted, 15.VIII.2021, leg. Schülke. Kvemo Svaneti: 17 exs., E Lentekhi, mountain track Chvelpi–Latpari pass, 42°50'25"N, 42°56'38"E, 1560 m, beech and hazelnut litter sifted, 29.VII.2021, leg. Assing & Schülke; 21 exs., E Lentekhi, mountain track Chvelpi–Latpari pass, 42°50'14"N, 42°56'51"E, 1330 m, beech litter and roots near track margin sifted, 29.VII.2021, leg. Assing & Schülke; 3 exs., Chvelpi–Latpari pass, 42°50'30"N, 42°56'33"E, 1510 m, forest with beech and alder, litter sifted, 16.VI.2021, leg. Brachat & Meybohm; 1 ex., E Lentekhi, mountain track Chvelpi–Latpari pass, 42°50'30"N, 42°56'33"E, 1600 m, beech forest, litter and dead wood sifted, 30.VII.2021, leg. Schülke. Kvemo Svaneti: 4 exs., E Usuguli, E Zagari pass, 42°5'48"N, 43°08'32"E, 1860 m, moist Carpinus forest, litter sifted, 31.VII.2021, leg. Schülke (MNB); 60 exs., E Lentekhi, S Panaga, 42°49'46"N, 42°55'09"E, 1160 m, deciduous forest, litter sifted, 1.VIII.2021, leg. Assing & Schülke; 9 exs., NE Lentekhi, 42°49'19"N, 42°45'07"E, 2100 m, Acer litter sifted, 2.VIII.2021, leg. Schülke; 13 exs., Ghebi, 42°45'09"N, 43°32'11"E, 1310 m, floodplain forest with alder, litter sifted, 18.VI.2021, leg. Brachat & Meybohm; 8 exs., NW Lentekhi, 42°48'26"N, 42°39'56"E, 1360 m, moist beech forest, litter and roots sifted, 3.VIII.2021, leg. Assing & Schülke; 1 ex., same data, but soil-washing. Racha: 6 exs., E Ambrolauri, 42°34'17"N, 43°21'22"E, 750 m, ruderal stream valley, litter sifted, 23.VII.2021, leg. Assing & Schülke; 9 exs., NE Oni, Shovi, 42°41'47"N, 42°55'01"E, 1170 m, stream valley, litter sifted, 27.VII.2021, leg. Assing & Schülke; 11 exs., mountain road E Ambrolauri, 42°31'42"N, 43°17'54"E, 1120 m, stream valley, litter sifted, 27.VII.2021, leg. Assing & Schülke; 1 σ, NE Ambrolauri, Likheti, 42°35'31"N, 43°13'58"E, 760 m, moist deciduous forest with predominant Carpinus, litter and roots sifted, 25.VII.2021, leg. Assing & Schülke; 1 σ, NE Oni, Shovi, 42°41'47"N, 43°41'05"E, 1580 m, forest margin with predominant Carpinus, litter and roots sifted, 25.VII.2021, leg. Assing & Schülke; 11 exs., mountain road E Ambrolauri, 42°31'42"N, 43°17'54"E, 1120 m, stream valley, litter sifted, 27.VII.2021, leg. Assing & Schülke; 1 σ, NE Ambrolauri, Likheti, 42°35'31"N, 43°13'58"E, 760 m, moist deciduous forest with predominant alder, partly on scree and gravel substrate, litter sifted, 21.X.2021, leg. Assing: 17 σ, 17 ζ, 9 ο, Oni, E Ghebi, 42°45'54"N, 43°31'36"E, 1450 m, moist deciduous forest with predominant Fagus, litter sifted, 22.X.2021, leg. Assing; 2 σ, Oni, E Ghebi, 42°45'54"N, 43°31'04"E, 1410 m, deciduous forest with predominant Fagus and alder, soil-washing, 27.X.2021, leg. Assing: 1 σ [teneral], same data, but litter sifted, leg. Schülke. Imereeti: 1 σ, 2 ζ, pass 25 km SE Sachkhare, 42°09'54"N, 43°35'44"E, 1190 m, deciduous forest with predominant Fagus and Carpinus, litter sifted, 23.X.2021, leg. Assing. Material deposited in MNB and cAss.

Geostiba cingulata has been recorded from numerous localities across Georgia and one in Azerbaijan. For a distribution map see Assing (2017b).

Geostiba (Sibiota) batumiensis Pace, 1996

Material examined: Georgia: Adjara: 6 exs., Chakvi, 41°40'47"N, 41°52'19"E, 330 m, litter sifted, 8.VI.2021, leg. Brachat & Meybohm; 11 exs., same data, but soil-washing; 4 exs., 7 km NE Batumi, 41°39'05"N, 41°45'51"E, 550 m, litter sifted, 9.VI.2021, leg. Brachat & Meybohm; 7 exs., same data, but soil-washing; 3 exs., Kintrishi National Park, 41°44'15"N, 41°59'01"E, 430 m, deciduous forest with chestnut, beech, Rhododendron, and Hyperticum, litter sifted, 10.VI.2012, leg. Brachat & Meybohm. Material deposited in MNB and cAss.

This species is endemic to the extreme west of the Lesser Caucasus (environ of Batumi), where it is rather common. For previous records see Assing (2005, 2016b, 2017b, 2018, 2019).

Geostiba (Sibiota) bituberculata (Éпплесhейм, 1878)

Material examined: Georgia: Imereeti: 1 ζ, pass 25 km SE Sachkhare, 42°10'05"N, 43°35'12"E, 1120 m, secondary beech forest, litter sifted, 23.X.2021, leg. Assing (cAss); 2 σ, 1 ζ, 6 km W Surami, 42°01'34"N, 43°29'49"E, 940 m, margin of Fagus and Carpinus forest, litter sifted, 24.X.2021, leg. Assing (cAss); 1 σ, 1 ζ, W Surami, Rikoti pass, 42°03'40"N, 43°28'59"E, 930 m, stream valley with chestnut and alder, soil-washing near old chestnut trees, 24.X.2021, leg. Assing (cAss).

The known distribution of G. bituberculata is confined to the Suram range (Assing 2016b).

Geostiba (Sibiota) recta Assing, 2016

(Fig. 18, Map 1)

Material examined: Georgia: Kvemo Svaneti: 6 exs., E Lentekhi, mountain track Chvelpi–Latpari pass, 42°50'25"N, 42°56'38"E, 1560 m, beech and hazelnut litter sifted, 29.VII.2021, leg. Assing & Schülke; 5 exs., E Lentekhi, mountain track Chvelpi–Latpari pass, 42°50'14"N, 42°56'51"E, 1330 m, beech litter and roots near track margin sifted, 29.VII.2021, leg. Assing; 7 exs., mountain track Chvelpi–Latpari pass, 42°50'30"N, 42°56'33"E, 1600 m, beech forest, litter and dead wood sifted, 30.VII.2021, leg. Assing & Schülke; 32 exs., Chvelpi–Latpari pass, 42°51'19"N, 42°56'38"E, 2100 m, litter of birch, hazelnut, sorbus, and rhododendron, litter sifted, 15.VI.2021, leg. Brachat & Meybohm; 1 ex., Chvelpi–Latpari pass, 42°50'58"N, 42°56'42"E, 1950 m, beech forest, litter sifted, 15.VI.2021, leg. Brachat & Meybohm; 6 exs., Chvelpi–Latpari pass, 42°50'30"N, 42°56'33"E, 1510 m, forest with beech and alder, litter sifted, 16.VI.2021, leg. Brachat & Meybohm; 2 exs., E Lentekhi, S Panaga, 42°49'46"N, 42°55'09"E, 1160 m, deciduous forest, litter sifted, 1.VIII.2021, leg. Assing; 2 exs., S Panaga, 42°49'43"N,
42°55'01"E, 1170 m, beech and hazelnut forest with rocks, litter sifted, 16.VI.2021, leg. Brachat & Meybohm; 8 exs., S Panaga, 42°49'35"N, 42°54'56"E, 1250 m, alder forest, litter sifted, 16.VI.2021, leg. Brachat & Meybohm; 1 ex., NE Lentschki, 42°49'19"N, 42°54'56"E, 1250 m, alder forest with rocks, litter sifted, 16.VI.2021, leg. Assing & Schülke; 5 exs., same data, but soil-washing. Material deposited in MNB and cAss.

*Geostiba recta* had been known from few localities near Lentschki (Assing 2016b, 2017b). The currently known distribution is illustrated in Map 1. The spermatheca of one of the females from the environs of Panaga is shown in Fig. 19.

### Geostiba (Sibiota) largata Assing, 2016

**Material examined:** Georgia: Racha: 2 exs., N Nakerala pass, 42°24'31"N, 43°02'27"E, 1160 m, beech forest margin, litter sifted, 26.VII.2021, leg. Assing & Schülke (cAss, MNB).

This species has been recorded only from the environs of Likheti (Georgia: Racha) (Assing 2016b, 2017b, 2018).

### Geostiba (Sibiota) artifistula Assing, 2016

**Material examined:** Georgia: Racha: 2 ♂, NE Ambrolauri, Likheti, 42°35'31"N, 43°13'38"E, 760 m, moist deciduous forest with predominant alder, partly on scree and gravel substrate, litter sifted, 21.X.2021, leg. Assing (cAss).

This species has been recorded from several localities in the northern slopes of the Lesser Caucasus (Assing 2018, 2019).

### Geostiba (Sibiota) breviflagellata Assing, 2018

**Material examined:** Georgia: Guria: 1 ex., Kvabgha–Zoti, 41°54'25"N, 42°25'44"E, 680 m, moist slope, litter sifted, 11.VI.2021, leg. Brachat & Meybohm (cAss).

This recently described species has been recorded from several localities in the northern slopes of the Lesser Caucasus (Assing 2018, 2019).

### Geostiba (Sibiota) kakhetiana Assing, 2019

**Material examined:** Georgia: Kakheti: 1 ♂, 1 ♀, Lagodekhi National Park, Lagodekhiskevi river valley, 41.854°N, 46.198°E, 700 m, sifted, 2.VI.2019, leg. Kocian (cKoc).

The original description of this recently described species is based on 24 type specimens from a locality to the north of Lechuri (Assing 2019). The above records considerably expand the known distribution towards the east (Map 1). The aedeagus of the male from Lagodekhi is illustrated in Fig. 13.

### Geostiba (Sibiota) brevifistula Assing, 2021

**Type material:** Holotype ♂ “N42°30'51 E043°31'36 (21), Georgien Racha, Lesora 1410 m, Brachat & Meybohm 19.6.2021 / Holotypus ♂ Geostiba brevifistula sp. n. det. V. Assing 2021” (cAss). Paratypes: 1 ♂, 3 ♀ ♀: same data as holotype (cAss).

**Etymology:** The specific epithet is a noun in apposition composed of the Latin adjective brevis and the Latin noun fistula (tube, hose). It alludes to the short spermathecal capsule.

**Description:** Body length 2.2–2.7 mm; length of forebody 0.9–1.1 mm. Habitus as in Fig. 1. Colouration: body reddish-yellow to yellowish-brown; legs and antennae yellow.

Eyes (Fig. 3) reduced to minute rudiments, without ommatidia and pigmentation. Other external characters not distinctive.

♂: elytra (Fig. 2) each with a pronounced impression, with distinct and somewhat granulose punctuation, hind margins distinctly elevated, suture anteriorly broadly and posteriorly narrowly keeled; tergite VII (Fig. 4) with a median pair of short, oblong, and posteriorly slightly converging tubercles; sternite VIII obtusely produced posteriorly; median lobe of aedeagus (Figs 5–6) 0.28 mm long; internal sac with rather stout flagellum, without spines.

♀: sternite VIII with broadly convex posterior margin; spermatheca (Fig. 14) small, with short proximal portion, and without distinct apical cuticular invagination.

**Intraspecific variation:** In the smaller male paratype, the male secondary characters are much less pronounced than in the holotype: the impressions on the elytra are indistinct and the pair of the tubercles on tergite VII are obsolete.

**Comparative notes:** *Geostiba brevifistula* belongs to the *G. bituberculata* group (see Assing 2016b). Among the Georgian representatives of this group, this species is most similar (similar male primary and secondary sexual characters; spermatheca without distinct apical
Figs 1–13: *Geostiba brevifistula* (1–6), *G. egrisica* (7–12), and *L. kakhetica* from Lagodekhi (13). 1, 7 – male habitus; 2, 8 – male forebody; 3, 9 – head and pronotum in lateral view; 4, 10 – male tergites VII and VIII; 5–6, 11–13 – median lobe of aedeagus in lateral view. Scale bars: 1, 7: 1.0 mm; 2, 8: 0.5 mm; 3–4, 9–10: 0.2 mm; 5–6, 11–13: 0.1 mm.
cuticular invagination) and evidently also most closely allied to the geographically close G. artifistula Assing, 2016, which has been recorded only from the environs of Likheti in the southern slopes of the Lechakhumi range (Map 1). It is distinguished from this species by smaller average body size, more pronounced impressions on the male elytra, a more distinct pair of tubercles on the male tergite VII, a broader flagellum in the internal sac of the aedeagus, and particularly by a much shorter capsule of the spermatheca. For comparison, the spermatheca of G. artifistula is illustrated in Figs 15–16.

Distribution and natural history: The type material was collected near Lesoria, a small village to the southeast of Oni (Racha) (Map 1), by sifting litter in an abandoned graveyard with old trees, predominantly beech. An intense search for additional specimens in the same locality at the end of July was unsuccessful, suggesting that the adults may be present only earlier in the year.

Geostiba (Sibiota) egrisica spec. nov.
urn:lsid:zoobank.org:act:267A9CC9-F7A1-4CED-8594-1CE8CF16CD0E
(Figs 7–12, 17–18, Map 1)

Type material: Holotype ♀: “N42°37'54 E042°24'25 (7), GG Samegrelo-Zemo Svaneti, Lebarde-Tal 550 m, Brachat & Meybohm 14.6.2021 / Holotypus ♀ Geostiba egrisica sp. n. det. V. Assing 2021” (cAss). Paratypes: 5 ♂♂, 3 ♀♀: same data as holotype (cAss, MNB); 2 ♀♀: “GEORGIA [51] – Zemo Svaneti, N Martvili, Lebarde valley, 42°37’54”N 42°24’28”E, 580 m, 13.VIII.2021, V. Assing” (cAss); 4 ♂♂, 5 ♀♀: “GEORGIA [56] – Zemo Svaneti, N Martvili, Lebarde valley, 42°37’54”N, 42°24’28”E, 580 m, 16.X.2021, V. Assing” (cAss); 3 ♂♂, 4 ♀♀: same data, but soil-washing (cAss); 6 ♂♂, 5 ♀♀: “GEORGIA [58a] – Zemo Svaneti, N Martvili, Lebarde valley, 42°37’51”N, 42°24’20”E, 540 m, 17.X.2021, V. Assing” (cAss); 4 ♀♀: same data, but litter sifted (cAss); 1 ♂, same data, but leg. Schülke (MNB).

Intraspecific variation: The male secondary sexual characters are fully pronounced in only some of the males. In the other (smaller) males, they are partly or completely reduced.

Comparative notes: Like G. brevifistula, G. egrisica belongs to the G. bituberculata group. It is distinguished from G. recta, the geographically closest representative of this group, particularly by darker average colouration, more sharply and more strongly elevated sutural carinae on the male elytra, differently shaped tubercles on the male tergite VII, and an aedeagus without a long internal flagellum. The spermathecae of both species are of rather similar shape, but that of G. egrisica is significantly smaller (see Figs 17–19).
Distribution and natural history: The type locality is situated in the southern slopes of the Egrisi Range, in the valley of Tekhuri river, some 25 km to the north of Martvili, Zemo Svaneti (Map 1). The specimens were sifted from leaf litter at the margin of a moist mixed deciduous forest at an altitude of 540–580 m.

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