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New species and a new synonym of *Geostiba* from the Iberian Peninsula (Coleoptera: Staphylinidae, Aleocharinae)

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A b s t r a c t : Five species of *Geostiba* THOMSON are described, illustrated and distinguished from similar Iberian congeners: *G.* (s.str.) *consobrina* sp.n. (Portugal: Serra da Estrela), *G.* (*Typhlusida*) *hachoensis* sp.n. (Spain, Andalucia: Sierra del Hacho), *G.* (*Sipalotricha*) *cabrerensis* sp.n. (Spain, León: Sierra de la Cabrera), *G.* (*Sphenosipalia*) *feldmanni* sp.n. (Spain, Zaragoza: Sierra del Moncayo), and *G.* (*Prionosipalia*) *unituberculata* sp.n. (Spanien, Navarra: Col de Ibaneta). The holotype of *G. leonensis* PACE is revised and illustrated. *Geostiba osellaiana* PACE 1983, syn. n., is regarded as a junior synonym of *G. numantensis* PACE 1983, stat. n.

1. Introduction

The genus *Geostiba* is represented in the Western Mediterranean by numerous species. Recent descriptions of several new species by PACE (2002) show that our current knowledge of the Geostiba fauna of this region is still incomplete. The species of the Iberian Peninsula have never been revised, but the first steps of such a revision are in the planning stage (ASSING in prep.). This project, however, is strongly impeded by the fact that the descriptions of numerous species have been based on females (e. g. PACE 1990, 1996, 2002), although a reliable identification and interpretation is usually possible only when males are available. Often, even a direct comparison of material with a female holotype is insufficient to ascertain whether or not they are conspecific. In addition, the distributions of *Geostiba* species are only poorly known, so that zoogeographic evidence is often too weak to support either hypothesis.

Iberian *Geostiba* material recently collected by Benedikt Feldmann (Münster), Arved Lompe (Nienburg), Heinrich Meybohm (Stelle), and myself contained several undescribed species. In this paper, only those species are described for which a conspecificity with any of the described species is most unlikely. The remainder will be treated in the context of a comprehensive revision.

2. Material

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

DEI .....Deutsches Entomologisches Institut, Eberswalde
MHNG.....Muséum d'Histoire Naturelle, Genève
MNHUB.....Museum für Naturkunde der Humboldt-Universität Berlin
NHMW.....Naturhistorisches Museum Wien (H. Schillhammer)
OÖLML.....Oberösterreichisches Landesmuseum Linz
cAss.....author's private collection
cFel.....private collection B. Feldmann, Münster
cSch.....private collection M. Schülke, Berlin
cWun .....private collection P. Wunderle, Mönchengladbach

3. Descriptions

Geostiba (s.str.) *consobrina* sp.n. (Figs. 1-14)

Holotype ♂ : P - Serra da Estrela, No. 10, W Manteigas, Penhas Douradas, 40°23N, 7°34W, 1505m, 19.III.2002, Meybohm / Holotypus ♂ *Geostiba consobrina* sp.n. det. V. Assing 2002 (cAss). Paratypes : 2♂♂, 4♀♀: same data as holotype (cAss).

Description: 2.1-2.6 mm; facies as in Fig. 1. Coloration: head dark brown; pronotum brown, slightly lighter than head; elytra light brown; abdomen dark brown with the apex lighter, sometimes also the anterior segments slightly lighter; antennae brown; legs testaceous.

Head approximately as wide as long or weakly transverse (length measured from anterior margin of clypeus); eyes in dorsal view approximately half the length of postocular region or slightly larger (Fig. 3); integument with distinct microreticulation.

Pronotum approximately 1.15 times as wide as long and 1.10-1.15 times as wide as head (Figs. 1, 2); microreticulation as distinct as that of head.

Elytra at suture approximately 0.6 times as long as pronotum, with shallower microsculpture and consequently more shine than head and pronotum. Sexual dimorphism pronounced. Hind wings reduced.

Abdomen 1.10-1.15 times as wide as elytra; microsculpture transverse; puncturation very fine, barely noticeable, and sparse.

♂: elytra with a large, strongly elevated, diagonal, more or less oval tubercle near scutellum on either side of suture (Figs. 2, 3), behind this pair of tubercles extensively and transversely impressed, this impression not interrupted by suture; puncturation distinct and granulose. Tergite VII with oblong median tubercle near posterior margin (similar to that in *G. circellaris*) (Figs. 4, 5); posterior margin of tergite VIII in the middle truncate to weakly concave (Fig. 6); sternite VIII obtusely pointed posteriorly (Fig. 7); median lobe of aedeagus in ventral view almost of ovoid shape (i. e. ventral process not distinctly separated from basal part); ventral process in lateral view almost straight (Figs. 10, 11); apical lobe of paramere relatively slender and with short setae (Fig. 12).

♀: elytra with shallow impressions and with weakly granulose puncturation. Tergite VII unmodified; posterior margin of tergite VIII weakly convex (Fig. 8); posterior margin of sternite VIII not concave in the middle and with weakly modified marginal setae (Fig. 9); spermatheca as in Figs. 13-14.

Etymology : The name (Lat.., noun in apposition: cousin) refers to the fact that the species is apparently closely related to *G. circellaris*, though not as closely as *G. sororcula* ASSING from northern Anatolia.

Comparative notes and systematics: *Geostiba consobrina* is readily distinguished from all its congeners especially by the modifications of the male elytra, but also by the combination of various other characters, e. g. the dark coloration and the primary sexual characters of both sexes. *Geostiba circellaris* and *G. ehlersi*, too, have an oblong tubercle on the male tergite VIII, but the former is much larger, its abdomen is much more densely punctured, and the latter has a shining head and pronotum. In both *G. circellaris* and *G. ehlersi*, the coloration is much lighter, the elytra are much more densely punctured, the modifications of the ♂ elytra are completely different, and the primary sexual characters are of different morphology.

In spite of the differences indicated above, *G. consobrina* shares some characters with *G. circellaris* suggesting a closer relationship. These characters include the presence of a pair of tubercles on the male elytra, the presence of an oblong median tubercle on the male tergite VII, a centrally weakly concave posterior margin of the male tergite VIII, the basally wide ventral process of the median lobe of the aedeagus (ventral view), a weakly pronounced crista apicalis of the median lobe, the absence of a central concavity at the hind margin of the ♀ sternite VIII, and the general shape of the spermatheca. Based on these similarities, *G. consobrina* is here attributed to the subgenus *Geostiba*. On the other hand, *G. consobrina* has a much more slender apical lobe of the paramere with much shorter setae, somewhat resembling the condition in species of *Tropogastrosipalia* SCHEERPELTZ, from which it is, however, distinguished by numerous other characters. For a more detailed discussion of the systematics of the subgenera *Geostiba* and *Tropogastrosipalia* see ASSING (2003b).

Distribution and bionomics: *Geostiba consobrina* is very likely to be an endemic of the Sierra da Estrela, Portugal. It was sifted from grass roots near snow in a small birch forest at an altitude of 1500 m (MEYBOHM pers. comm.), together with a new species of *Tectusa* BERNHAUER (ASSING 2003a).

Geostiba (*Typhlusida*) *hachoensis* sp.n. (Figs. 15-25)

Holotype ♂: E. Andalucia, Sierra del Hacho, 800m, 36°31N, 05°21W, 21.II.2000, Meybohm / Holotypus ♂ *Geostiba hachoensis* sp.n. det. V. Assing 2002 (cAss). Paratypes: 5♂♂, 6♀♀: same data as holotype (cAss); 1♂: E. Andalusien Umg. Cortez de la Frontera, Meybohm, 19.2.2000 / N36°37 W5°25, Penon del Berrueco, 700m, Korkeichenw. (cAss).

Description: 2.2-2.7 mm; facies as in Fig. 15. Yellowish brown, usually with the head, the preapical abdominal segments, and the the central areas of the anterior abdominal tergites weakly infuscate; sometimes also pronotum slightly darker; legs testaceous.

Head approximately as wide as long or weakly transverse (length measured from anterior margin of clypeus); eyes small, in dorsal view approximately one fourth the length of postocular region (Figs. 15-16); integument with very shallow microreticulation.

Pronotum approximately 1.05 times as wide as long and 1.10 times as wide as head; microreticulation very shallow. Puncturation with sexual dimorphism, but in both sexes more pronounced than that of head.

Elytra at suture 0.55-0.60 times as long as pronotum, with shallow microsculpture. Sexual dimorphism pronounced.

Abdomen approximately 1.10 times as wide as elytra; microsculpture transverse; puncturation fine, sparser and finer on posterior than on anterior tergites.

♂: pronotum with distinct puncturation, interstices as wide as or slightly wider than

diameter of punctures; elytra with suture forming a distinctly elevated carina (large ♂♂!) almost reaching the apex of the scutellum anteriorly and the posterior margin of the elytra posteriorly; this carina highest and widest behind the middle of suture (Fig. 16); elytral puncturation granulose; each elytron with extensive ill-defined diagonal impression; abdominal tergite III with pair of ill-defined shining elevations; tergite VII with long median carina or tubercle, this tubercle posteriorly extending into a distinctly elevated and hook-shaped process (Fig. 17); tergite VIII weakly convex posteriorly (Fig. 18); posterior margin of sternite VIII weakly pointed (Fig. 19); median lobe of aedeagus with relatively shout and curved ventral process (lateral view); crista apicalis and crista proximalis weakly developed (Figs. 22-23); apical lobe of paramere stout and with long setae (Fig. 24).

♀: pronotum on average with finer puncturation; elytral puncturation not granulose; elytra without or with very shallow impressions, suture unmodified; abdominal tergites III and VII unmodified; tergite VIII weakly convex to weakly pointed posteriorly (Fig. 20); posterior margin of sternite VIII weakly concave in the middle and with long and distinctly modified marginal setae (Fig. 21); spermatheca as in Fig. 25.

Intraspecific variation: The pronotal puncturation, the modifications of the male elytra, and especially the length and elevation of the carina of the male tergite VII are subject to considerable variation.

Etymology: The name (adj.) is derived from the Sierra del Hacho, where the type locality is situated.

Comparative notes and systematics: Based on the male primary and secondary sexual characters, *Geostiba hachoensis* is a representative of the subgenus *Typhlusida* CASEY (a senior synonym of *Tylosipalia* SCHEERPELTZ). From other species of the subgenus occurring in the south of the Iberian Peninsula, *G. hachoensis* is distinguished as follows:

In *G. bermejensis* PACE (paratypes examined) from the nearby Sierra Bermeja, the sutural carinae of the male elytra are shorter, the carina of the male tergite VII does not project beyond the posterior tergal margin, the ventral process of the aedeagus is more slender, and the spermatheca, especially the capsule, is of completely different shape.

In *G. pluricarinata* PACE (holotype examined) from Cadiz ("Sotogrande"), the sutural carina of the elytra is longer and not higher posteriorly than anteriorly, the male abdominal tergite III is unmodified, the the carina on the male tergite VII is very weakly developed, and the median lobe of the aedeagus is of different shape (lateral view).

In *G. tronqueti* PACE, whose male sexual characters are unknown, the spermatheca is of completely different morphology.

In *G. gadesensis* PACE from San Roque (Cadiz), the sutural carina of the male elytra is highest and widest anteriorly, the carina of the male tergite VII is much shorter and less strongly elevated, the median lobe of the aedeagus is more slender and differently shaped (lateral view), the apical lobe of the paramere is much more slender and has shorter setae, and the apical cuticular intrusion of the capsule of the spermatheca, which is otherwise of rather similar shape, is much deeper and more acute.

For figures illustrating the characters of the species referred to above see PACE (1990, 2002).

Distribution and bionomics: *Geostiba hachoensis* is probably endemic to the Sierra del Hacho and adjacent mountains. It was sifted at altitudes of 700-800 m; some of the types are teneral.

Geostiba (Sipalotricha) cabrerensis **sp.n. (Figs. 26-36)**

Holotype ♂: E - León, 4, 50 km S Ponferrada, Sierra de la Cabrera, 1950m, 42°12'17N, 6°32'20W, 23.VI.2002, V. Assing / Holotypus ♂ *Geostiba cabrerensis* sp.n. det. V. Assing 2002 (cAss). Paratypes: 15♂♂, 14♀♀: same data as holotype (cAss); 4♂♂: same data, but 1900m, 42°12N, 6°33W (cAss); 2♂♂, 5♀♀: E - León, 6, 40 km SSW Ponferrada, Sierra de la Cabrera, 1770m, 42°19'19N, 6°43'50W, 24.VI.2002, V. Assing (cAss); 27♂♂, 18♀♀, 85 sex?: E - Leon, 23.V.1999, Sierra del Cabrera, Viscodillo, 2050m, leg. B. Feldmann (DEI, MHNG, MNHUB, NHMW, OÖLML, cAss, cFel, cSch, cWun).

Description: 2.1-2.9 mm; facies as in Fig. 26. Measurements (in mm) and ratios (range): head width (HW): 0.31-0.35; pronotal width (PW): 0.36-0.39; pronotal length (PL): 0.31-0.34; elytral length at suture (EL): 0.20-0.22; PW/HW: 1.11-1.19; PW/PL: 1.11-1.19; EL/PL: 0.62-0.67.

Whole body almost uniformly rufo-testaceous; preapical abdominal segments not infuscate or only indistinctly darker in central tergal area.

Head approximately as wide as long (length measured from anterior margin of clypeus); eyes small, in dorsal view approximately one fourth the length of postocular region (Figs. 26-27); integument with shallow microreticulation; puncturation extremely fine, barely noticeable.

Pronotum 1.15-1.20 times as wide as long and 1.15-1.20 times as wide as head (Fig. 27); microreticulation as shallow as that of head or slightly more distinct. Puncturation similar to that of head.

Elytra at suture approximately 0.65 times as long as pronotum (Fig. 27); microsculpture very shallow; puncturation with sexual dimorphism, in ♂ distinct and granulose, in ♀ finer and not granulose.

Abdomen approximately 1.15 times as wide as elytra; microsculpture shallow; puncturation extremely fine, barely noticeable, and sparse.

♂: posterior margin of tergite VIII weakly, that of sternite VIII more strongly convex (Fig. 28-29); median lobe of aedeagus and apical lobe as in Figs. 32-34.

♀: posterior margin of tergite VIII weakly convex (Fig. 30); posterior margin of sternite VIII weakly convex, without distinct concavity in the middle and with weakly modified marginal setae (Fig. 31); spermatheca as in Figs. 35-36.

Etymology: The name (adj.) is derived from the Sierra de la Cabrera, where the species is apparently endemic.

Comparative notes and systematics: Based on the male secondary sexual characters, the species is attributed to the subgenus *Sipalotricha*. The only other species of this subgenus known from northwestern Spain is *G. leonensis* PACE, which was described from the surroundings of San Emiliano and whose male sexual characters are unknown. From this species, *G. cabrerensis* is separated by an on average wider pronotum (in relation to head), slightly longer elytra (see measurements of *G. leonensis*), and a spermatheca with a shorter duct.

Distribution and bionomics: The distribution of *G. cabrerensis* is probably restricted to the Sierra de la Cabrera. It was found under stones (numerous specimens, leg. Feldmann) and sifted from grass and moss at altitudes of 1770-2050 m.

Geostiba (Sipalotricha) leonensis **PACE (Figs. 36-37)**

Geostiba (Lioglutosipalia) plicatella leonensis PACE 1996: 32.

Type material examined: holotype ♀: Umg. San Emiliano, Prov. Leon, lg. H.

Franz / HOLOTYPUS Geostiba leonensis m., det. R. Pace 1989 / Geostiba leonensis sp.n. det R. Pace 1989 (NHMW).

Comments: The description of this species is based on a single female; no further records have become known. A reliable interpretation will only be possible when males become available. For characters distinguishing this species from *G. cabrerensis* see the preceding section. The facies and primary sexual characters of the holotype are illustrated in Figs. 36-37. The measurements (in mm) and ratios of the holotype are: HW: 0.32; PW: 0.38; PL: 0.33; EL: 0.20; PW/HW: 1.19; PW/PL: 1.14; EL/PL: 0.59.

Geostiba (Sphenosipalia) feldmanni sp.n. (Figs. 39-50)

Holotype ♂: E. ZARAGOZA, 1999, S. del Moncayo, 1800m, Agramonte, Gesiebe, leg. B. Feldmann, 20.V. / Holotypus ♂ *Geostiba feldmanni* sp.n. det. V. Assing 2003 (cAss). Paratypes: 5♂♂, 4♀♀: same data as holotype (cAss, cFel).

Description: 2.2-2.6 mm; facies as in Fig. 39. Whole body (except eyes) testaceous; preapical abdominal segments at most weakly infuscate.

Head of subcircular shape, approximately as wide as long (length measured from anterior margin of clypeus) or weakly oblong; eyes very small, with only few (approximately 10) ommatidia (Fig. 40); integument with shallow microreticulation; puncturation extremely fine, barely noticeable.

Pronotum weakly transverse (approximately 1.05 times as wide as long) and about 1.10 times as wide as head (Fig. 39); microreticulation somewhat more distinct than that of head. Puncturation similar to that of head.

Elytra at suture approximately 0.65 times as long as pronotum (Fig. 39); with sexual dimorphism.

Abdomen 1.05-1.15 times as wide as elytra (Fig. 39); microsculpture distinct, but rather shallow; puncturation extremely fine, barely noticeable, and sparse.

♂: elytra on either side of suture with bulging elevation (extending from scutellum to posterior margin), which may be reduced to various degrees, puncturation granulose (Fig. 39); tergite VII with pair of more or less distinct, posteriad converging carinae (Fig. 41); posterior margin of tergite VIII weakly convex, in the middle indistinctly concave (Fig. 42); posterior margin of sternite VIII obtusely pointed (Fig. 43); median lobe of aedeagus with long flagellum (Figs. 46-48); apical lobe of paramere as in Fig. 49.

♀: elytra unmodified, puncturation not granulose; posterior margin of tergite VIII weakly convex (Fig. 44); posterior margin of sternite VIII weakly convex, in the middle weakly concave and with distinctly modified marginal setae (Fig. 45); spermatheca as in Fig. 50).

Etymology: The species is dedicated to Benedikt Feldmann, who collected the types.

Comparative notes and systematics: Based on the male secondary sexual characters and the long flagellum in the internal sac of the aedeagus, the species belongs to *Sphenosipalia* SCHEERPELTZ 1951. The only representative of this subgenus previously known from Spain is *G. osellaiana* PACE 1983, whose correct name, however, is *G. numantiensis* PACE 1983 (see the following section). From this species, which occurs in the Sierra de Urbión, *G. feldmanni* is separated by the male secondary sexual characters (elytra not impressed, tergite VII with pair of posteriad converging carinae), by the morphology of the median lobe of the aedeagus (more slender ventral process in lateral view, shorter flagellum in internal sac), and by the shape of the sper-

matheca, especially the capsule. For comparison see the figures in PACE (1983a, 1983b).

Distribution and bionomics: *Geostiba feldmanni* is probably endemic to the Sierra del Moncayo, which is situated to the southeast of the Sierra de Urbión. It was sifted from moss, debris, and grass between rocks, partly near snow, at an altitude of 1800 m (FELDMANN pers. comm.).

Geostiba (Sphenosipalia) numantensis PACE, stat. n.

Geostiba (Sphenosipalia) osellaiana numantensis PACE 1983a: 18.
Geostiba (Sphenosipalia) osellaiana PACE 1983b: 139ff.; **syn. n.**

Material examined: 3♂♂, Soria, Sierra de Urbión, below Laguna Negra, 1600m, 21.V.1999, leg. Feldmann (cAss, cFel); 1♂, Burgos, Sierra de Neila, Campino, 1600m, nest of *Formica* sp., 21.V.1994, leg. Schülke & Grünberg (cAss); 1♂, Burgos, Sierra de Neila, above Laguna Alta, 1900m, 27.V.1994, leg. Schülke & Grünberg (cAss); 1♂, 1♀, Burgos, Sierra de Neila, Campino, 1500-1900m, 25.V.1994, leg. Schülke & Grünberg (cAss); 2♂♂, Logroño, Villoslada de Cameros, 31.VII.1971, leg. Lohse (cAss); 1♀, Sierra de la Demanda, 2.VIII.1971, leg. Lohse (cAss).

Comments: The descriptions of both *G. osellaiana numantensis* PACE and of *G. osellaiana* PACE appeared in print in 1983. However, the former was published in March and the latter in June, so that *G. osellaiana numantensis* is the senior name. Consequently, Article 47.2 (ICZN 1999) is here applied: *G. osellaiana* PACE 1983a is considered an unavailable name, *G. numantensis* PACE is regarded as the nominotypical subspecies, and the valid trinomina would be *numantensis numantensis* PACE 1983a and *G. numantensis osellaiana* PACE 1983b. For a more detailed discussion of similar cases in the genus *Leptusa* KRAATZ see the discussions in ASSING (2002: 973f., 975).

The type localities of both taxa are situated in the range of the Sierra de Urbión. This and the vague distinguishing characters indicated and illustrated by PACE (1983a, 1983b) made it appear unlikely that a subspecific distinction of both populations was justified. A comparison of material (the majority were seen by Pace and identified as *G. osellaiana*) from various localities in the Sierra de Urbión, from the vicinity of both type localities, indeed confirmed this suspicion, so that *G. osellaiana* PACE 1983b is here placed in the synonymy of *G. numantensis* PACE 1983a.

Geostiba (Prionosipalia) unituberculata sp.n. (Figs. 51-61)

Holotype ♂: E. Navarra, Col de Ibaneta, Orzanzurieta, 1450m, beech forest, 43°01'N, 01°16'W, 28.V.1998, leg. Lompe / Holotypus ♂ *Geostiba unituberculata* sp.n. det. V. Assing 2003 (cAss). Paratypes: 4♂♂, 4♀♀: same data as holotype (cAss); 3♂♂: E - Navarra, Ibaneta-Ozanzurieta, 1450m, 23.V.1997, W. Starke leg. (cAss, cFel); 1♂, E - Navarra, 28.V.1998, Ibaneta, Ozanzurieta, Buchenwald-Gesiebe, 1550m, leg. A. Hetzel (cFel).

Description: 2.1-2.7 mm; facies as in Fig. 51. Coloration of body rufous to brown; preapical abdominal segments usually weakly infuscate.

Head more or less oblong, 1.05-1.12 times as long as wide (length measured from anterior margin of clypeus); eyes small, in dorsal view 1/3 to 1/4 the length of postocular region; integument with distinct microreticulation and subdued shine; puncturation extremely fine, barely noticeable.

Pronotum 1.10-1.15 times as wide as long and about 1.20 times as wide as head (Fig. 51); microreticulation even more distinct than that of head.

Elytra at suture approximately 0.65 times as long as pronotum (Fig. 51); with sexual dimorphism.

Abdomen approximately 1.20 times as wide as elytra (Fig. 51); microsculpture distinct and predominantly composed of isodiametric meshes and short transverse meshes; puncturation fine, often slightly granulose.

♂: head usually with oblong median impression; elytra with somewhat granulose puncturation and posteriorly, on either side of suture, with distinctly elevated long diverging carinae (Fig. 51); tergite VII with median tubercle or upright tooth directed obliquely posteriad (Figs. 52-53); posterior margin of tergite VIII on either side of middle with usually two denticles (Fig. 54); sternite VIII posteriorly convex, not distinctly pointed (Fig. 55); median lobe of aedeagus and apical lobe of paramere as in Figs. 58-60.

♀: elytra unmodified, puncturation finer than in ♂; tergite VII unmodified; posterior margin of tergite VIII weakly convex, in the middle shallowly concave (Fig. 56); posterior margin of sternite VIII convex, in the middle not concave, with weakly modified marginal setae (Fig. 57); spermatheca as in Fig. 61.

Etymology: The name (Lat., adj.) refers to the fact that, in contrast to most of its close relatives, the species has only a single tubercle on the ♂ tergite VII.

Comparative notes and systematics: The similar morphology of the male primary sexual characters and especially the doubtlessly synapomorphic modifications of the male elytra suggest that the eight species previously attributed to the subgenera *Triptychosipalia* SCHEERPELTZ and *Prionosipalia* SCHEERPELTZ together form a monophyletic group. This conclusion is additionally supported by biogeographic data: all the species of both groups are endemic to the Pyrenees. The characters indicated by SCHEERPELTZ (1951) to distinguish both subgenera, i. e. the modifications of the male tergite VII, are of little significance, since they are subject to considerable intraspecific and intrasubgeneric variation. Consequently, it would seem appropriate to synonymize the subgenera, but this step is refrained from until the types of *Geostiba glacialis* (BRISOUT) have been revised. *Geostiba unituberculata* is distinguished from all other species of *Triptychosipalia* and *Prionosipalia* by the morphology of the median lobe of the aedeagus, by the shape of the spermatheca, by the pronounced carinae on the male elytra, and especially by the modifications of the male abdominal tergite VII; in the other species, except *G. monogranulata* PACE, this tergite has either a pair of carinae or two tubercles (or elevations); note that, in smaller males, these modifications may be reduced to various degrees. The only other representative of *Prionosipalia* in Spain is *G. leridensis* PACE from Lerida, which is separated from *G. unituberculata* by different male sexual characters and a longer spermathecal duct. For illustrations of the facies and sexual characters of several other species of *Triptychosipalia* and *Prionosipalia* see PACE (1990).

Distribution and bionomics: The type locality is situated in the western Pyrenees, where the species is probably endemic. The types were sifted from leaf litter in a beech forest at altitudes of 1450 and 1550 m, together with several specimens of *G. roscidavallensis* PACE.

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Zusammenfassung

Fünf Arten der Gattung *Geostiba* THOMSON werden von der Iberischen Halbinsel beschrieben und von ähnlichen Arten unterschieden; wesentliche Differentialmerkmale werden abgebildet: *G.* (s. str.) *consobrina* sp.n. (Portugal: Serra da Estrela), *G.* (*Typhlusida*) *hachoensis* sp.n. (Spanien, Andalusien: Sierra del Hacho), *G.* (*Sipalotricha*) *cabrerensis* sp.n. (Spanien, León: Sierra de la Cabrera), *G.* (*Sphenosipalia*) *feldmanni* sp.n. (Spanien, Zaragoza: Sierra del Moncayo) und *G.* (*Prionosipalia*) *unituberculata* sp.n. (Spanien, Navarra: Col de Ibaneta). The Holotypus von *G. leonensis* PACE wird revidiert und abgebildet. *Geostiba osellaiana* PACE 1983, syn.n., wird mit *G. numantensis* PACE 1983, stat.n., synonymisiert.

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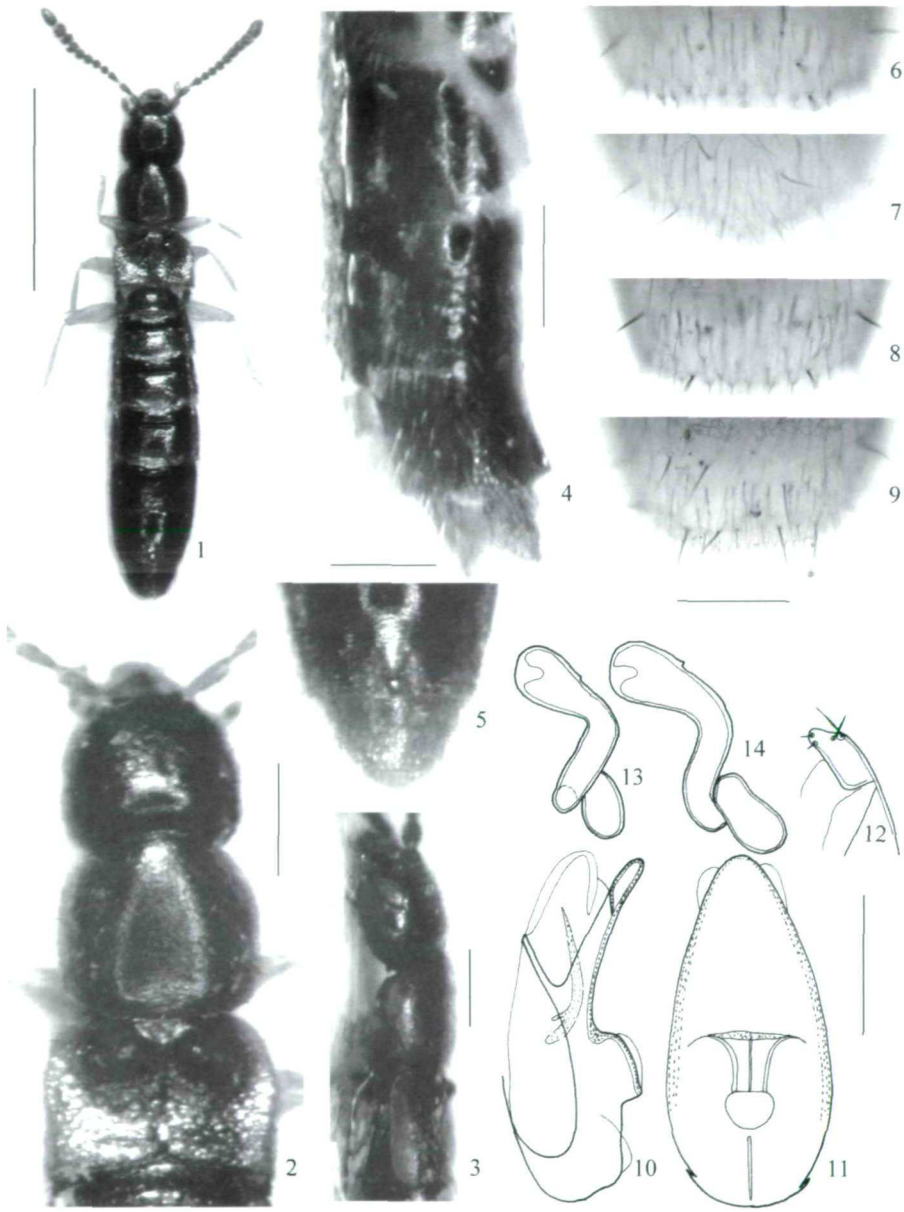
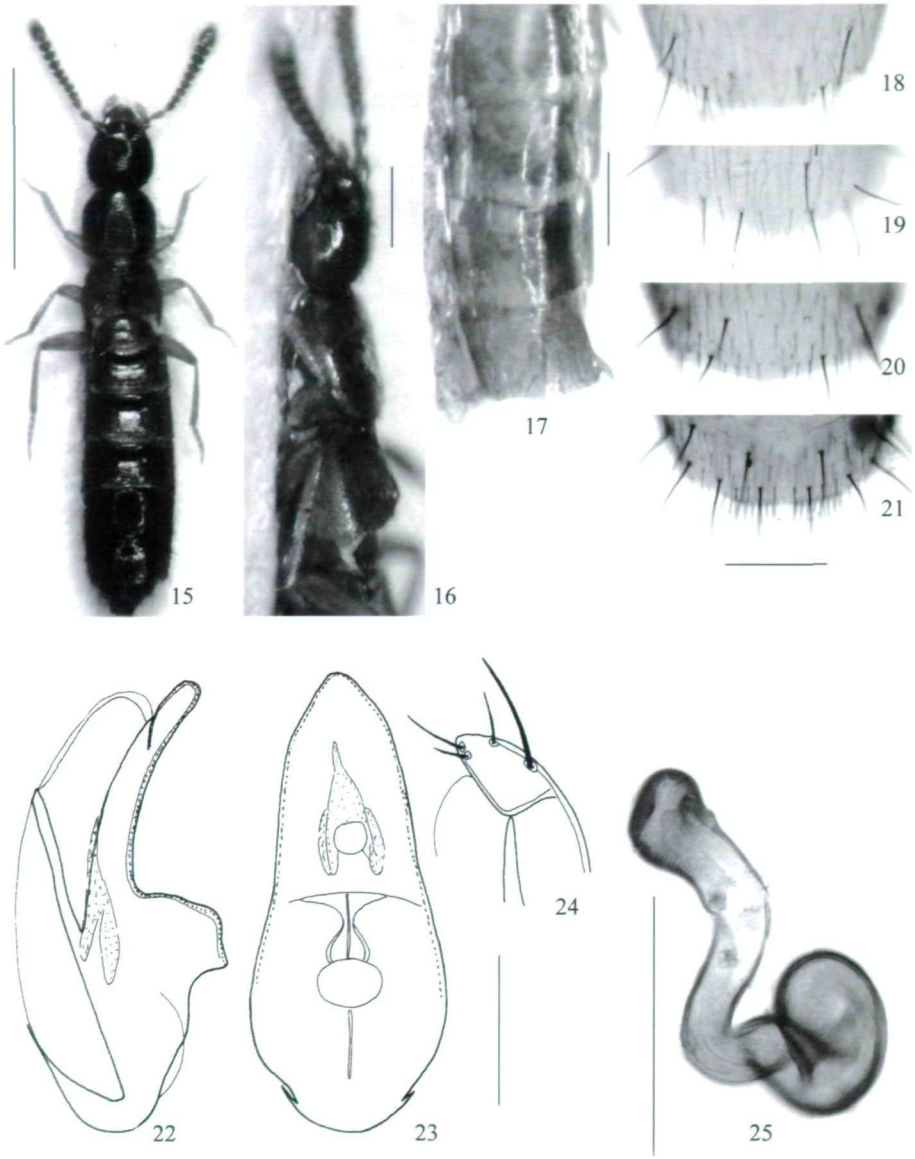
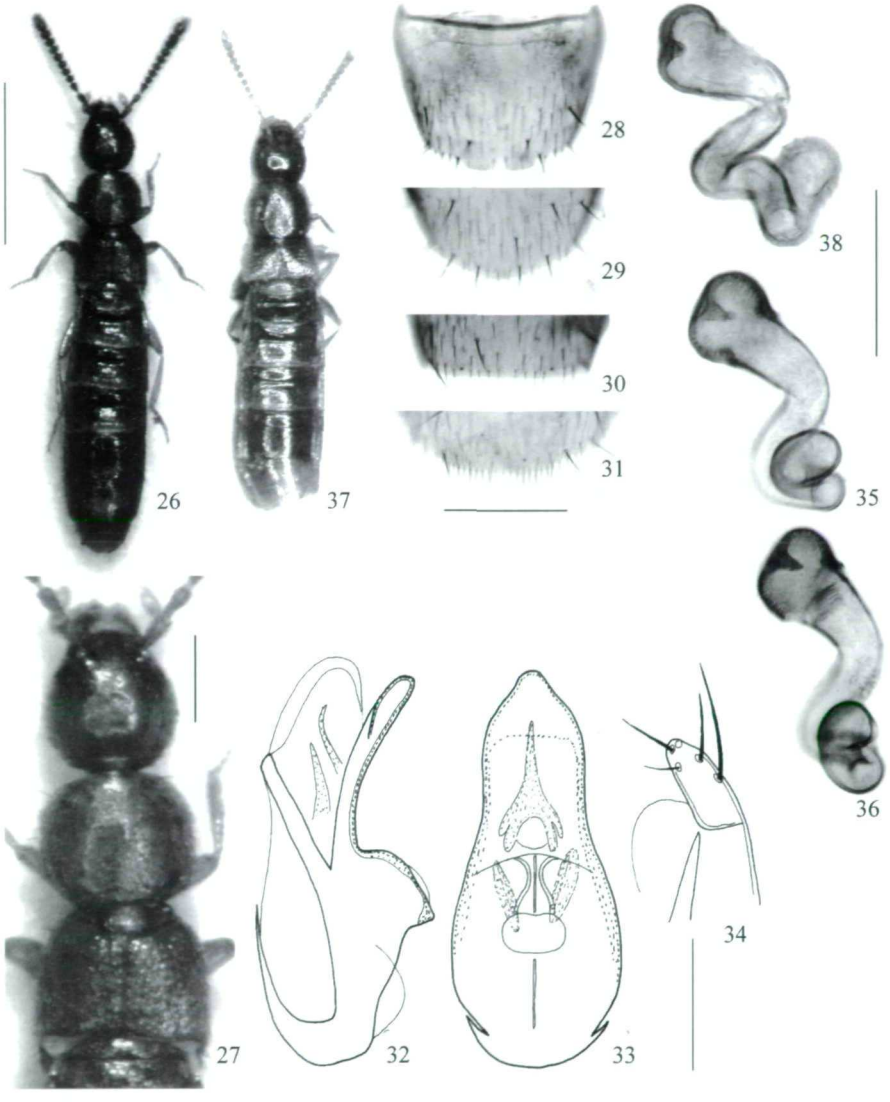


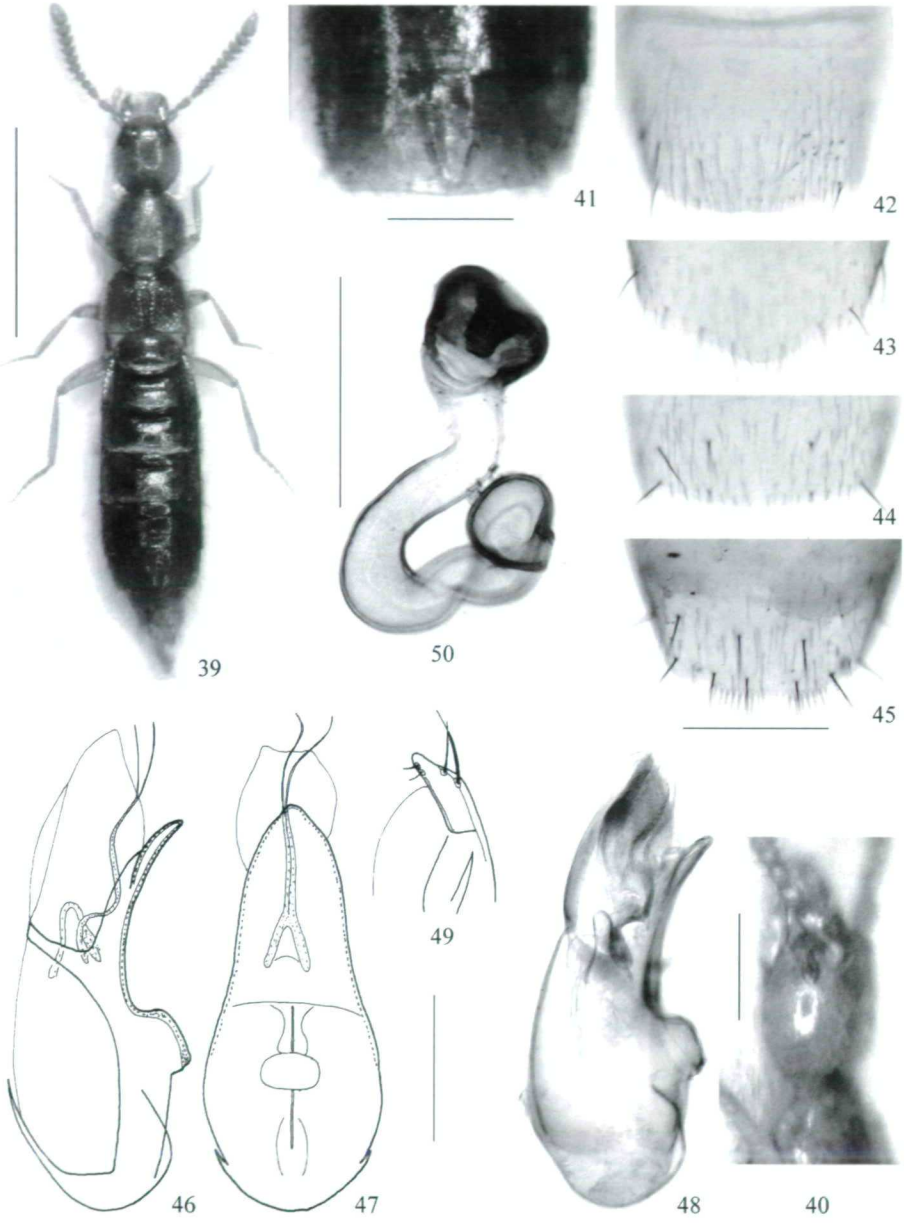
Figs. 1-14: *Geostiba consobrina* sp.n.: **1** – facies (♂); **2, 3** – ♂ forebody in dorsal and in lateral view; **4, 5** – apex of ♂ abdomen in lateral and in dorsal view; **6** – posterior part of ♂ tergite VIII; **7** – posterior part of ♂ sternite VIII; **8** – posterior part of ♀ tergite VIII; **9** – posterior part of ♀ sternite VIII; **10, 11** – median lobe of aedeagus in lateral and in ventral view; **12** – apical lobe of paramere; **13, 14** – spermathecae of two ♀♀. Scales: 1: 1.0 mm; 2-9: 0.2 mm; 10, 11, 13, 14: 0.1 mm; 12: 0.08 mm.



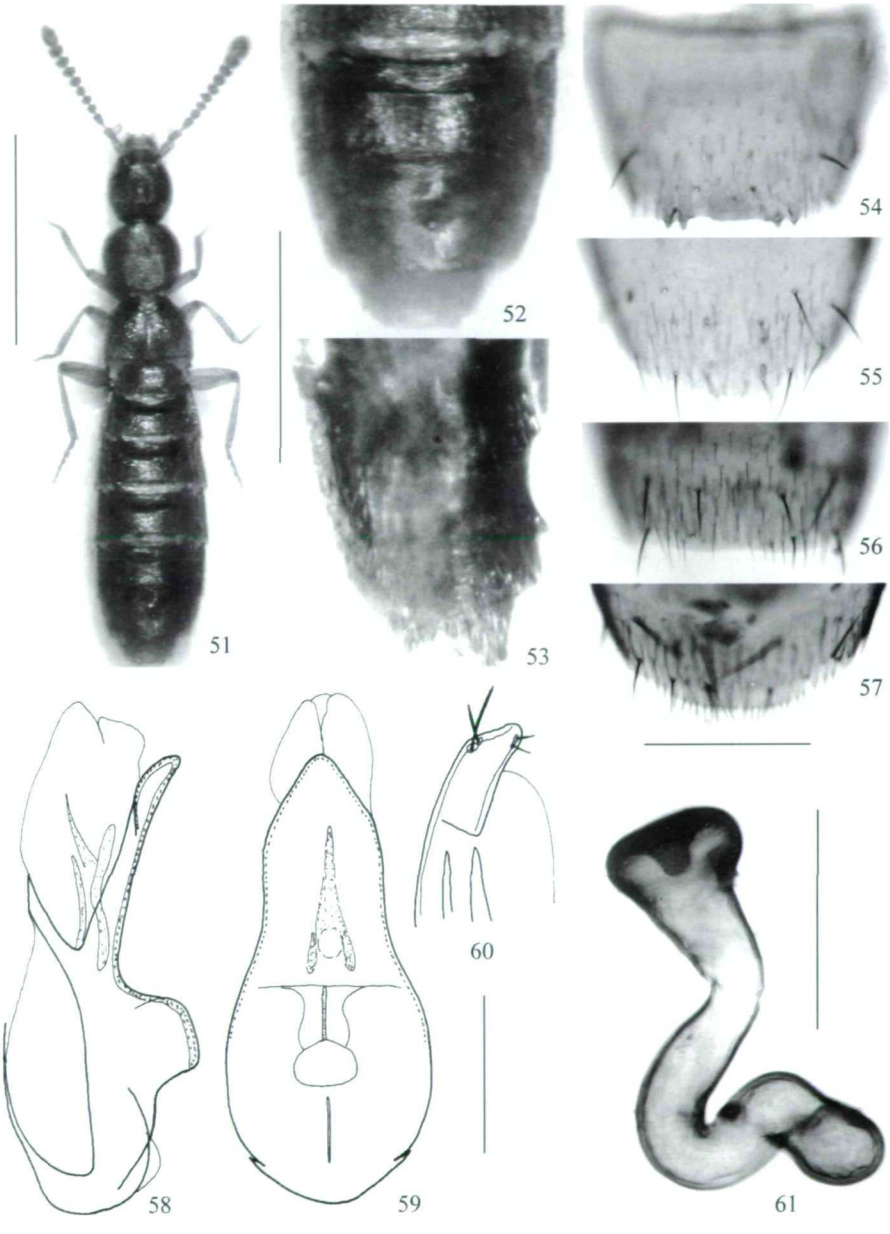
Figs. 15-25: *Geostiba hachoensis* sp. n.: **15** – facies (♂); **16** – ♂ forebody in lateral view; **17** – segments IV-VII of ♂ abdomen in lateral view; **18** – posterior part of ♂ tergite VIII; **19** – posterior part of ♂ sternite VIII; **20** – posterior part of ♀ tergite VIII; **21** – posterior part of ♀ sternite VIII; **22, 23** – median lobe of aedeagus in lateral and in ventral view; **24** – apical lobe of paramere; **25** – spermatheca. Scales: 15: 1.0 mm; 16-21: 0.2 mm; 22, 23, 25: 0.1 mm; 24: 0.08 mm.



Figs. 26-38: *Geostiba cabrerensis* sp.n. (**26-36**) and holotype of *G. leonensis* PACE (**37-38**): **26, 37** – facies; **27** – ♂ forebody in dorsal view; **28** – ♂ tergite VIII; **29** – posterior part of ♂ sternite VIII; **30** – posterior part of ♀ tergite VIII; **31** – posterior part of ♀ sternite VIII; **32, 33** – median lobe of aedeagus in lateral and in ventral view; **34** – apical lobe of paramere; **35, 36, 38** – spermathecae. Scales: 26, 37: 1.0 mm; 27-31: 0.2 mm; 32, 33, 35, 36, 38: 0.1 mm; 34: 0.08 mm.



Figs. 39-50: *Geostiba feldmanni* sp. n.: **39** – facies (♂); **40** – head in lateral view; **41** – ♂ tergite VII; **42** – ♂ tergite VIII; **43** – posterior part of ♂ sternite VIII; **44** – posterior part of ♀ tergite VIII; **45** – posterior part of ♀ sternite VIII; **46-48** – median lobe of aedeagus in lateral and in ventral view; **49** – apical lobe of paramere; **50** – spermatheca. Scales: 39: 1.0 mm; 40-45: 0.2 mm; 46-48: 0.1 mm; 49-50: 0.08 mm.



Figs. 51-61: *Geostiba unituberculata* sp. n.: **51** – facies (♂); **52, 53** – ♂ segments VI-VIII in dorsal and in lateral view; **54** – ♂ tergite VIII; **55** – posterior part of ♂ sternite VIII; **56** – posterior part of ♀ tergite VIII; **57** – posterior part of ♀ sternite VIII; **58, 59** – median lobe of aedeagus in lateral and in ventral view; **60** – apical lobe of paramere; **61** – spermatheca. Scales: 51: 1.0 mm; 52-57: 0.2 mm; 58-59: 0.1 mm; 60-61: 0.08 mm.