

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/309596162>

# Review of the genus *Geotragus* Schoenherr, 1845 (Coleoptera: Curculionidae), with description of a new species from the Indian subcontinent

Article in *The Pan-Pacific Entomologist* · July 2016

DOI: 10.3956/2016-92.3.133

CITATION

1

READS

96

4 authors:



**Tarun Kumar**

Indian Agricultural Research Institute

7 PUBLICATIONS 14 CITATIONS

[SEE PROFILE](#)



**G. Mahendiran**

National Bureau of Agricultural Insect Resources

15 PUBLICATIONS 9 CITATIONS

[SEE PROFILE](#)



**Shaloo Ayri**

Indian Agricultural Research Institute

13 PUBLICATIONS 23 CITATIONS

[SEE PROFILE](#)



**V. V. Ramamurthy**

Indian Agricultural Research Institute

166 PUBLICATIONS 622 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Network project on insect biosystematics [View project](#)



World Bank – NAIP project “Studies on the ecology and taxonomy of whitefly *Bemisia tabaci* in India, its symbiosis with various obligate and facultative bacterial symbionts.” 2009 – 2014 [View project](#)

## **Review of the genus *Geotragus* Schoenherr, 1845 (Coleoptera: Curculionidae), with description of a new species from the Indian subcontinent**

Author(s): Tarun Kumar, G. Mahendiran, Shaloo Ayri and V. V. Ramamurthy<sup>1</sup>  
All India Coordinated Project on Taxonomy (Aicoptax-Coleoptera), Division  
of Entomology, Indian Agricultural Research Institute, New Delhi-110012,  
India<sup>2</sup> Division of Crop Protection, Central Institute of Temperate Horticulture,  
Srinagar, Kashmir-190007, India<sup>3</sup> Division of Entomology (NPIB), Indian  
Agricultural Research Institute, New Delhi-110012, India

Source: Pan-Pacific Entomologist, 92(3):133-150.

Published By: Pacific Coast Entomological Society

DOI: <http://dx.doi.org/10.3956/2016-92.3.133>

URL: <http://www.bioone.org/doi/full/10.3956/2016-92.3.133>

---

BioOne ([www.bioone.org](http://www.bioone.org)) is a nonprofit, online aggregation of core research in the biological, ecological, and environmental sciences. BioOne provides a sustainable online platform for over 170 journals and books published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Web site, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/page/terms\\_of\\_use](http://www.bioone.org/page/terms_of_use).

Usage of BioOne content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

**Review of the genus *Geotragus* Schoenherr, 1845  
(Coleoptera: Curculionidae), with description of a new  
species from the Indian subcontinent**

TARUN KUMAR<sup>1\*</sup>, G. MAHENDIRAN<sup>2</sup>, SHALOO AYRI<sup>3</sup> AND V. V. RAMAMURTHY<sup>1</sup>

<sup>1</sup>All India Coordinated Project on Taxonomy (Aicoptax-Coleoptera),  
Division of Entomology, Indian Agricultural Research Institute,  
New Delhi-110012, India

<sup>2</sup>Division of Crop Protection, Central Institute of Temperate Horticulture,  
Srinagar, Kashmir-190007, India

<sup>3</sup>Division of Entomology (NPIB), Indian Agricultural Research  
Institute, New Delhi-110012, India

\*Corresponding author. E-mail: tarunbiotech246@gmail.com

*Abstract.* The entimine weevil genus *Geotragus* Schoenherr, 1845 from the Indian subcontinent is reviewed. The three known species: *G. himalayanus* Boheman, *G. assamensis* Schoenherr, and *G. bituberosus* Desbrochers des Loges, are redescribed, and a new species from Myanmar, *G. shanensis* sp. nov., is described. A key to the species from the Indian subcontinent and a checklist of the species are also provided.

*Key Words.* Entiminae, new species, Myanmar, genus redescription, checklist, key, India.

---

INTRODUCTION

The broad-nosed weevil genus *Geotragus* Schoenherr, 1845 (Coleoptera: Curculionidae: Entiminae) is mainly distributed in the Oriental region. *Geotragus* is placed in the tribe Tanymecini by virtue of having lateral scrobes and post ocular vibrissae on the lateral margin of the pronotum and within the subtribe Piazomiina (Reitter 1913) due to the tarsal claws being fused or reduced to a single claw (Emden 1944a). Schoenherr (1845) established the genus based on a single species, *G. himalayanus* Boheman, 1845. Schoenherr (1847) later established *Taphrorhynchus* with the type species *T. assamensis* Schoenherr, 1847 from Assam. Jekel (1849) listed *Geotragus* and *Taphrorhynchus* as both valid, but Lacordaire (1863) synonymized the latter, along with *Pachynotus* Redtenbacher, 1844 and *Piazomias* Schoenherr, 1840, under *Geotragus* without explanation. Faust (1891) did not agree with Lacordaire, resurrecting all of them as valid genera, and redescribed *T. assamensis*. Later, Faust (1893) synonymized *T. assamensis* under *G. himalayanus* without explanation. Marshall (1916) synonymized *Taphrorhynchus* under *Geotragus*, described *G. fissicollis* Marshall, 1916 from Myanmar, transferred *Sympiezomias ellipticus* Faust, 1895, *Brachyaspiestes bituberosus* Desbrochers des Loges, 1891 and *B. subfasciatus* Desbrochers des Loges, 1890 to *Geotragus*, the latter with *T. assamensis* as a synonym despite the previous action by Faust, and provided redescrptions of the genus and the four known species. Though subsequent taxonomists accepted these actions, *T. assamensis* Schoenherr remains an available name with precedence. Thus, the correct name is *Geotragus assamensis* (Schoenherr, 1847), while *T. assamensis* Faust and *B. subfasciatus* Desbrochers des Loges are synonyms. Marshall (1941) stated that *Sympiezomias inflatus* Faust, 1895 and *S. setosus* Aurivillius, 1892 should also be transferred to *Geotragus*, and Emden (1944b) presented a key to these and related

genera. An annotated checklist by Ren et al. (2013) included the eleven species thus far placed in the tribe Tanymericini.

Currently, the genus *Geotragus* belongs to the *Leptomias* group (Ren et al. 2013). The following characters distinguish *Geotragus* from related genera: rostrum with scrobes deep, curving downwards at some distance in front of eye, dilated behind and of equal depth throughout; antennae with scape reaching almost middle of eye when at rest; and metepisternum indistinctly fused with metasternite posteriorly. The eleven known species of *Geotragus* are distributed in India, Myanmar, China, Bhutan, Laos and Malaysia (Marshall 1916, Chao & Chen 1980, Chen 1990, Alonso-Zarazaga & Lyal 1999, Ren et al. 2013). So far only three species are known from the northeastern region of India. The present study reviews the genus and includes redescriptions of the three species known from India, as well as the description of a new species from Myanmar.

#### MATERIAL & METHODS

Specimens included in the study are in the National Pusa Collection, Division of Entomology, Indian Agricultural Research Institute, New Delhi, India (NPC). Dissections were done using a Leica EZ4 stereo zoom microscope after relaxing overnight, and the dissected genitalia parts were placed in 10–30% KOH for 60 minutes for digestion of soft tissues. Dissections were cleaned and stored in glycerin in microvials after study and pinned with their corresponding specimens. Illustrations were made using Wild M8 Heerbrugg and Leica MZ16A stereozoom microscopes equipped with drawing tubes and edited in Adobe Photoshop 7.0. A Leica M205 FA stereozoom microscope with automontage software was used to photograph the specimens. The terminology used largely follows Ren et al. (2013) and Thompson (1992). Measurements were made using an ocular micrometer, with standard length (SL) = apex of head to apex of elytra dorsally along the midline; standard width (SW) = widest part of body horizontally measured; head length (HL) = from posterior margin of the rostrum to base of head dorsally along the midline; head width (HW) = widest part of head horizontally measured; frons width (FW) = distance between the eyes; eye length (EYL) = length of eye dorsally along the midline; eye width (EYW) = width of eye horizontally measured; pronotal length (PL) = from anterior margin to base of pronotum dorsally along the midline; pronotal width (PW) = widest part of pronotum horizontally measured; elytral length (EL) = from base to apex of the elytra dorsally along the midline; elytral width (EW) = measured at base; rostral length (RL) = from apex of rostrum to the anterior margin of the eye; rostral width (RW) = widest part of rostrum horizontally measured; club length (CL) = from apex to base; and club width (CW) = widest part of club horizontally measured.

#### CHECKLIST OF *GEOTRAGUS* SCHOENHERR, 1845

<i>assamensis</i> (Schoenherr, 1847)	India
<i>bituberosus</i> (Desbrochers des Loges, 1891)	India, Bhutan
<i>brevidens</i> Ren, Alonso-Zarazaga & Zhang, 2013	China
<i>declivis</i> Ren, Alonso-Zarazaga & Zhang, 2013	China
<i>ellipticus</i> (Faust, 1895)	Myanmar
<i>fissicollis</i> Marshall, 1916	Myanmar
<i>himalayanus</i> Boheman, 1845	India, China
<i>inflatus</i> (Faust, 1895)	Malaysia

*rugosus* Ren, Alonso-Zarazaga & Zhang, 2013  
*setosus* (Aurivillius, 1892)  
*shanensis* **sp. nov.**  
*tuberculatus* Chen, 1990

China  
 Laos  
 Myanmar  
 China

KEY TO SELECT *GEOTRAGUS* SPECIES OF INDIA AND MYANMAR\*

1. Elytra with vestiture short and depressed; pronotum elongate, with a shallow, narrow central furrow; first funicle segment 1.10× as long as second; spermatheca with nodulus distinct and cornu straight at apex ..... 2
- Elytra with vestiture long and erect; pronotum rounded, with a deep, central furrow; first funicle segment 1.84× as long as second; spermatheca with nodulus indistinct and cornu slightly bent at apex ..... *G. shanensis* **sp. nov.**
2. Elytra with prominent tubercles on fifth interval at top of declivity; first segment of funicle 1.70× as long as broad ..... 3
- Elytra without any tubercles on fifth interval; first segment of funicle 0.90× as long as broad; aedeagus 1.67× as long as apophyses, 2.5× as its median lobe, median lobe highly sclerotized, curved near base ..... *G. assamensis* Schoenherr
3. Elytra with an elevation on third interval; funicle with first and second segments equal; pronotum 1.02× as long as broad ..... *G. himalayanus* Boheman
- Elytra without an elevation on third interval; funicle with first segment 1.16× as long as second; pronotum somewhat (1.05×) as broad as long ..... *G. bituberosus* Desbrochers des Loges

\*Specimens of *G. ellipticus* and *G. fissicollis* were not available for study by the authors and are excluded from the key.

*Geotragus* Schoenherr, 1845

*Geotragus* Schoenherr, 1845:411. Type species: *Geotragus himalayanus* Boheman, 1845.

*Taphrorhynchus* Schoenherr, 1847:33; Marshall 1916:201.

*Diagnosis.* Rostrum with scrobes deep and curving downwards at some distance in front of eyes, posteriorly slightly dilated, equal in depth throughout. Mandibles with distinct apical-lateral scars. Antennae with scape reaching between anterior margin and middle of the eye when at rest. Metepisternal suture is complete, metepisternum fused with metasternite posteriorly. Abdomen with intercoxal process narrower than metacoxae.

*Description.* Standard length 6.60–7.10 mm, elongate oval, usually round to oval, scales often metallic. Rostrum 1.05× as long as head and continuous with it, in dorsal view lateral margins subparallel, dorsal surface slightly constricted at antennal insertion, base not or only slightly broader than frons, apex scarcely emarginate; scrobes deep and curving downwards at some distance in front of eyes, posteriorly slightly dilated, equal in depth throughout; in lateral view, ventral margins of rostrum and head forming an obtuse angle; mandibles with distinct apical-lateral scars, base of scars more or less cylindrically projecting; epistome V-shaped, without scales. Eyes lateral, oval, moderately flat to strongly convex.

Antennae with scape reaching between fore margin and middle of eye when at rest, slender at base, gradually clavate; funicle with two basal segments elongate, segment 1 wider than 2, 3–6 subequal, 7 longer and subconical; club elongate oval, 3-segmented, uniformly pubescent.

Pronotum truncate at base and apex, sides evenly rounded, greatest width at middle, gradually constricted at both ends, anterior margin slightly narrower than posterior, posterior margin narrowly and slightly carinate; apex with distinct, curved, fine and sparse vibrissae behind eyes; post ocular lobes not developed, and gular margin more or less sinuate. Scutellum very small to large, reddish brown to black, glabrous, triangular and pointed.

Elytra in dorsal view elongate ovate, base truncate and elevated as prominent flange, without humeral callus, lateral margin not or scarcely sinuate above metacoxae, and strongly constricted beyond declivity towards apex; striae distinct, narrow, with minute, elongate, moderately deep punctation, separated by a distance similar to as long as two or three punctation.

Prosternum with procoxae inserted closer to the front than to hind margin; mesepimeron much smaller than mesepisternum; metepisternum fused with it behind, metacoxae reaching the margin of elytra. Metathoracic wings absent. Abdomen with intercoxal process narrower than metacoxae and rounded in front, ventrite 2 along midline longer than 3 and 4 combined, suture I bisinuate; ventrites 3 and 4 equal or subequal in length; ventrite 5 longer than 3 and 4 combined, with a basal longitudinal groove on each side close to lateral margins, extending from base to midpoint in females (Fig. 65).

Legs slender, femora clavate, front pair longer, with femora thickened; protibiae curved and internally denticulate in both sexes, apex only projecting inwards but not outwards, with long, thick, dense bristles on apical margin; apex of metatibiae with an evident outer bevel, margin of corbel slightly ascending along dorsal edge; tarsi long and broad, tarsomere 2 narrower than 1, tarsomere 3 distinctly wider at apex than 2, broadly cordate, rather deeply emarginate; claws simple and connate at base; tarsi with dorsal setae fine and dense, under surface forming thick pads.

*Geotragus shanensis* **sp. nov.**

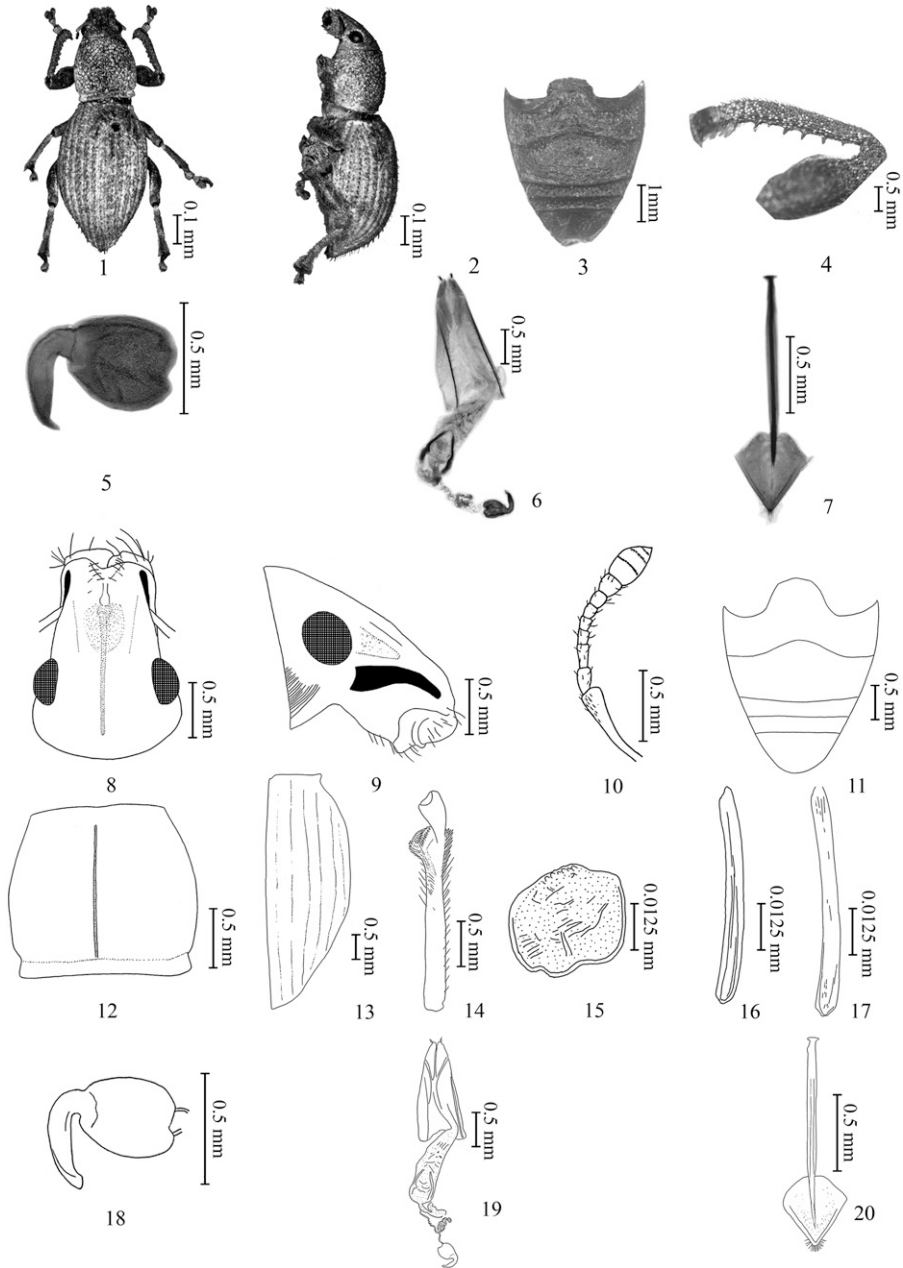
(Figs. 1–20)

*Diagnosis.* *Geotragus shanensis* resembles *G. assamensis* but can be distinguished by the following: elytra with vestiture of long, erect setae; antennae very elongate, with very short pedicel, and dark to light brown in color–; pronotum rounded, with a deep, central furrow having dense, large, round granules, each granule with one subrecumbent seta; antennal first funicle segment 1.84× as long as second; spermatheca with nodulus indistinct and cornu slightly bent at apex; dorsal part of rostrum without subparallel furrows (Fig. 8); preocular area with longitudinal impression laterally on each side of rostrum (Fig. 9); legs with inner margin of tibiae with 8 sharp, large teeth (Fig. 4).

*Description.* Integument black with grey and yellowish vestiture (Figs. 1–2); antennae greyish black; legs black with irregular markings; scales on dorsal surface of rostrum moderately dense; pronotum with post ocular vibrissae along anterior margin, scales oval to pentagonal shape, sparse recumbent with curved setae, elytra with less dense scales, setae distributed parallel on each interval (Figs. 15–17).

Head slightly convex, moderately flat, 0.93× as long and 1.53× as broad as rostrum, 0.44× as long and 0.73× as broad as pronotum, eyes strongly convex; frons moderately flat, less corrugated, not higher than dorsal part of rostrum (Fig. 8).

Rostrum in dorsal view, 1.10× as wide as long, widest at base, 1.02× as wide as frons, sides gently narrowed from base to apex, broadly and deeply impressed above, deep median sulcus, reaching to vertex and broad lateral furrow on each side, with longitudinal impression in front of eye; scrobes deep, curving downwards at some



Figures 1–20. *Geotragus shanensis* sp. nov. Habitus (1, 2) Female: Dorsal view and lateral view; (3) venter; (4) protibia; (5–7) Female genitalia; (5) spermatheca; (6) genital chamber; (7) speculum ventrale; (8 and 9) Head; dorsal view and lateral view; (10) antennae; (11) venter; (12) prothorax; (13) elytra; (14) foreleg; (15–17) Elytral vestiture; (18–20) Female genitalia; (18) spermatheca; (19) genital chamber; (20) spiculum ventrale.

distance in front of eye, posterior angle of epistome  $60^\circ$ , with carina distinct; mandibular scars subcircular; in lateral view ventral margin of scrobes visible from apex to curving downwards at some distance in front of eye (Figs. 8–9).

Antennae with scape short, reaching middle of eyes,  $1.05\times$  as long as funicle; segment 1  $1.40\times$  as long and  $1.29\times$  as broad as segment 2, segments 3–5 subequal and elongate,  $0.66\times$  as long as segment 2, segment 7  $1.33\times$  as long and  $1.66\times$  as wide as segments 3–5, segment 7 as wide as segments 2–6 and  $1.11\times$  as wide as segment 1; club  $1.85\times$  as long as broad, segment 1  $1.85\times$  as long as 2, segment 2  $1.55\times$  as long as 3, in total club  $1.90\times$  as long as segment 1,  $3.5\times$  as long as segment 2,  $4.9\times$  as long as segment 3 (Fig. 10).

Pronotum  $0.92\times$  as long as wide, almost isodiametric,  $1.12\times$  as broad as base,  $1.34\times$  as broad as apex, strongly rounded, broadest at or behind middle, posterior margin truncate, disc with a complete median longitudinal groove (Fig. 12) and with dense, large, round granules, each granule with one subrecumbent setae, laterally with post ocular vibrissae (Fig. 12).

Scutellum invisible.

Elytra ovate,  $5.86$  as long as rostrum,  $2.55$  as long and  $1.70$  as broad as pronotum, sides rounded, broadest after middle, elytra sharply narrowed towards blunt apex, in lateral view moderately convex, in dorsal view intervals slightly convex, without any tubercles, lateral margins clearly diverging subparallel, reaching its greatest width near base, less converging towards apex, apex blunt, interstria 1 and 2 subparallel, interstria 3 slightly convex, interstria 5 little raised at declivity (Fig. 13). Elytral vestiture of two types, scales predominant flat, subrectangular to subcircular, with irregular impressions on surface and light brown with a hyaline outer core (Fig. 15), setae less predominant very elongate, with very short pedicel, and dark to light brown (Figs. 16–17).

Venter with surface of ventrite 1 moderately convex at middle, as long as ventrite 1  $1.15\times$  as long as 2, ventrite 2  $2.0\times$  as long as ventrite 3,  $1.62\times$  as long as ventrite 4,  $1.62\times$  as long as ventrite 5, ventrite 5 broadly parabolic convex, procoxae far from anterior margin of prosternum; metacoxae apart by width of median coxae, hind coxae reaching margin of elytra (Fig. 11).

Leg with inner margin of protibia with 9 not sharp and small triangular teeth, each tooth covered with setae just behind, metatibial tooth sparse and almost equal in length and width, mesotibial tooth larger than protibial and metatibial tooth, tarsi slender, tarsomere 1  $1.71\times$  long and  $1.20\times$  as wide as 2, tarsal claws simple and connate at base, tarsi with dorsal setae fine and dense, underside with thick soles (Fig. 4).

Male genitalia unknown.

Female genitalia having spermatheca with distal arm  $1.05\times$  as long as proximal arm, proximal arm swollen, angle between arms acute, nodulus indistinct, ramus slightly projecting out, cornu bent at tip (Figs. 5, 18). Spiculum ventrale with shaft elongate,  $1.99\times$  as long as basal plate, uniformly thickened towards apex, apex clubbed and flattened, basal plate  $1.09\times$  as long as broad, subtriangular, each apex with setae (Figs. 4, 20).

Measurements (in mm): SL: 11.04; SW: 4.32; PL: 3.10; PW: 3.35; EL: 7.20; EW: 2.85; RL: 1.45; RW: 1.60; EYL: 0.83; EYW: 0.70.

*Etymology.* This new species is named after the type locality.

*Specimen Examined.* Holotype, 1 ♀, Myanmar: North Shan States, 14.V.1914, Coll. Mackwood, G.A.K. Marshall. Host unknown (NPC).



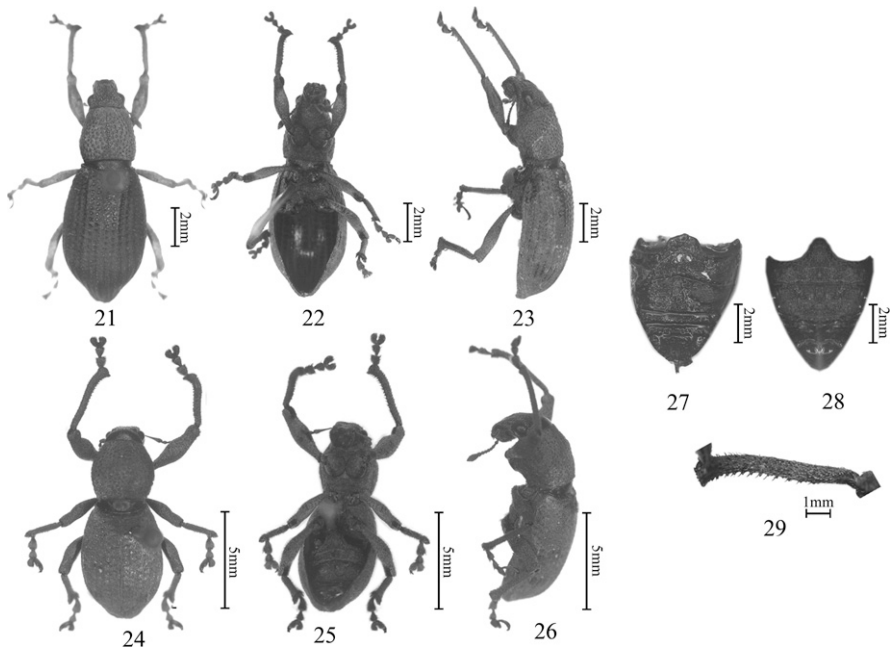
*Geotragus assamensis* (Schoenherr, 1847)

(Figs. 21–57)

*Taphrorhynchus assamensis* Schoenherr, 1847:33*Brachyaspistes subfasciatus* Desbrochers des Loges, 1890:211.*Taphrorhynchus assamensis* Faust, 1891:260; 1893:149.

**Diagnosis.** *Geotragus assamensis* resembles *G. shanensis* but can be distinguished by the following: dorsal part of rostrum, with a deep wide central furrow and many subparallel furrows (Fig. 37); preocular area without any longitudinal impression; first funicle segment 1.10× as long as second, 0.90× as long as broad; pronotum elongate, with a shallow, narrow central furrow; elytra with vestiture short and depressed without any tubercles on fifth interval; spermatheca with nodulus distinct and cornu straight at apex, aedeagus 1.67× as long as apophyses, 2.5× as its median lobe, median lobe highly sclerotized, curved near base; forelegs with inner margin of tibiae with 11–13 small teeth (Fig. 29).

**Redescription.** Integument black with earthy brown vestiture (Figs. 21–23); antennae reddish brown, scales on dorsal surface of rostrum moderately dense, covered with subrecumbent thick setae; funicle without scales; pronotum with post ocular vibrissae with scales oval to irregular pentagon shape or polygonal scales, moderately dense, and with sparse, recumbent and curved setae; scales on ventrites dense 3–5; legs with dark brown to black scales, contiguous but not imbricate, covered by setae, setae of tibiae long and dense, femora with subrecumbent fine setae; Standard with subrecumbent to recumbent, sparse, slightly thick and short setae; setae of interstriae, sparse, curved and subrecumbent, those on ventral surface fine, long and dense (Figs. 47–50).



Figures 21–29. *Geotragus assamensis* Schoenherr. Habitus (21–23) Male, dorsal, ventral and lateral view; (24–26) Female, dorsal, ventral and lateral view; Venter (27–28) Male and female; (29) Protibia. (male).



Figures 30–36. *Geotragus assamnensis* Schoenherr. (30–34) Male genitalia; (30–32) Aedeagu-s, dorsal, ventral and lateral view; (33) tegmen; (34) spiculum gastrale; (35–36) Female genitalia; (35) spiculum ventrale; (36) spermatheca.

In female, elytra  $1.13\times$  as wide as male, elytra less elongate in male, pronotum less ovate in male than female, ventrite 5 U-shaped in male and triangular shaped in female (Figs. 27–28).

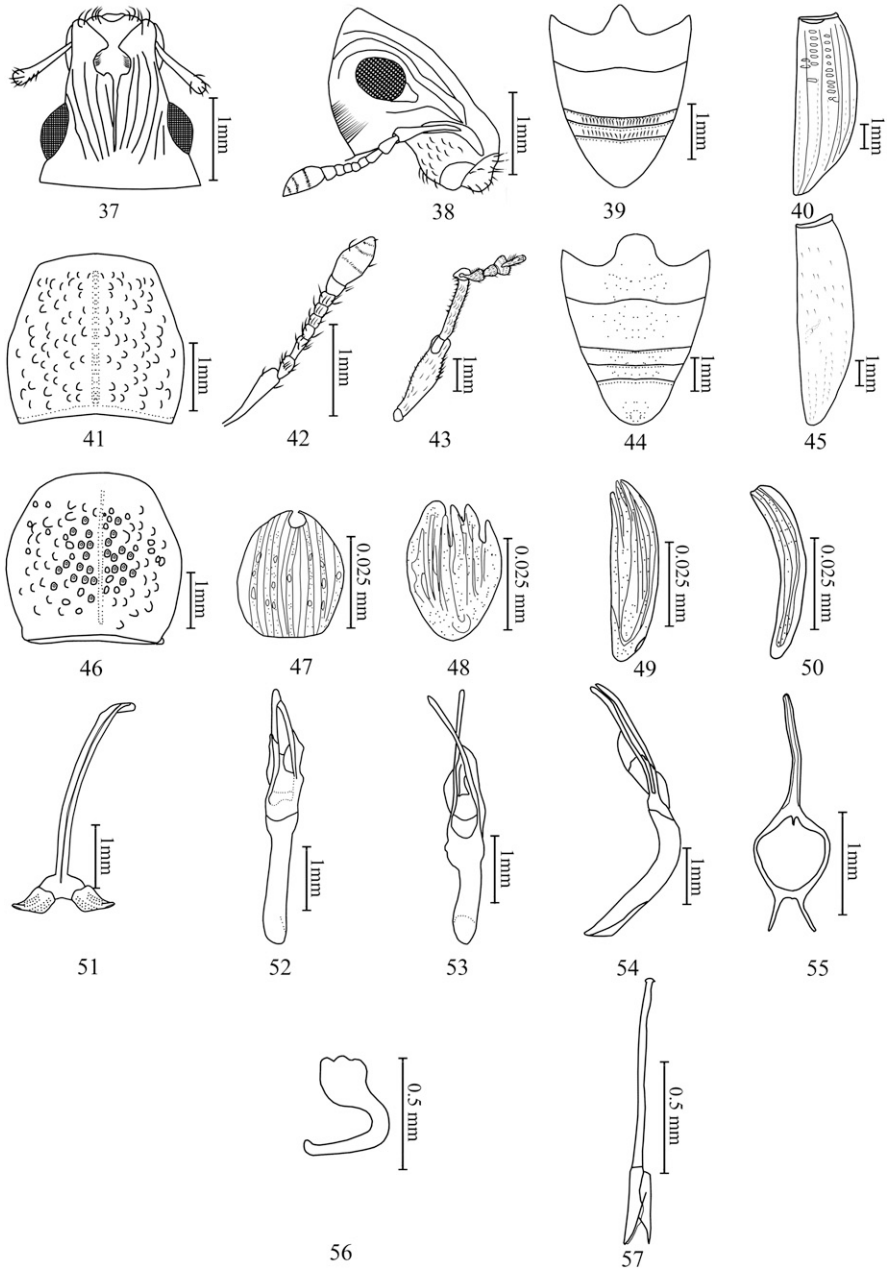
Head slightly convex, corrugated,  $0.78\times$  as long and  $1.57\times$  as broad as rostrum,  $0.40\times$  as long and  $0.69\times$  as broad as pronotum; eyes convex, frons deeply corrugated, not higher than rostral dorsum (Fig. 37).

Rostrum in dorsal view,  $1.13\times$  as wide as long, widest at base,  $0.96\times$  as wide as frons, sides abruptly narrowed at middle from base to apex, dorsal surface depressed in median area, corrugated, with wide and deep median sulcus, reaching to vertex, along with several subparallel side sulci; scrobes deep, curving downwards at some distance in front of eye, without any longitudinal impression (Fig. 38); posterior angle of epistome  $50\text{--}55^\circ$ , with carina distinct; mandible scars subcircular; in lateral view, margin of scrobes visible from apex to middle of rostrum, narrow at apex (Fig. 37 and 38).

Antennae with scape slender, not reaching to middle of eyes,  $0.76\times$  as long as funicle, funicle with segment 1  $0.83\times$  as long and  $1.57\times$  as wide as 2, less narrowed toward base, segments 3 to 5 subequal in length, segment 6  $1.14\times$  as long as 3–5, segment 7  $1.43\times$  as long and  $1.25\times$  as broad as segments 3–5, pubescence of segment 7 as broad as segments 2–6; club  $2.05\times$  as long as broad, segment 1  $1.44\times$  as long as 2, segment 2  $0.90\times$  as long as 3, in total club  $2.46\times$  as long as segment 1,  $3.55\times$  as long as segment 2,  $3.20\times$  as long as segment 3 (Fig. 42).

Pronotum  $0.93\times$  as long as wide, less isodiametric, widest after middle, pronotum width  $1.18\times$  as broad as base,  $1.40\times$  as broad as apex, sides regularly rounded, with complete median longitudinal groove, closely and evenly covered with small granulations, and with dense, large, round granules, space between granules not convex, post ocular vibrissae long (Fig. 41).

Scutellum invisible.



Figures 37–57. *Geotragus assammensis* Schoenherr. (37, 38) Head, dorsal and lateral view; (39) Male, venter; (40) elytra; (41) Male, prothorax; (42) antennae; (43) foreleg; (44–46) Female: (44) venter; (45) elytra; (46) prothorax; (47–50) Elytral vestiture; (51–55) Male genitalia, (51) spiculum gastrale; (52–54) Aedeagus, dorsal, ventral and lateral view; (55) tegmen; (56 and 57) Female genitalia; (56) spermatheca; (57) spiculum ventrale.

Elytra ovate,  $4.28\times$  as long as rostrum,  $2.18\times$  as long and  $1.32\times$  as broad as pronotum, sides rounded, broadest about middle, sharply narrowed before apex, in lateral view moderately convex; in dorsal view, intervals slightly convex, lateral margins clearly diverging from base to basal 1/4, strongly converging towards apex, interstriae 2 slightly more raised than other stria, top of declivity little rounded in lateral view and interstriae 1 to 5 forming a row of small tubercles (Fig. 40). Elytral vestiture of three types, scales polygonal, moderately dense, dark scales forming irregular patches (Figs. 47–48), setae of two types, one narrowly elongate, curved, pedicellate, with irregular impression on surface and less brown, and other broadly elongate with indistinct grooves on surface, less granulated at base and brown (Figs. 49–50).

Venter with surface of ventrite 1 depressed at middle and convex on lateral areas, ventrite 2 less convex medially, with apical transverse impression, ventrite 1  $0.92\times$  as long as 2, ventrite 2  $1.78\times$  as long as ventrite 3 and 4 combined, venter with ventrite 2  $1.08\times$ ,  $3.57\times$ , and  $1.31\times$  as long as 1, 3 and 5, respectively, ventrite 3 and 4 subequally long, ventrite 5 broadly parabolic and convex; procoxae far from anterior margin of prosternum; metacoxae apart by process width of median coxae; hind coxae not reaching to margin of elytra (Fig. 39).

Leg with inner margin of protibiae with 11–13 small teeth each tooth with a spiniform seta just behind it, teeth of meso- and metatibiae sparse few, smaller than protibiae, covered by single long spiny setae; tarsi slender; tarsomere 1  $1.62\times$  long and  $1.36\times$  as wide as 2, tarsal claws simple, connate at base; tarsi with dorsal setae fine and dense, underside with thick soles (Fig. 43).

Male genitalia with aedeagus  $5.9\times$  as long as broad, in profile strongly arcuate, broader at apex (Figs. 30–31, 52–53); aedeagal apodeme  $1.45\times$  as long as median lobe, median lobe sub cylindrical for some part beyond middle and then rounded and little pointed at apex, strongly sclerotised, slightly membranous at middle (Figs. 30–32); endophallus between aedeagal apodeme having transparent layer; tegmen  $1.92\times$  as long as manubrium, parameres elongate, manubrium slender, uniformly thick, slightly curved at middle (Figs. 33, 55); spiculum gastrale  $16.5\times$  as long as broad at shaft, slightly curved at apex thicker at middle, apex lobate, its breadth as broad as breadth of manubrium and  $1.25\times$  as broad as apophyses (Figs. 34, 51).

Female genitalia having spermatheca with distal arm  $1.05\times$  as long as proximal arm, angle between arms acute, nodulus projecting out, ramus swollen, rounded, cornu straight, parallel to proximal arm, with bluntly pointed apex (Figs. 36, 56). Spiculum ventrale with shaft elongate,  $3.6\times$  as long as basal plate, slightly curved, basal plate  $2.10\times$  as long as broad, subtriangular, without setae (Figs. 35, 57).

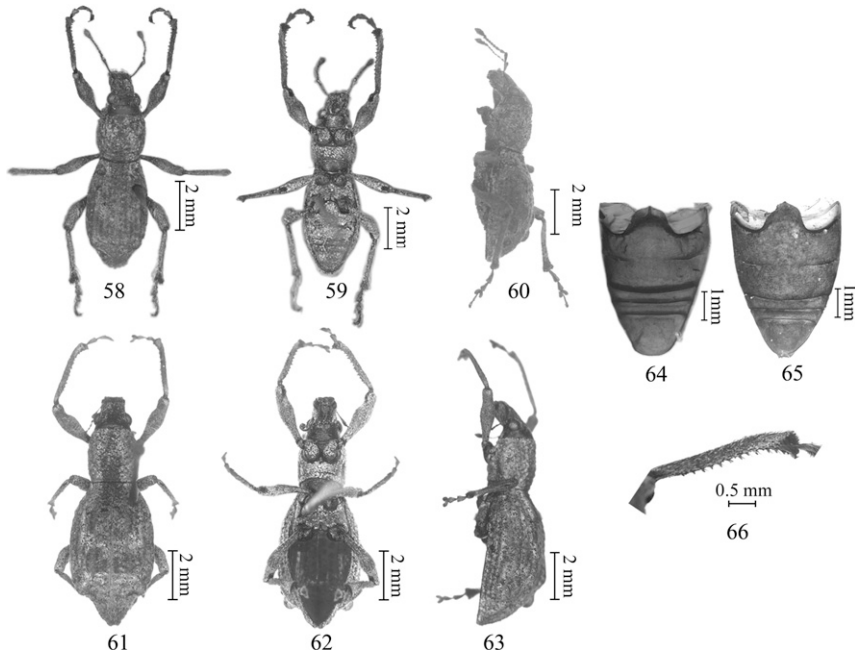
Measurements (in mm): Male SL: 8.69; SW: 2.97; PL: 2.95; PW: 2.75; EL: 6.0; EW: 1.95; RL: 1.15; RW: 1.30; EYL: 0.77; EYW: 0.70. Female SL: 8.80; SW: 3.40; PL: 2.95; PW: 2.90; EL: 6.70; EW: 2.20; RL: 1.40; RW: 1.60; EYL: 0.73; EYW: 0.69.

*Specimens Examined.* INDIA: West Bengal: 1 ♂, 1 ♀, Darjeeling, 1992–93, Coll. not known (NPC), host: *Camellia sinensis* (L.) Kuntze.

*Geotragus himalayanus* Boheman, 1845  
(Figs. 58–96)

*Geotragus himalayanus* Boheman, in Schoenherr, 1845:412.

*Diagnosis.* *Geotragus himalayanus* resembles *G. bituberosus* but can be distinguished by the following: dorsal part of rostrum slightly smooth, not corrugated (Fig. 58), first segment of funicle  $1.70\times$  as long as broad, first and second segments subequal in



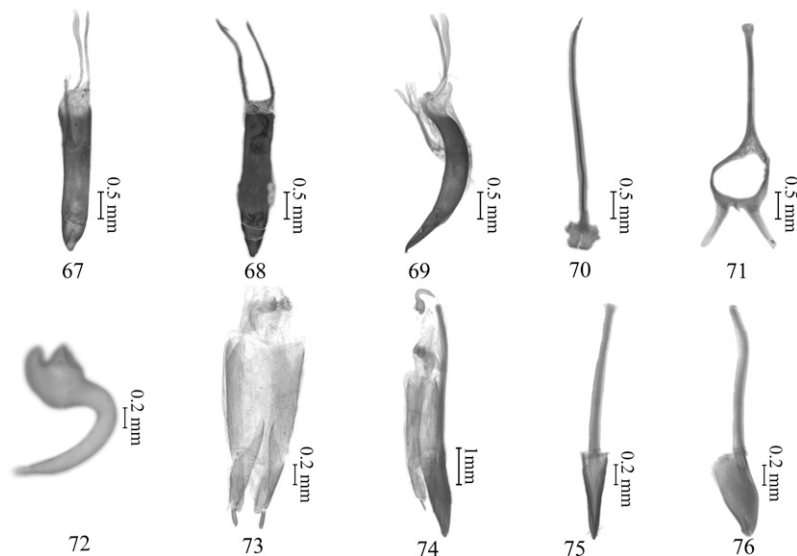
Figs. 58–66. *Geotragus himalayanus* Boheman. Habitus (58–60) Male; (58–60) dorsal, ventral and lateral view; (61–63) Female; (61–63) dorsal, ventral and lateral view; Venter (64–65) male and female; (66) protibia.

length; 1 pronotum  $1.02\times$  as long as broad, widest at middle; elytra with an elevation on third interval with prominent tubercles on fifth interval at top of declivity; ventrite 2 with apical transverse impression very shallow (Fig. 64); forelegs with inner margin of tibiae with 9–11 large teeth (Fig. 66).

**Redescription.** Integument black with earthy brown vestiture (Figs. 58–59); antennae reddish brown; legs dark brown, with coppery yellowish brown to bronze scales; scales oval to irregular pentagon shaped, moderately dense, contiguous but not imbricate; scales oval on lateral surfaces of rostrum, with subrecumbent setae; posterior half of antennal scrobes with sparse elongate scales; funicle without scales; pronotum with post ocular vibrissae, with polygonal scales, moderately dense, with a wide stripe of paler scales on each side of median sulcus, and with sparse, recumbent and curved setae; scales on elytra polygonal, moderately dense, dark scales forming irregular patches (Figs. 84, 85); scales on ventrites dense, large, round to elongate; Standard with subrecumbent to recumbent, sparse, slightly thick and short setae (Figs. 86, 87); setae of interstriae curved and subrecumbent, those on ventral surface fine, long and dense; setae on legs fine, long and subrecumbent.

In female, elytra  $1.31\times$  as wide as male, elytra less sharply narrowed before apex in male, pronotum  $1.09\times$  transverse than male, ventrite 5 U-shaped in male and V-shaped in female (Fig. 65).

Head slightly convex, not corrugated,  $1.05\times$  as long and  $1.45\times$  as broad as rostrum;  $0.47\times$  as long and  $0.70\times$  as broad as pronotum; eyes strongly convex; frons moderately flat, with wide median stria descending at vertex, and with a fine central stria reaching vertex (Fig. 77).



Figures 67–76. *Geotragus himalayanus* Boheman. (67–71) Male genitalia; (67–69) aedeagus, dorsal, ventral and lateral view; (70) spiculum gastrale; (71) tegmen; (72–76) Female genitalia; (72) spermatheca; (73) coxites; (74) genital chamber; (75–76) spiculum ventrale, dorsal and lateral view.

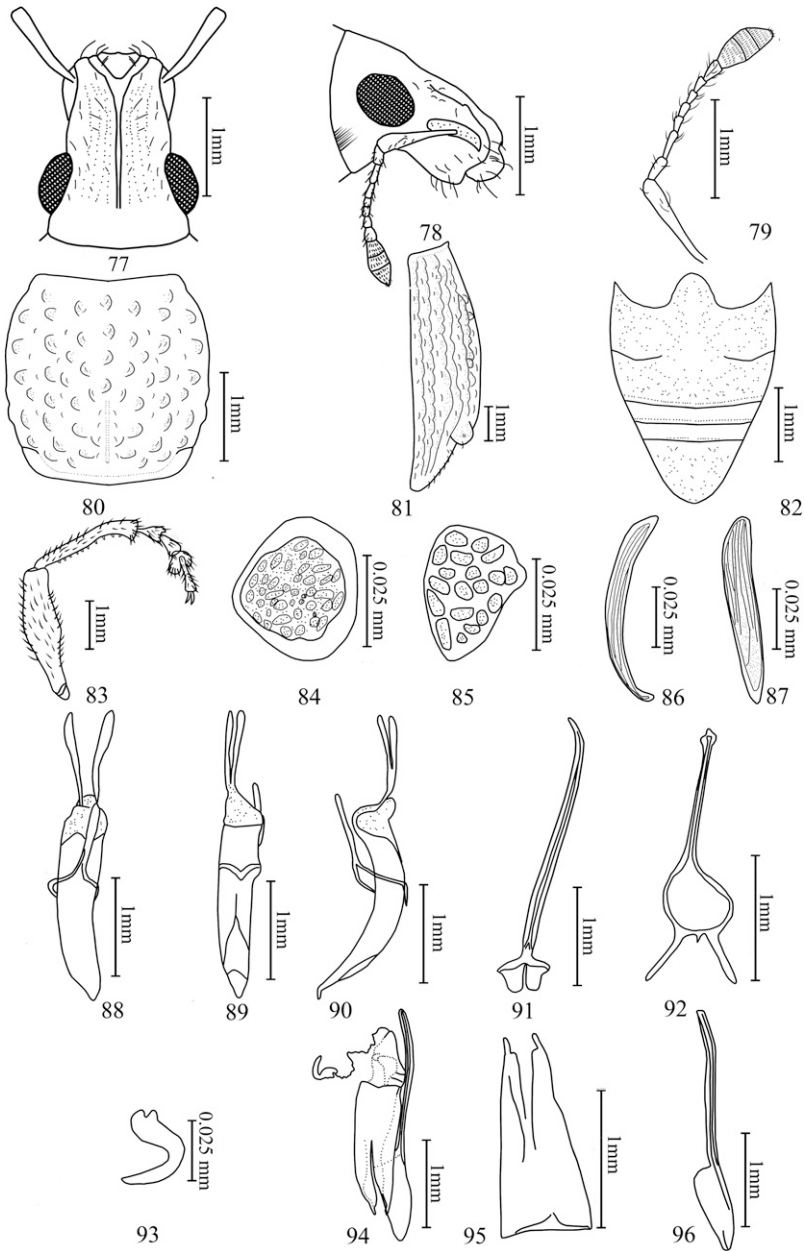
Rostrum in dorsal view,  $1.05\times$  as wide as long, widest at base;  $1.05\times$  as wide as frons, sides gently narrowed from base to apex, apex scarcely emarginate, narrow with deep median sulcus reaching vertex; posterior angle of epistome  $45\text{--}60^\circ$ , with carina less distinct; mandibles with distinct apical-lateral scars, close to ventral margin of rostrum accompanied by deep and wide sulcus; in lateral view scrobes deep and curving downwards at some distance in front of eyes, posteriorly slightly dilated, equal in depth throughout (Figs. 77, 78).

Antennae with scape slender, reaching middle of eyes,  $0.78\times$  as long as funicle; funicle with segment 1 and 2 subequal,  $1.4\times$  as wide as 2, both segments elongate, clavate, apex of segment 1 rather stout, strongly narrowed toward base, segments 3–6 subequal and elongate, segment 7  $1.33\times$  as long and  $1.40\times$  as wide as 6, pubescence of segment 7 denser than that of 2–6; club  $1.80\times$  as long as broad, segment 1  $1.25\times$  as long as of 2, segment 2  $0.80\times$  as long as 3, in total club  $2.80\times$  as long as segment 1,  $3.50\times$  as long as segment 2,  $2.80\times$  as long as segment 3 (Fig. 79).

Pronotum  $1.02\times$  as long as wide, widest at middle,  $1.24\times$  as broad as base,  $1.36\times$  as broad as apex, evenly rounded, anterior and posterior margins truncate, disc with a fine, shallow, incomplete median longitudinal groove, this only can be seen at posterior  $3/4$ ; posterior margin with distinct carina, and with dense, large, round granules, space between granules not convex, each granule with one recumbent seta on top and post ocular vibrissae long (Fig. 80).

Scutellum very small, triangular, reddish brown to black.

Elytra less ovate,  $5.16\times$  as long as rostrum,  $2.33\times$  as long and  $1.26\times$  as broad as pronotum, sides less rounded, broadest after middle, slightly narrowed before apex, in lateral view slightly convex; in dorsal view intervals convex, lateral margins clearly diverging from base to basal  $1/4$ , then subparallel, reaching its greatest width nearly at mid length, hence strongly converging towards apex, apex blunt and W-shaped; odd interstriae



Figures 77–96. *Geotragus himalayanus* Boheman. (77–78) Head, dorsal and lateral view; (79) antennae; (80) prothorax; (81) elytra; (82) venter; (83) foreleg; (84–87) Elytral vestiture; (88–92) Male genitalia; (88–90) aedeagus, dorsal, ventral, lateral view; (91) spiculum gastrale; (92) tegmen; (93–96) Female genitalia; (93) spermatheca; (94) genital chamber; (95) coxites; (96) spiculum ventrale.

slightly more raised than even ones, interstria 1 moderately raised along basal 1/8, but not forming crest, slightly raised at declivity, top of declivity rounded in lateral view; interstria 3 much wider than remaining interstriae, distinctly raised and expanded at basal 1/4, forming an elongate crest, with elongate oval crest before declivity, much shorter than

basal one; interstria 5 slightly raised behind basal 1/8, and forming a row of several small tubercles, more strongly raised at declivity, forming a cone like tubercle and interstriae 3 and 9 coalescing, raised at declivity, forming a V-shaped tubercle on each elytron (Fig. 81). Elytral vestiture three types, scales predominant flat, subcircular to ovate, granulated impression on surface (Figs. 84, 85); setae of two types, one narrowly elongate, curved, pedicellate with irregular impression on surface and less brown, and broadly elongate with indistinct grooves on surface, more granulated at base (Figs. 86, 87).

Venter with surface of ventrite 1 depressed at middle and convex on lateral areas; suture 1 strongly bisinuate; ventrite 1  $1.5\times$  as long as 2, ventrite 2  $1.55\times$  as long as ventrite 3 and 4 combined, ventrite 2 with apical transverse impression very shallow; ventrite 5  $1.50\times$  as long as ventrite 3 and 4 combined; procoxae nearer anterior margin of prosternum; metacoxae apart by width of median coxae; hind coxae just reaching margin of elytra (Fig. 59); venter with intercoxal processes  $1.10\times$  as wide as metacoxae and rounded in front (Figs. 64, 82).

Leg with inner margin of protibiae with 9–11 large teeth, each tooth with a spiniform seta just behind it (Fig. 66); each protibial tooth with a spiniform seta just behind it; teeth of meso- and metatibiae sparse and smaller than protibiae; protibial mucro moderately large, distinct, not covered by setae; tarsi slender; tarsomere 1  $1.60\times$  long and  $1.22\times$  as wide as 2, tarsal claws simple (Fig. 83).

Male genitalia with aedeagus  $6.80\times$  as long as broad, in profile strongly arcuate, abruptly narrowed and hooked at apex (Figs. 67–69, 88–90); aedeagal apodeme  $1.68\times$  as long as median lobe, broader at their joining; median lobe subcylindrical at middle and then pointed towards apex, strongly sclerotised, slightly membranous at middle (Figs. 67–69); endophallus between aedeagal apodeme slightly sclerotised; tegmen Y-shaped,  $1.97\times$  as long as manubrium, parameres elongate (Figs. 71, 92); spiculum gastrale  $17.5\times$  as long as broad at shaft, with thick and Y-shaped symmetrical arms (Figs. 70, 91).

Female genitalia having spermatheca with distal arm  $1.33\times$  as long as proximal arm (Fig. 72), nodulus distinct, projecting out, cornu with apex bluntly pointed or flat, shaft of spiculum ventrale elongate  $1.85\times$  as long as basal plate, basal plate slightly curved  $2.6\times$  as long as broad, subtriangular, with setae (Figs. 75–76, 96).

Measurements (in mm): Male SL:  $6.70 \pm 0.10$  (6.60–6.80); SW:  $2.20 \pm 0.10$  (2.10–2.30); PL:  $2.15 \pm 0.22$  (2.10–2.20); PW:  $2.07 \pm 0.025$  (2.05–2.10); EL:  $4.85 \pm 0.05$  (4.80–4.90); EW:  $1.35 \pm 0.05$  (1.30–1.40); RL:  $0.98 \pm 0.024$  (0.95–1.00); RW:  $1.025 \pm 0.025$  (1.00–1.05); EYL:  $0.59 \pm 0.040$  (0.55–0.63); EYW:  $0.575 \pm 0.049$  (0.57–0.58); Female SL:  $7.40 \pm 0.3$  (7.10–7.70); SW:  $2.80 \pm 0.055$  (2.75–2.86); PL:  $2.20 \pm 0.049$  (2.15–2.25); PW:  $2.20 \pm 0.05$  (2.10–2.20); EL:  $5.50 \pm 0.4$  (5.10–5.90); EW:  $1.80 \pm 0.1$  (1.70–1.90); RL:  $0.95 \pm 0.05$  (0.90–1.00); RW:  $1.025 \pm 0.025$  (1.00–1.05); EYL:  $0.68 \pm 0.02$  (0.66–0.70); EYW:  $0.57 \pm 0.02$  (0.55–0.59).

*Specimens examined.* INDIA: West Bengal: 3♂, 2♀, Darjeeling, June, Coll. Fruhstorfer leg (NPC).

*Geotragus bituberosus* (Desbrochers des Loges, 1891)

(Figs. 97–117)

*Brachyaspistes bituberosus* Desbrochers des Loges, 1891:354; Faust 1893:149.

*Diagnosis.* *Geotragus bituberosus* is similar to *G. himalayanus* but can be distinguished by the following characters: dorsal part of rostrum corrugated (Fig. 97), funicle with first segment  $1.16\times$  as long as second; pronotum somewhat ( $1.05\times$ ) as broad as long;



elytra without an elevation on third interval, ventrite 2 completely visible (Fig. 100); foreleg with inner margin of tibiae with 8–10 not sharp and small teeth (Fig. 109).

*Redescription.* Integument dark brown to black, with earthy brown vestiture (Figs. 97–99); antennae reddish brown; legs black with irregular markings; scales on dorsal surface of rostrum subcircular, posterior half of antennal scrobes sparsely with elongate small scales, rostrum covered with subrecumbent thick setae; funicle without scales; pronotum with post ocular vibrissae with polygonal oval shaped scales, less dense, with a wide stripe of scales absent on each side of median sulcus (Fig. 110); scales on ventrites dense, large, round to elongate, Standard with subrecumbent sparse, slightly thick and short setae recumbent and little curved setae; setae of interstriae neither lanceolate, recumbent; setae on ventral surface subrecumbent, short and dense; setae of tibiae long, femora with subrecumbent long and fine setae.

Head slightly convex, dorsally corrugated, fine confluent punctation, striolate,  $0.86\times$  as long and  $1.46$  as broad as rostrum,  $0.34\times$  as long and  $0.73\times$  as broad as pronotum; eyes convex, without any sulcus; frons deeply corrugated, not more than dorsal part of rostrum (Fig. 106).

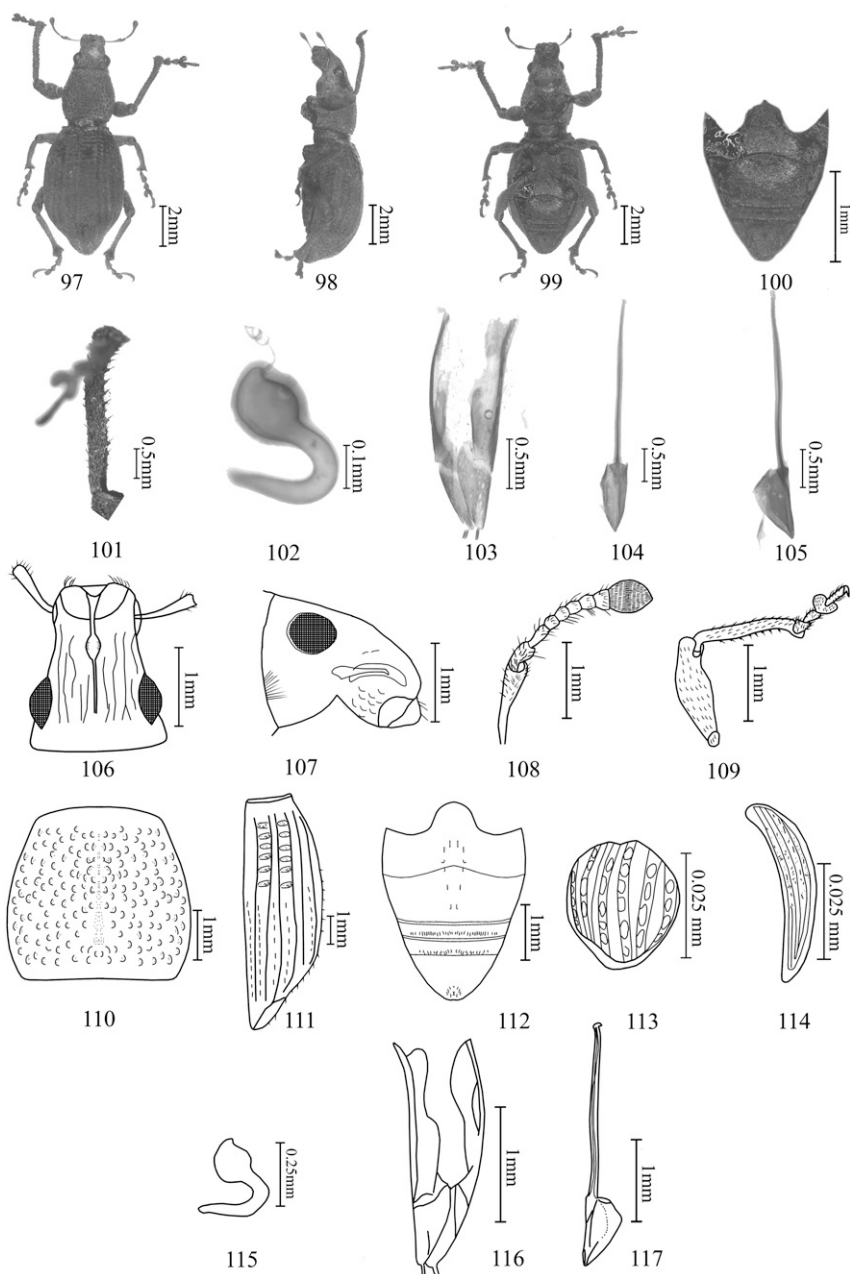
Rostrum in dorsal view,  $1.18\times$  as wide as long, widest at base,  $1.13\times$  as wide as frons, its sides gently narrowed from base to apex and gently straight from middle to apex, dorsal surface depressed in median area of rostrum, corrugated, narrow with deep median sulcus reaching vertex, antennal scrobes deep, curving downwards at some distance in front of eye, visible from apex to middle of rostrum; posterior angle of epistome  $75\text{--}80^\circ$ , with carina distinct; mandible scars subcircular in shape; in lateral view ventral margin of scrobes visible from apex to slightly curving downwards at some distance in front of eye (Figs. 106, 107).

Antennae with scape short, stout, reaching to middle of eyes,  $0.73\times$  as long as funicle, segment 1  $1.16\times$  as long as 2, elongate clavate, apex of segment 1 rather stout, strongly narrowed toward base, segments 3–5 subequal in length, moniliform,  $0.60\times$  as long as segment 2, segment 6  $1.14\times$  as long as 3–5, segment 7  $1.25\times$  as long and  $1.28\times$  as wide as 6, moniliform; club  $1.60\times$  as long as broad, segment 1  $1.11\times$  as long as 2, segment 2  $1.80\times$  as long as 3, segment 3  $0.55\times$  as long as 2, in total club  $2.40\times$  as long as segment 1,  $2.67\times$  as long as segment 2,  $4.80\times$  as long as segment 3 (Fig. 108).

Pronotum  $1.05\times$  as long as broad, less isodiametric,  $1.24\times$  as broad as base,  $1.33\times$  as broad as apex, disc with a fine, shallow, incomplete median longitudinal groove, this only can be seen at middle  $1/2$ ; posterior margin with distinctly carinate, and with dense, large, round polygonal granules, space between granules not convex, some granule with one recumbent seta on top; post ocular vibrissae long at marginal apex (Fig. 110).

Scutellum invisible.

Elytra less ovate,  $5.27\times$  as long as rostrum,  $2.10\times$  as long and  $1.53\times$  as broad as pronotum, sides less rounded, broadest after middle broadly narrowed at apex, in dorsal view, intervals slightly convex, lateral margins clearly diverging from base to basal  $1/4$ , then subparallel, reaching its greatest width nearly at mid length, strongly converging towards apex, apex blunt, U-shaped, interstriae 2 slightly raised upto middle, interstria 1 flat along basal  $1/8$ , not forming crest, slightly raised, top of declivity rounded in lateral view, interstria 3 without any post median elevation, interstria 5 more strongly raised at declivity, forming a little convex shaped tubercle on each elytra (Fig. 111). Elytral vestiture of two types, scales predominant flat, subcircular to ovate, granulated impression on surface with 5–6 ridges (Fig. 113); and



Figures 97–117. *Geotragus bituberosus* Desbrochers des Loges. Habitus (97–99) Dorsal, ventral, and lateral view; (100) venter; (101) protibia; (102–105) Female; (102) spermatheca; (103) genital chamber; (104–105) spiculum ventrale, dorsal and lateral view; (106–107) Head, dorsal and lateral view; (108) antennae; (109) foreleg; (110) prothorax; (111) elytra; (112) venter; (113–114) Elytral vestiture; (115–117) Female genitalia; (115) spermatheca; (116) genital chamber; (117) spiculum ventrale.

setae broadly elongate, curved, irregular impression on surface with 3–4 ridges, more granulate at base and brown (Fig. 114).

Venter with surface of ventrite 1 moderately convex at middle, ventrite 2 less convex medially, with apical transverse impression visible normally, as long as ventrite 1  $0.96\times$  as long as 2, ventrite 2  $2.41\times$  as long as ventrite 3–4 combined, ventrite 5 triangular; procoxae far from anterior margin of prosternum; metacoxae apart by process width of median coxae; hind coxae not reaching to margin of elytra (Fig. 112).

Leg with inner margin of protibiae with 8–10 not sharp and small teeth each tooth with a pointed seta just behind it, teeth of meso- and metatibiae sparse and much smaller than protibiae, protibial mucro little large than meso- or metatibia, distinct, not covered by setae; tarsi slender; tarsomere 1  $1.67\times$  long and  $1.36\times$  as wide as 2, with long sparse setae, tarsal claws simple, connate at base; tarsi with dorsal setae fine and dense, underside with thick soles (Figs. 101, 109).

Male genitalia unknown

Female genitalia having spermatheca with distal arm  $1.05\times$  as long as proximal arm, proximal arm swollen, angle between arms acute, nodulus distinct, ramus slightly projecting out, cornu straight and little pointed at apex (Figs. 102, 115). Spiculum ventrale with shaft elongate,  $3.5\times$  as long as basal plate, apex not clubbed, basal plate  $1.85\times$  as long as broad, subtriangular, apex with setae (Figs. 104–105, 117).

Measurements (in mm): SL: 8.14; SW: 3.00; PL: 2.75; PW: 2.60; EL: 5.80; EW: 2.00; RL: 1.10; RW: 1.30; EYL: 0.72; EYW: 0.64.

*Specimen Examined.* INDIA: West Bengal: 1♀, Darjeeling, Lepchu, 20.X.1967, Coll. Leg. Gy. Topal, beaten material (NPC).

#### ACKNOWLEDGMENTS

This study is funded by All India Coordinated Project on Taxonomy “Aicoptax-Coleoptera”, Ministry of Environment, Forests and Climate Change (MoEF), New Delhi, India. We thank Mr. Mahesh Rawat, Division of Entomology, (IARI) for helping with photo editing.

#### LITERATURE CITED

- Alonso-Zarazaga, M. A. & C. H. C. Lyal, 1999. *A World Catalogue of Families and Genera of Curculionoidea (Insecta: Coleoptera) (Excepting Scolytidae and Platypodidae)*. Entomopraxis S.C.P., Barcelona, Spain, 315 pp.
- Aurivillius, C. 1891. Collection d'insectes formée dans l'Indo-Chine par M. Pavie, consul de France au Cambodge (Suite). *Nouvelles Archives du Muséum d'Histoire Naturelle* 3(3):205–224.
- Boheman, C. H. 1845. In: C. J. Schoenherr (Ed.), *Genera et Species Curculionidum, Cum Synonymia Hujus Familiae. Species Novae aut Hactenus Minus Cognitae, Descriptionibus a Dom. L. Gyllenhal, C. H. Boheman, O. J. Fahraeus, et Entomologis Aliis Illustratae. Tomus Octavus – Pars Secunda*. 8(2) Supplementum continens Roret, Paris, iv + 504 pp.
- Chao, Y. C. & Y. Q. Chen, 1980. Chinese *Leptomias* Faust and its allied genera in the Qinghai-Xizang Plateau district (Coleoptera: Curculionidae). *Entomotaxonomia* 2(2):85–107.
- Chen, Y. Q. 1990. A new species of *Geotragus* from the Hengdian Mountains, Yunnan, China (Coleoptera: Curculionidae). *Sinozoologia* 7:149–150.
- Desbrochers des Loges, J. 1891. Curculionides et Brenthidés du Bengale occidental recueillis par le R. P. Cardon avec description d'espèces nouvelles. *Annales de la Société Entomologique de Belgique* 1891:350–361.
- Faust, J. 1891. Curculioniden aus Ost-Indien. *Stettiner Entomologische Zeitung* 52(7–12):259–287.

- Faust, J. 1893. Notizen über Rüsselkäfer. Fortsetzung. *Stettiner Entomologische Zeitung* 54(4–6): 145–152.
- Faust, J. 1895. Viaggio di Leonardo Fea in Birmania e regioni vicine. LX. Curculionidae. *Annali del Museo Civico di Storia Naturale di Genova* 34:153–370.
- Jekel, H. 1849. *Genera et Species Curculionidum et Catalogus* (ed. Schönherr, C. J.). *Societe Entomologique Galliae Sodali, Fontaine-Molière, Paris*, 8: 279 pp.
- Lacordaire, T. 1863. *Histoire Naturelle des Insectes. Genera des Coleoptres ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet ordre d'insectes. Vol. 6.* Roret, Paris, 637 pp.
- Ren, L, M. A. Alonso-Zarazaga & R. Zhang. 2013. Revision of the Chinese *Geotragus* Schoenherr with description of three new species (Coleoptera: Curculionidae: Entiminae) *Zootaxa* 3619 (2):161–182.
- Marshall, G. A. K. 1916. *Fauna of British India, Ceylon and Burma, Coleoptera: Rhynchophora: Curculionidae.* Taylor and Francis, London, (15) + 367 pp.
- Marshall, G. A. K. 1941. On Curculionidae (Col.) from Burma. *Annals and Magazine of Natural History* 11(8):345–379.
- Schoenherr, C. J. 1845. *Genera et Species Curculionidum, Cum Synonymia Hujus Familiae. Species Novae aut Hactenus Minus Cognitae, Descriptionibus a Dom. L. Gyllenhal, C. H. Boheman, O. J. Fahraeus, et Entomologis Aliis Illustratae. Tomus Octavus – Pars Secunda.* 8(2) Supplementum continens Roret, Paris, (4) + 504 pp.
- Schoenherr, C. J. 1847. *Mantissa Secunda Familiae Curculionidum Seu Descriptiones Novorum Quorundam Generum Curculionidum.* Norstedt et Filit, Holmiae, 86 pp.
- Van Emden, F. I. 1944a. A key to the genera of Brachyderinae of the World. *Annals and Magazine of Natural History* 80(11):503–532.
- Van Emden, F. I. 1944b. A key to the genera of Brachyderinae of the World. *Annals and Magazine of Natural History* 81(11):559–586.

*Received 3 Mar 2015; Accepted 20 June 2016 by F. W. Shockley; Publication date 27 Oct 2016*