

***Idahotyphlus alleni* Gusarov, gen. n., sp. n., a new leptotyphline staphylinid beetle from Idaho (Coleoptera: Staphylinidae: Leptotyphlinae)**

VLADIMIR I. GUSAROV

Division of Entomology, Natural History Museum, University of Kansas, Lawrence, KS 66045-7523, U.S.A.
and

Department of Entomology, St. Petersburg State University, Universitetskaya nab., 7/9, St. Petersburg 199034, Russia.

vlad@ku.edu

Abstract

Idahotyphlus alleni Gusarov, gen. n. & sp. n. (tribe Neotyphlini) is described from Idaho. Diagnostic characters and illustrations are provided to distinguish *Idahotyphlus* from its most-closely related genera.

Key words: Coleoptera, Staphylinidae, Leptotyphlinae, Neotyphlini, *Idahotyphlus*, Nearctic, taxonomy, new genus, new species

Introduction

The staphylinid subfamily Leptotyphlinae includes blind and wingless soil-dwelling beetles represented by 44 genera and 518 species known from all zoogeographical regions (Herman 2001; Gusarov 2001, 2003a, 2003b). Before this contribution, only 9 genera and 14 species of leptotyphlines were described from the United States: 12 species from California (Coiffait 1959, 1962; Sáiz 1975; Gusarov 2001), one species from Florida (Frank & Thomas 1984), and one species from Alaska (Smetana 1986). Unspecified numbers of undescribed leptotyphline species have been reported from California, Oregon, Washington, Idaho and New Mexico (Newton *et al.* 2000). The fact that an undescribed leptotyphline occurs in Idaho has been known since 1979 (Allen 1979) but no attempt was made to describe it. In this paper I describe this leptotyphline staphylinid as a new genus and species.

To avoid the controversy on what side of the aedeagus should be called ventral (Gusarov 2002), I refer to the side of aedeagus bearing the basal orifice as parameral.

Depositories

AACB – personal collection of Mr. Albert D. Allen (Boise, Idaho, United States)

FMNH – Field Museum of Natural History, Chicago, Illinois, United States (Dr. A.F. Newton)

KSEM – Snow Entomological Collection, University of Kansas, Lawrence, Kansas, United States (Dr. J.S. Ashe)

SPSU – Department of Entomology, St. Petersburg State University, St. Petersburg, Russia (Dr. V.I. Gusarov)

WFBM – Division of Entomology, University of Idaho, Moscow, Idaho, United States (Dr. J.B. Johnson)

***Idahotyphlus* Gusarov, gen. n. (Figs. 1–22)**

Diagnosis. Based on the presence of the procoxal fissure, the dilated second and third articles of the maxillary palpus and the absence of deep transverse basal furrows of abdominal sterna, *Idahotyphlus* is assigned to the tribe Neotyphlini Coiffait, 1963. *Idahotyphlus* can be distinguished from the other genera of that tribe by the combination of the following characters: labrum with three small denticles at the anterior margin; each mandible with a single subapical tooth and smooth internal edge; prostheca present; last segment of the maxillary palpus long; completely separate gular sutures; frontal swelling above the antennal insertions interrupted in the middle; a long prosternal process; aedeagus, when retracted in the abdomen, with the basal orifice facing right, with the apical orifice shifted to the left side, and with an extremely long needle-shaped sclerite of the internal sac protruding out of the median lobe; and no parameres visible at 200x.

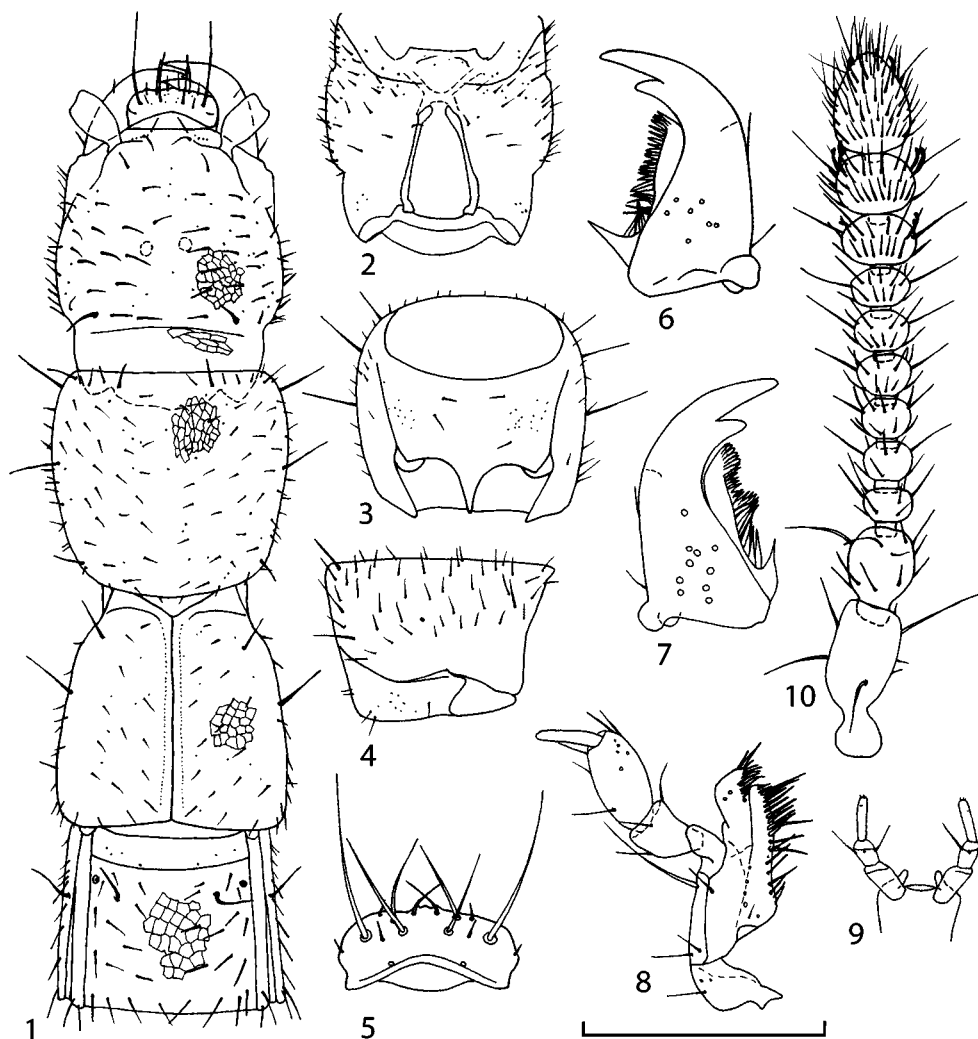
Idahotyphlus is similar to *Cainotyphlus* Coiffait, 1962 in having a narrow median lobe of the aedeagus with reduced parameres and a long and partially exposed sclerite of the internal sac. However, in *Idahotyphlus* the sclerite of the internal sac is needle-shaped and as long as the median lobe. As a result, in *Idahotyphlus* the aedeagus is half as long as the entire body when the sclerite is projected. In some of the examined male specimens the apical portion of the aedeagus was exposed. In addition, *Idahotyphlus* differs from *Cainotyphlus* in having a smooth inner edge of the mandibles (crenulate in *Cainotyphlus*); three small denticles on the anterior margin of the labrum (two denticles in *Cainotyphlus*) and a different distribution of macrosetae on the labrum (Fig. 5: this paper; Figs. 29, 34: Coiffait (1962)).

Description. Length 1.4–1.7 mm. Body brownish yellow, poorly pigmented, dorsal surface with isodiametric microsculpture.

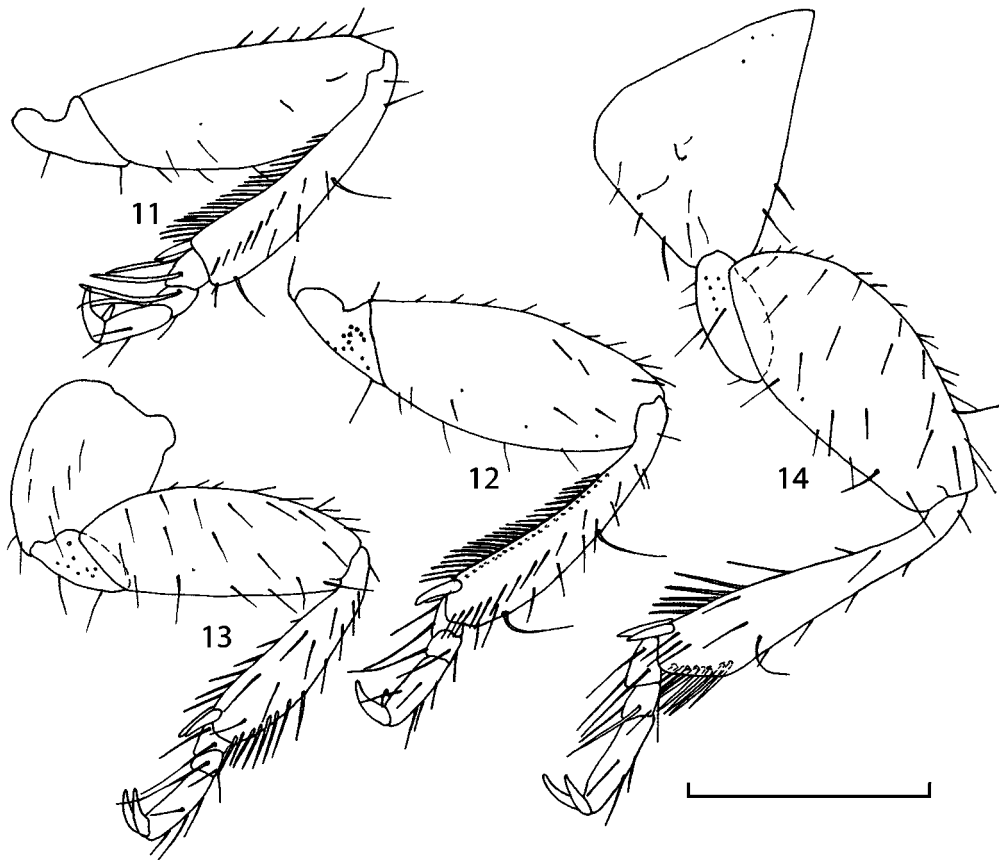
Head slightly convex laterally (Figs. 1–2). Labrum (Fig. 5) with three small tubercles at anterior margin (in exactly dorsal view), with small medial tubercle (visible in oblique dorsal view: Fig. 1). Mandible with single subapical tooth and developed prostheca (Figs. 6–7). Maxillary palpus with dilated articles 2 and 3, last article long and narrow (Fig. 8).

Antenna with articles 3–10 transverse, with setae arranged in two belts, article 11 with evenly distributed setae, articles 9–11 with a few clavate setae in subapical portions (Fig. 10). Gular sutures completely separate posterior to tentorial pits (Fig. 2). Frontal swelling above antennal insertions interrupted medially (Fig. 1).

Pronotum with two weak longitudinal impressions along midline. Procoxal fissure present as anterolateral notch in procoxal cavity and extends anteriorly as suture (Figs. 3–4). Prosternal process long (Fig. 3). All tibiae with two rows of setae (Figs. 11–14), the row on internal surface of protibia 0.6 times as long as tibial length. Tarsal formula 3-3-3 (Figs. 11–14).



FIGURES 1–10. Details of *Idahotyphlus alleni* Gusarov, gen. n., sp. n. (male (3, 9) and female (1–2, 4–8, 10) paratypes from Beaver Creek Summit, Idaho). 1 — forebody, dorsal view; 2 — head, ventral view; 3 — prothorax, ventral view; 4 — prothorax, lateral view; 5 — labrum; 6 — right mandible, dorsal view; 7 — left mandible, dorsal view; 8 — right maxilla, ventral view; 9 — prementum, ventral view; 10 — right antenna. Scale bar 0.1 mm (5–10), 0.2 mm (1–4).



FIGURES 11–14. Legs of *Idahotyphlus alleni* Gusarov, gen. n., sp. n. (male (11, 13–14) and female (12) paratypes from Beaver Creek Summit, Idaho). 11–12 — left anterior leg; 13 — left middle leg; 14 — left posterior leg. Scale bar 0.1 mm.

Abdominal sterna without transverse basal furrows.

Aedeagus long and narrow, without denticle on parameral surface (Figs. 15–20), when retracted in abdomen, with basal orifice facing right. No visible parameres at 200x. Apical orifice of median lobe shifted to left side. Internal sac with long needle-shaped sclerite which is as long as median lobe; when retracted the sclerite exposed apically. Aedeagus with completely projected internal sclerite (Figs. 15, 18, 20) 0.7–0.8 mm long, with retracted sclerite 0.45 mm long.

Type species. *Idahotyphlus alleni* Gusarov, sp. n.

Etymology. The name *Idahotyphlus* is derived from word Idaho (the type locality state) and the Greek adjective τυφλός (blind). Gender: masculine.

Discussion. To recognize *Idahotyphlus*, the most recent key to Nearctic leptotyphline genera (Newton *et al.* 2000: 323) is modified as follows:

- 6(3). Ridge on front of head between antennae obsolete medially (Fig. 1: this paper); mandible with a single large tooth on mesal edge, not serrate (Figs. 6–7: this paper); labrum with one pair of *large* setae near anterior edge and two pairs of *large* setae on disk (Fig. 5: this paper) 6a
- Ridge on front of head between antennae complete; mandible, in addition to large preapical tooth, with more basal second large tooth, or serrations, or both (see Coiffait (1962), Figs. 55, 35, 45–50); labrum with two pairs of *large* setae near anterior edge and one pair of *large* setae on disk (Figs. 29, 34) 7
- 6a(6). Sclerite of internal sac shorter than median lobe, not needle-shaped (see Coiffait (1962), Fig. 42); apical orifice shifted to right side of median lobe (see Coiffait (1962), Fig. 42) *Homeotyphlus*
- Sclerite of internal sac as long as median lobe, needle-shaped (Figs. 15, 18, 20: this paper); apical orifice shifted to left side of median lobe (Fig. 20: this paper) *Idahotyphlus*

***Idahotyphlus alleni* Gusarov, sp. n. (Figs. 1–22)**

Type material. Holotype: ♂, **UNITED STATES: Idaho:** Boise Co.: Beaver Creek Summit, funneled from Ponderosa pine litter (A.D.Allen), 3.vii.1978 (KSEM).

Paratypes: **UNITED STATES: Idaho:** Boise Co.: 3♂♂, 13♀♀, same data as the holotype (AACB, KSEM, SPSU, WFBM); 3♀♀, ca. 30 mi. NE Boise, Ten Mile Camp Area, funneled from Ponderosa pine litter (A.D.Allen), 29.v.1978 (AACB, SPSU); ♂, 2♀♀, ditto but 20.v.1982 (FMNH, SPSU); Valley Co.: 3♀♀, Warm Lake, pine litter (A.D.Allen), 4.vi.1982 (FMNH).

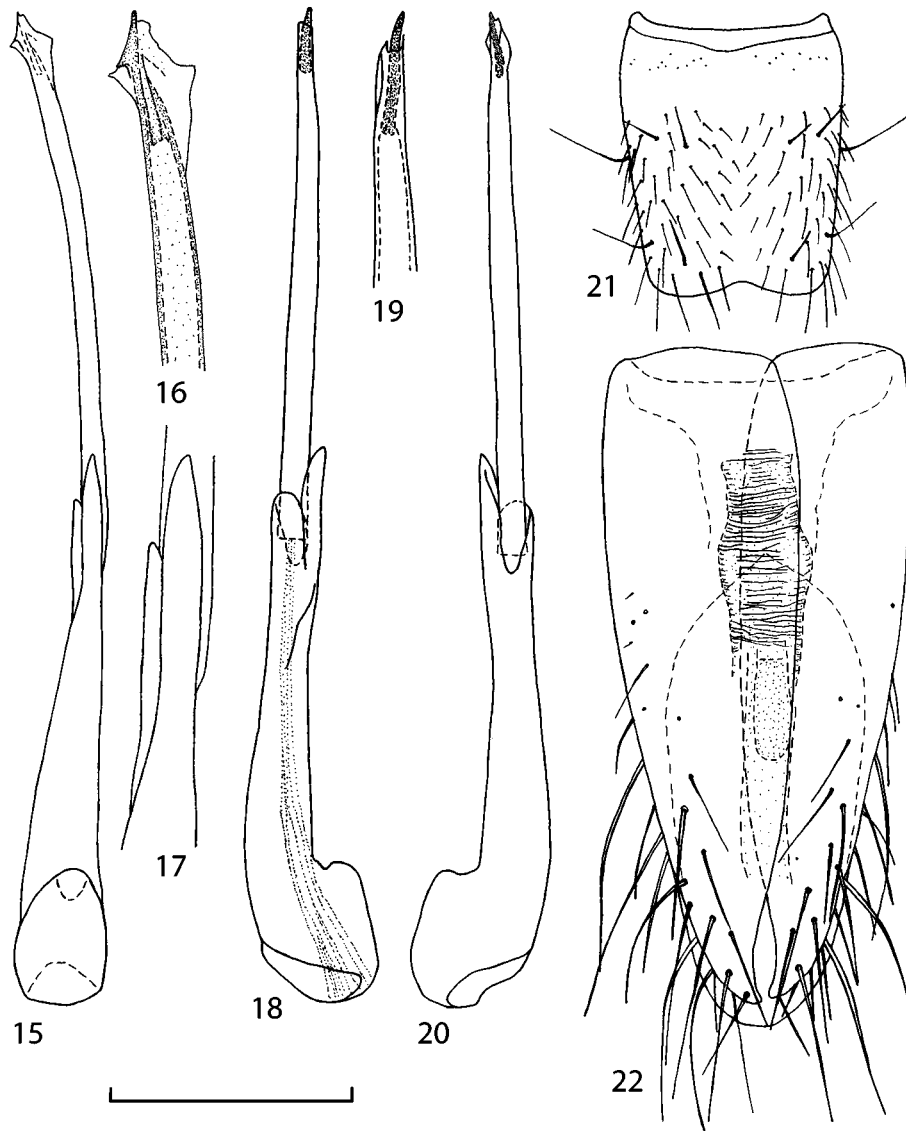
Diagnosis. *Idahotyphlus alleni* is the only known species of the genus *Idahotyphlus*. If any additional species of *Idahotyphlus* are ever discovered, *I. alleni* could probably be distinguished by the shape of the aedeagus (Figs. 15–20) and the shape of the female accessory sclerites (Fig. 22).

Description. Length 1.4–1.7 mm.

Head with short setae arranged as in Figs. 1–2. Second antennal article slightly longer than wide, twice as long and 1.4 times as wide as article 3, articles 3–9 transverse, 1.2–1.5 times as wide as long, article 10 is 1.3 times as wide as long, last article elongate, 1.3 times as long as wide.

Pronotum with short setae arranged as in Fig. 1, narrowed posteriad, 1.1 times as wide as long, as wide as head and elytra. Elytra with short setae, with lateral sides diverging posteriad (Fig. 1), 1.1 times as wide as long (length measured from humeral level).

Male mesotrochanter without modification (Fig. 13). In males, setae on ventral side of protarsus thicker than in females (cf. Figs. 11 and 12), but in both sexes the setae lack apical adhesive disks. Male abdominal sternum 8 with broad and shallow apical emargination, without zone devoid of setae (Fig. 21).

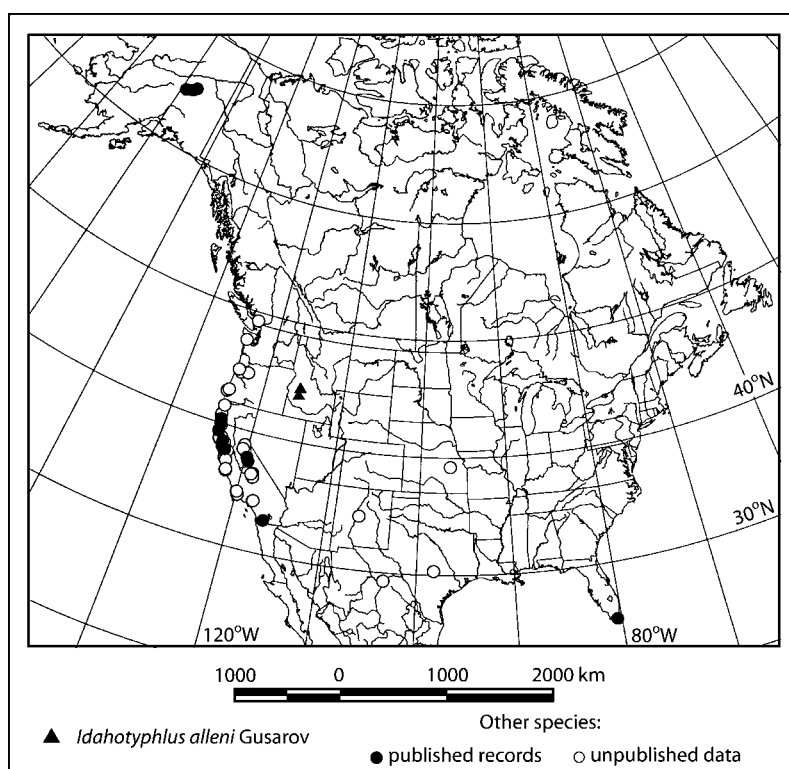


FIGURES 15–22. Details of *Idahotyphlus alleni* Gusarov, gen. n., sp. n. (male (15–21) and female (22) paratypes from Beaver Creek Summit, Idaho). 15 — aedeagus with extended internal sclerite, parameral view; 16 — apex of the sclerite of internal sac, parameral view; 17 — apex of the median lobe, parameral view; 18, 20 — aedeagus with extended internal sclerite, lateral view; 19 — apex of the sclerite of internal sac, lateral view; 21 — male sternum 8; 22 — female abdominal segments 9–10, ventral view. Scale bar 0.1 mm (16–17, 19, 22), 0.2 mm (15, 18, 20–21).

Aedeagus long and narrow, without denticle on parameral surface (Figs. 15–20). Internal sac with long needle-shaped sclerite which is as long as median lobe; when retracted the sclerite exposed apically.

Female accessory sclerites as in Fig. 22, poorly sclerotized.

Distribution. Known from three localities in Idaho (Fig. 23). The males from both localities in Boise County are identical in the shape of the aedeagus and its internal sclerite. No males are known from the locality in Valley County but the females are identical to those from the type locality in all external characters, including the shape of the terminal abdominal segments, and in the shape of the female accessory sclerites.



FIGURES 23. Distribution of *Idahotyphlus alleni* Gusarov, gen. n., sp. n. and other species of leptoptyphlines in America north of Mexico.

Natural History. *Idahotyphlus alleni* was found in funnel extract of forest litter taken at the base of a big Ponderosa pine tree (*Pinus ponderosa*) (Allen, personal communication).

Discussion

Distribution of *Idahotyphlus alleni* and other species of leptoptyphlines in America north of Mexico, based on available data (Coiffait 1959, 1962; Sáiz 1975; Frank & Thomas 1984; Gusarov 2001; Gusarov, unpublished), is shown in Fig. 23. The discovery of a leptoptyphline species in Idaho significantly extends the known range of this subfamily into the interior mountain ranges of the western United States. In Idaho, Washington, Oregon and

California leptotyphlines were collected in different types of coniferous forest, particularly in the organic litter of *Pinus ponderosa*, *P. contorta*, *Pseudotsuga menziesii*, *Picea sitchensis*, *Abies procera*, *Libocedrus decurrens*, *Sequoia sempervirens* and *Sequoiadendron giganteum*. Leptotyphlines were found in forest litter, in soil and rotting tree stumps. In this context it seems likely that leptotyphlines also occur in forested mountains of Utah and Nevada.

Acknowledgements

I am greatly indebted to Albert Allen and Al Newton for allowing me to examine the specimens described in this study. I thank two anonymous reviewers and Paul Johnson for their comments which helped to improve my manuscript. This work was supported by the National Science Foundation PEET grant DEB-9978110 to Steve Ashe and by the Russian Federal program "Russian Universities — Fundamental Sciences" (project 07.01.056).

References

- Allen, A. (1979) A note on new beetle genera and species occurring in Idaho. *Idaho Entomology Group Newsletter*, 6(5), 13–15.
- Coiffait, H. (1959) Monographie des Leptotyphlites (Col. Staphylinidae). *Revue Française d'Entomologie*, 26(4), 237–437.
- Coiffait, H. (1962) Les Leptotyphlites (Col. Staphylinidae) de Californie. *Revue Française d'Entomologie*, 29(2), 154–166.
- Coiffait, H. (1963) Les Leptotyphlites (Col. Staphylinidae) du Chili. In: Delamare Deboutteville, Cl. & Rapport, E. (Eds.), *Biologie de l'Amérique Australe; Vol. II*. Editions du CNRS, Paris, pp. 353–369.
- Frank, J.H. & Thomas, M.C. (1984) *Cubanotyphlus largo*, a new species of Leptotyphlinae (Coleoptera: Staphylinidae) from Florida. *Canadian Entomologist*, 116(10), 1411–1417.
- Gusarov, V.I. (2001) *Heterotyphlus sequoia*, a new species of soil-dwelling staphylinid from California (Coleoptera, Staphylinidae). *Journal of the New York Entomological Society*, 109(2), 300–303.
- Gusarov, V.I. (2002) A revision of Nearctic species of the genus *Geostiba* Thomson, 1858 (Coleoptera: Staphylinidae: Aleocharinae). *Zootaxa*, 81, 1–88.
- Gusarov, V.I. (2003a) *Mayatyphlus carltoni* Gusarov, a new genus and species of leptotyphline staphylinid beetle from Belize (Coleoptera: Staphylinidae: Leptotyphlinae). *Zootaxa*, 165, 1–7.
- Gusarov, V.I. (2003b) *Cubanotyphlus guatemalae*, a new species of leptotyphline staphylinid from Guatemala (Insecta: Coleoptera: Staphylinidae). *Studies on Neotropical Fauna and Environment*, 38(2), 125–128.
- Herman, L.H. (2001) Catalog of the Staphylinidae (Insecta: Coleoptera). 1758 to the end of the second millennium. *Bulletin of the American Museum of Natural History*, 265, i–vi, 1–4218.
- Newton, A.F., Thayer, M.K., Ashe, J.S. & Chandler, D.S. (2000) Staphylinidae Latreille, 1802. In: Arnett, R.H., Thomas, M.C. (Eds.), *American Beetles. Vol.1. Archostemata, Myxophaga, Adephega, Polyphaga: Staphyliniformia*. CRC Press, Boca Raton, Florida, pp. 272–418.
- Sáiz, F. (1975) Une nouvelle espèce de Leptotyphlinae de Californie (U.S.A.) (Coleopt. Staphylinidae). *Nouvelle Revue d'Entomologie*, 5, 43–45.
- Smetana, A. (1986) *Chionotyphlus alaskensis* n. g., n. sp., a Tertiary relict from unglaciated interior Alaska (Coleoptera, Staphylinidae). *Nouvelle Revue d'Entomologie (N. Sér.)*, 3(2), 171–187.