

## DESCRIPTION OF *ALOCONOTA ELONGATA* SP. NOV. (COLEOPTERA: STAPHYLINIDAE: ALEOCHARINAE) IN KOREA

SEUNG-GYU LEE AND KEE-JEONG AHN\*

Department of Biology, Chungnam National University, Daejeon 305-764, Republic of Korea

\*Corresponding author; E-mail: kjahn@cnu.ac.kr

## ABSTRACT

A description, a habitus photograph and illustrations of the diagnostic characters of *Aloconota elongata* Lee & Ahn, **sp. nov.** are provided. Diagnostic characters of *Aloconota* Thomson are presented. Systematic position of *Aloconota* and *Paraloconota* Thomson are briefly discussed.

Key Words: Staphylinidae, Geostibini, *Aloconota*, *Paraloconota*, new species, Korea

## RESUMEN

Se provee una descripción, fotografía del habitus e ilustraciones de los caracteres diagnósticos de *Paraloconota koreana* Lee y Ahn, **sp. nov.** Se transfiere el género *Paraloconota* Cameron de Athetini a Geostibini (Aleocharinae) y es registrado en la península de Corea por primera vez.

Palabras Clave: Staphylinidae, Aleocharinae, Geostibini, *Paraloconota*, nuevas especies, Corea

The genus *Aloconota* Thomson now contains 88 species worldwide, 78 of which occur in the Palearctic region. In eastern Asia, 5 and 3 species are recorded in China and in Japan, respectively (Smetana 2004; Newton & Thayer, 2005). Two species were reported in North Korea by Pašník (2001), but one of which, *Aloconota koreana* Pašník, was transferred to the genus *Earota* Mulsant & Rey by Lee & Ahn (2014). They have been known to inhabit niches near the water (Cameron 1939) and most Korean specimens have been also collected near streams.

While studying Korean Athetini and related taxa, a new species, *Aloconota elongata* Lee & Ahn, **sp. nov.**, was discovered in the Korean Peninsula. The taxonomic characters of this new species are in agreement with the diagnostic characters of the genus *Aloconota* provided below. In this study we provide a description and illustrations of the diagnostic characters and a habitus photograph of new species.

specimens more correctly. The terminology used here follows Sawada (1972), but we followed Ashe (1984) in some cases, particularly for mouthparts, to reduce confusion.

## RESULTS

Genus *Aloconota* Thomson, 1858

*Aloconota* Thomson, 1858: 33 (as a genus); Cameron, 1939: 287 (Type species: *Tachyusa imunita* Erichson, 1839 = *Homalota gregaria* Erichson, 1839).

*Glossola* Fowler, 1888: 66 (as a genus) (Type species: *Homalota gregaria* Erichson, 1839).

*Terasota* Casey, 1906: 337 (as a genus); 1910: 84 (as a subgenus) (Type species: *Terasota brunneipes* Casey, 1906).

*Taphrodota* Casey, 1906: 338 (as a genus); 1910: 84 (as a subgenus) (Type species: *Taphrodota ventralis* Casey, 1906).

## MATERIAL AND METHODS

All specimens are deposited in the Chungnam National University Insect Collection (CNUIC), Daejeon, Korea. The first author also examined type specimens of many *Aloconota* species deposited in the Field Museum of Natural History (FMNH) Chicago, USA and the Natural History Museum (NHM), London, UK to identify Korean

## Diagnostic Characters

Members of the *Aloconota* can be distinguished from other aleocharine genera by the combination of the following characters: body parallel-sided;  $\alpha$ -sensillum of epipharynx reduced; labium with ligula divided into 2 lobes at base; two medial setae widely separated; lateral pseudopores absent on prementum; pronotum more or less nar-

rowed basally, less than about 1.1 times as wide as long; metatarsomere 1 about as long as 2 and 3 combined or longer than 2; empodial seta distinctly longer than claw; abdominal tergites III-V impressed in basal region; most male tergite VII with tubercles; posterior margin of male tergite VIII modified, with process in most species (Cameron 1939; Benick & Lohse 1974, Yosii & Sawada 1976; Ashe 2001; per. obs.).

*ALOCONOTA ELONGATA* LEE & AHN, **SP. NOV.**  
(Figs. 1-14)

Type Series

**HOLOTYPE**, male, labeled as follows: KOREA: Jeonnam prov., Gurye-gun, Sandong-myeon, Mt. Jirisan, Simwon-fall, N 35°19' 24.8" E 127° 31' 34.6" 850 m asl, 17 VI 2010, KJ Ahn, TK Kim, YH Kim, JG Lee, IS Yoo, JH Song, SG Lee, under stones near stream; Holotype, *Aloconota elongata* Lee and Ahn, Desig. S.-G. Lee and K.-J. Ahn 2013. Deposited in CNUIC, Daejeon. Paratypes, 17 exx. (total): 5 exx., same data as holotype; 8 exx., Chungnam prov., Gongju-city, Gyeryong-myeon, Gyeryongsan, Gapsa, 19 VIII 2006, SJ Park, YH Kim, *ex* near stream; 4 exx., Gangwon prov., Pyeongchang-gun, Jinbu-myeon, Dongsan-ri, Mt. Odaesan, Sangwonsa, N 37° 47.074' E 128° 33.735", 15 V 2006, T.-K. Kim, Y.-H. Kim, H.-W. Kim, *ex* near stream.

Other Material Examined

KOREA: Chungnam prov.: 3 exx., Geumsan-gun, Mt. Daedunsan, 25 V 2001, SJ Park, MJ Jeon, HJ Yun, sifting; Gangwon prov.: 2 exx., Hongcheon-gun, Naechon-myeon, Mt. Baekamsan, KJ Ahn, CW Shin, JS Park, near stream; 13 exx., Yangyang-gun, Mt. Seoraksan, Osaekyaksu, 31 VII 2002, CW Shin, near stream; 4 exx., same data as the former except '22 VI 2002, JS Park'; Jeonnam prov.: 2 exx., Damyang-gun, Yong-myeon, Wolgye-ri, Mt. Chuwolsan, 7 VI 2005, SM Choi, SI Lee, sifting.

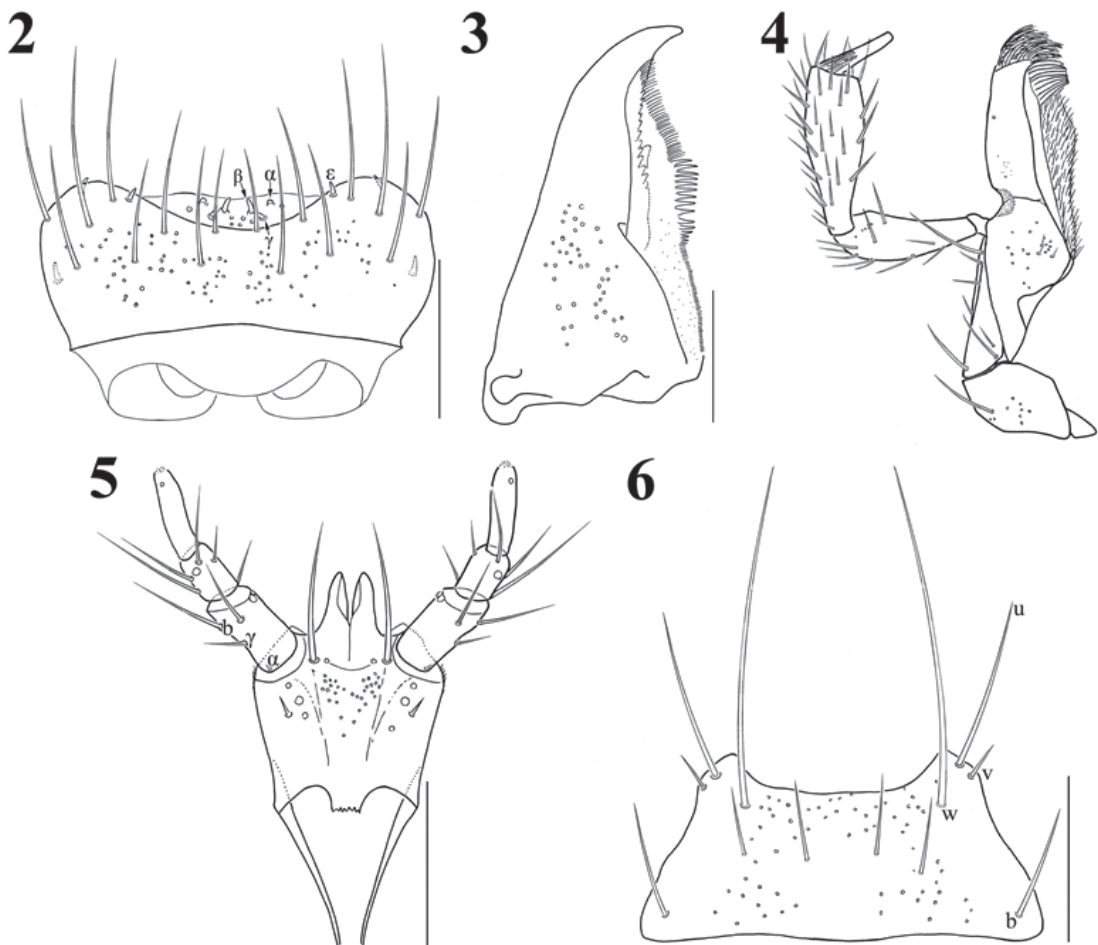
Description

Length 4.0-4.5 mm. Body large, parallel-sided; surface glossy, densely pubescent with microsculpture (Fig. 1). Body usually dark brown to black; basal antennomeres, mouthparts and legs paler brown; head and abdomen slightly darker than pronotum and elytra. *Head*. Slightly elongate, approximately 1.1 times longer than wide, slightly narrower than pronotum; eyes slightly prominent, about 1.4-1.5 times as long as tempora; gular sutures moderately separated, dilated basally; infraorbital carina incomplete; cervical carina forked. Antennae (Fig. 7) long and



Fig. 1. Habitus of *Aloconota elongata* **sp. nov.**, 4.1 mm.

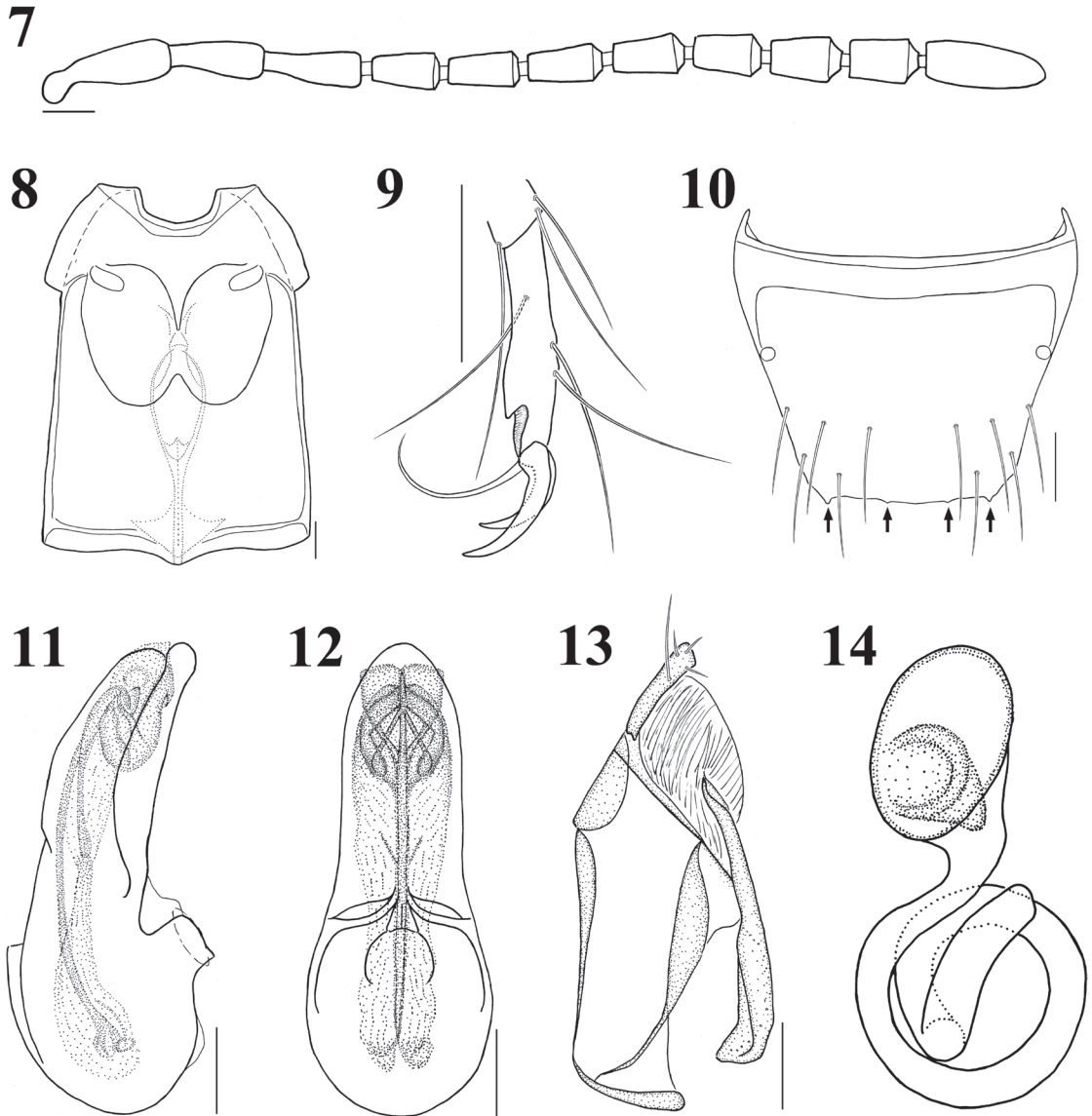
slender; all antennomeres elongate, 1 longest, 3 slightly longer than 2, 11 about as long as pre-



Figs. 2-6. Mouthparts of *Aloconota elongata* sp. nov.: 2. labrum, dorsal aspect; 3. right mandible, ventral aspect; 4. left maxilla, ventral aspect; 5. labium, ventral aspect; 6. mentum, ventral aspect. Scales = 0.1 mm.

ceding two combined. *Mouthparts*. Labrum (Fig. 2) transverse, anterior margin distinctly emarginate, with 2 lateral sensilla and about 8 macrosetae present on each side of midline;  $\beta$ - and  $\gamma$ -sensillum short,  $\alpha$ -sensillum about as long as  $\epsilon$ -sensillum. Mandibles asymmetrical, pointed apically, approximately 1.8 times as long as basal width, anterior margin serrulate; right one (Fig. 3) with internal tooth; prostheca well developed, distinctly composited three regions. Galea and lacinia of maxilla (Fig. 4) very long, lacinia with nine spines in distal comb region, isolated spines absent; maxillary palpus elongate, with pubescence and long setae; palpomere 1 smallest and 2.0-2.2 times as long as wide, 2 about 3.0 times longer than wide, 3 slightly longer than 2, 2.7-2.8 times as long as wide, 4 digitiform, filamentous sensilla reaching to basal half. Labium (Fig. 5) with ligula relatively broad, dilated apically; two medial setae widely separated; two basal pores

widely distant, 5-6 times width of basal pore; many medial pseudopores, 3 real pores and 1 setal pore present on prementum; labial palpus elongate with many setulae; palpomere 1 largest, 1.5-1.6 times longer than wide, with  $\gamma$ -setula separating from b-setula, distance from setulae  $\alpha$  to  $\gamma$  and setulae b to  $\gamma$  almost twice, 2 shortest, about 1.3-1.4 times longer than wide, 3 parallel-sided, slightly longer than 1, about 3.5-3.7 times longer than wide. Mentum (Fig. 6) trapezoidal, anterior margin emarginate; v-seta very short. *Thorax*. Pronotum subcordiform, approximately 1.1 times as wide as long, widest in apical third, narrowed apically, pubescence directed anteriorly in midline; hypomera developed, fully visible in lateral aspect; metanotal scutum with 8 setae on each side of midline; mesoventral process (Fig. 8) longer than metaventral process; isthmus longer than metaventral process; length ratio of mesoventral process, isthmus and metaventral



Figs. 7-14. Diagnostic characters of *Aloconota elongata* **sp. nov.**: 7. antenna; 8. meso- and metaventrites, ventral aspect; 9. empodial seta, lateral aspect; 10. male tergite VIII, dorsal aspect; 11. median lobe, lateral aspect; 12. median lobe, ventral aspect; 13. paramere, lateral aspect; 14. spermatheca. Scales = 0.1 mm.

process 11:7:5; mesendosternite and Y-shaped metendosternite well developed. Elytra wider than pronotum; elytron relatively long, approximately 1.8 times as long as wide, pubescence directed postero-laterally; postero-lateral margins almost straight; hind wings fully developed; flabellum with 10-11 setose lobes. *Legs.* Slender and long, with dense pubescence and setae; tibia with two spurs at apex; tarsal formula 4-5-5, length ratio of tarsomeres 30:34:36:82 (protarsus); 44:50:48:41:78 (mesotarsus); 72:69:52:47:97 (metatarsus) (mm,  $\times 400$ ); one empodial seta (Fig.

9) present. *Abdomen.* Subparallel-sided; surface glossy and densely pubescent, with transverse imbricate microsculpture; tergites II-IV macrochaetal arrangement 01-21-21; tergite VIII (Fig. 10) with 5 macrosetae on each side of midline; posterior margin of sternite VIII convex and more or less round, with long marginal setae. *Secondary Sexual Characteristics.* Male: posterior margin of abdominal tergite VIII truncate with four minute processes (see arrows in Fig. 10); abdominal sternite VII with a row of numerous pores in basal region; sternite VIII with 7 macrosetae on





Fig. 15. The type locality of *Aloconota elongata* **sp. nov.**, mountain stream at Mt. Jirisan, Gurye-gun, Korea. This species were found under stones and flood debris near stream of this photograph.

each side of midline. Female: posterior margin of abdominal tergite VIII subtruncate; abdominal sternite VIII with 6 macrosetae on each side of midline, posterior margin with minute setae in median region. *Aedeagus*. Median lobe (Figs. 11, 12) elongate; apical process relatively convergent apically in ventral aspect; internal sac elongate. Apical lobe of paramerite (Fig. 13) with four setae; a-seta longer, the other setae short, subequal in length. (a-d; see Sawada, 1972). *Spermatheca*. Bursa and umbilicus conical shape; duct coiled (Fig. 14).

#### Distribution

Korea (South).

#### Remarks

This species can be distinguished from other *Aloconota* species by all antennomeres distinctly elongate, male tergite VII without tubercle and the shape and structure of aedeagus and spermathecal duct. Usually, the species were collected in mountain streams with other athetine species (Fig. 15).

#### Etymology

Named from the Latin *elongata* meaning "elongate, long".

#### DISCUSSION

The genus *Aloconota* was described by Thomson (1858) based on *Tachyusa immunita* Erichson (1839). Later, Cameron (1939) noted that it is similar to *Paraloconota* Thomson, but can be distinguished by the transverse impression of abdominal tergites III-V and presence of tubercle on male tergite VII. But some members of *Aloconota* are without the tubercle on male tergite VII including Korean species and has more flattened and slender body.

These 2 genera are hypothesized to be closely related as both share the same ecological character (habitat) and many morphological characters such as lacinia of maxilla without isolated spines in distal comb; labium with ligula divided into 2 lobes at base; 2 medial setae widely separated; lateral pseudopores absent on prementum; mesoventral process pointed at apex; legs relatively long; and empodial seta distinctly longer than claw.

Recently, Elven et al. (2012) raised the subtribe Geostibina of Athetini to tribal rank, including *Aloconota* but not *Paraloconota*. The genus *Paraloconota* was placed in the tribe Athetini by Pace (1991, 1998) and Smetana (2004) since Cameron (1939) described it as a subgenus of *Atheta*

Thomson. However, it differs from the members of Athetini in having a tentative synapomorphy of Geostibini, the reduced  $\alpha$ -sensillum of epipharynx.

The genus *Paraloconota* appears to share the synapomorphy and some morphological characters with Geostibini. Therefore, they probably should be placed in the tribe Geostibini rather than in Athetini. But it is premature to decide the formal classification until we conduct a thorough comparative and detailed study of additional species from broader distributional areas including type species.

#### ACKNOWLEDGMENTS

We thank Margaret Thayer and James Boone (FMNH, Chicago), and Roger Booth (NHM, London) for arranging the loans of the specimens. Comments by J. H. Frank (Univ. of Florida, Gainesville) significantly improved the manuscript. Financial support was provided by the National Institute of Biological Resources (NIBR, Incheon) of Ministry of Environment, KOREA (1834-302) and the Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (2012-031412).

#### REFERENCES CITED

- ASHE, J. S. 1984. Generic revision of the subtribe Gyrphaenina (Coleoptera: Staphylinidae: Aleocharinae) with a review of the described subgenera and major features of evolution. *Quaest. Entomol.* 20: 129-349.
- ASHE, J. S. 2001. Aleocharinae, Staphylinidae Latreille, 1802, pp. 295-324, 358-375, 397-418 *In* A. F. Newton, M. K. Thayer, J. S. Ashe, and D. S. Chandler [eds.], *Staphylinidae*, pp. 272-418 *In* R. Arnett and M. Thomas [eds.], *American beetles*, Volume 1, Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. CRC Press LLC, Boca Raton. xv+1-443 pp.
- BENICK, G., AND LOHSE, G. A. 1974. 14. Tribus: Callicerini (Athetae), pp. 72-220 *In* H. Freude, K. W. Harde and G. A. Lohse [eds.], *Die Käfer Mitteleuropas*. Band 5, Staphylinidae II (Hypocyphtinae und Aleocharinae). Pselaphidae. Goecke & Evers Verlag, Krefeld. 381 pp.
- CAMERON, M. 1939. The Fauna of British India including Ceylon and Burma. Coleoptera Staphylinidae. Volume IV. Parts I & II. Taylor & Francis, London. xviii-691 pp.
- CASEY, T. L. 1906. Observations on the staphylinid groups Aleocharinae and Xantholinini, chiefly of America. *Trans. Acad. Sci. St. Louis* 16: 125-434.
- CASEY, T. L. 1910. New species of the staphylinid tribe Myrmedoniini. *Memoirs on the Coleoptera*. I. The New Era Printing Company, Lancaster, Pennsylvania. 183 pp.
- ELVEN, H., BACHMANN, L., AND GUSAROV, V. I. 2012. Molecular phylogeny of the Athetini-Lomechusini-Ecitocharini clade of aleocharine rove beetles (Insecta). *Zool. Scripta* 41: 617-636.
- ERICHSON, W. F. 1839. Genera et species staphylinorum insectorum coleopterorum familiae. *Erster Band*. F. H. Morin, Berlin. 400 pp.

- FOWLER, W. W. 1888. The Coleoptera of the British islands. A descriptive account of the families, genera, and species indigenous to Great Britain and Ireland, with notes as to localities, habitats, etc. Volume II. Staphylinidae. London L. Reeve & Co. 444 pp.
- LEE, S. G., AND AHN, K. G. 2014. Two new combinations and a key to the species of the genus *Earota* Mulsant & Rey (Coleoptera: Staphylinidae: Aleocharinae). *Zootaxa* 3765(2): 187-193.
- NEWTON, A. F., AND THAYER, M. K. 2005. Catalog of higher taxa, genera, and subgenera of Staphyliniformia [online]. Available from <http://fm1.fieldmuseum.org/peet/index.php>. Accessed 12-XI-2013.
- PACE, R. 1991. Aleocharinae nepalesi del Museo di Ginevra, parte V: Athetini (conclusionione) e Thamiaraeini (Coleoptera, Staphylinidae) (111° Contributo alla conoscenza delle Aleocharinae). *Rev. Suisse Zool.* 98: 803-863.
- PACE, R. 1998. Aleocharinae della Cina: Parte II (Coleoptera, Staphylinidae). *Rev. Suisse Zool.* 105(2): 395-463.
- PÁŠNIK, G. 2001. The North Korean Aleocharinae (Coleoptera, Staphylinidae): diversity and biogeography. *Acta Zool. Cracoviensia* 44: 185-234.
- SAWADA, K. 1972. Methodological Research in the Taxonomy of Aleocharinae. *Contrib. Biol. Lab. Kyoto Univ.* 24: 31-59.
- SMETANA, A. 2004. Aleocharinae, pp. 353-494 *In* I. Löbl and A. Smetana [eds.], *Catalogue of Palaearctic Coleoptera. Vol. 2, Hydrophiloidea, Histeroidea, Staphylinidea*. Apollo Books, Stenstrup. 942 pp.
- THOMSON, C. G. 1858. Försök till uppställning af Sveriges Staphyliner. Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar, 15: 27-40.
- YOSHII, R., AND SAWADA, K. 1976. Studies on the genus *Atheta* Thomson and its allies (Coleoptera, Staphylinidae). II: Diagnostic characters of Genera and Subgenera with description of representative species. *Contrib. Biol. Lab. Kyoto Univ.* 25(1): 11-140.