unable to locate the nest, though we made an effort to follow the underground galleries."

The species is named for Mr. Gavin Thornily, Pamol Estate manager, for all the cooperation given during this field work.

RELATIONSHIPS

Coptoxenus is very closely related to Hetairotermes, which is a generalized genus with a limuloid form. With the evolution of Coptoxenus, we see another convergent development of physicalgastronomy in staphylinids occupying the nests of Coptotermes. This genus is convergent to Coptotermes okei and Coptophilus Kistner and Pasteels, which evolved physicalgastronomy in the nests of Coptotermes in Australia (Kistner and Pasteels 1970), although the expansion of membrane in Coptoxenus is more spectacular, rivaling only the development in the Corotocenus.

ACKNOWLEDGEMENTS

I am extremely grateful to Mr. H. R. Jacobson for the dedicated field work which produced this genus and for the notes about the collection site. I thank Daniela Griffin, Jan Fischer, and Richard McLaugh, all Shinner Assistants, for expediting the completion of this paper. Thanks are also extended to Miss Linda Carter, of the Neighborhood Youth Corps for her assistance. I thank Dr. Kumar Krishna, City University of New York, for determining the host termites.

REFERENCES


Revision and Reclassification of the Genus Goniusa Casey with a Larval Description and Ant Host Records (Coleoptera: Staphylinidae)

by

David H. Kistner

ABSTRACT

The genus Goniusa (Coleoptera, Staphylinidae, Aleocharinae) is redescribed and transferred from the tribe Callicerini to Zyrasini. The type-species, G. obtusa, is redescribed and illustrated. A new species, G. alperti, is described from Washington state. Host records, Formica integra for G. obtusa and P. obscuripes for G. alperti, are presented for the first time. Sexual dimorphic characters, consisting of differences in pronotum shape and sculpture and a sculptured bifurcation of sterno VIII of the male, are described.

INTRODUCTION

The genus Goniusa was originally described by Casey (1906) to contain the species G. obtusa (Le Conte), originally described in the genus Euryusa. The genus was originally placed in the tribe Bolitocharini but was removed to the group Athetae of the tribe Myrmidoniini by Fenyes (1918: 19). This was probably based on his study of the mouthparts (1920: 236) in which he shows the galea as shorter than the lacinia, an incorrect interpretation as can be seen by reference to Fig. 21. The genus does not belong to the Bolitocharini because of its 4-5-5 tarsal formula. The structure of the maxillae with their setigerous lacinia and galea, place it in the Zyrasini. Recently, Mr. Gary Alpert, now at Harvard University, sent me a fine series of a new species of this genus. This series had good host records which marked the first definite ant host. Up to this paper, no hosts had been recorded for Goniusa although Fenyes (1920) stated that it was "almost surely" a myrmecophile. Included in Mr. Alpert's material were enough larvae associated with the adults to increase the probability that the association was not accidental. Hence, it is the
purpose of this paper to redescribe the genus and reclassify it, describe the larvae of *G. alperti*, and to provide the first host records.

**Genus Goniусa** Casey

*Goniусa* Casey 1906: 348, type-species, *G. obtusa* (Le Conte); Casey 1911: 208 (additional distribution); Fenyes 1918: 19; Fenyes 1920: 235, Fig. 47; Blackwelder 1952: 174, discussion of genotype.

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**Fig. 1. Goniусa alperti.** Dorsal view of intact male beetle

Related to *Pella* Stephens from which it is distinguished by the characters involved in the sexual dimorphism, by the exact shape of the maxillae, and by the shape of the labium with the elongate lingualae. Overall appearance as in Fig. 1. Head capsule wider than long, shaped as in Fig. 1 and 3A. Head with a well defined maceutical ridge but without a neck. Gula with the sides slightly divergent from anterior to posterior; fused to the submentum. Mentum distinct from the submentum; mandible acetabulae margined. Eyes well developed with many anteriorly and laterally directed facets. Antennae inserted between the eyes and the anterior arms of the tentoria. Antennae 11-segmented, shaped as in Fig. 2A. Mandibles nearly symmetrical, shaped as in Figs. 3B and 3C. Maxillae with the galea longer than the lacinia; both of these are fairly long and with the lacinia having many setae; shaped as in Fig. 2E, palpi 4-segmented. Labium shaped as in Fig. 2D, palpi 3-segmented. Labrum shaped as in Fig. 3C.

Pronotum shape somewhat variable by species. The pronotum of the female in dried specimens is much flatter than that of the male; shaped as in Fig. 3A-D. Prosternum much shorter than the pronotum shaped as in Fig. 3A. Coxal cavities closed behind by very short and lightly sclerotized mesothoracic peritremes which are imbedded in membrane. Pronotum of male with the disk shagreened as in Fig. 6, whereas the pronotum of the female has the ground sculpture smooth and shiny as in Fig. 7. Meso- and metanotum shaped as in Fig. 3E. Meso- and metasternum shaped as in Fig. 3D; mesocoaxal acetabulae distinctly margined. Elytra without distinction, shaped as in Fig. 3B. Pro-, meso-, and metalegs shaped as in Fig. 4J, I and H respectively; tarsal formula 4-5-5.

Overall shape of abdomen as in Fig. 1. Abdominal segment I represented by the tergite fused to the metanotum, (Fig. 3E). Segment II represented by the tergite alone. Segments III-VI represented by the
tergite, 2 pairs of paratergites, and 1 sternite each. Dorsal rim of the abdomen is between the outer paratergites and the sternites. Segment VII represented by tergite, sternite, and 1 pair of paratergites. Segment VIII represented by the tergite and the sternite alone. Segment IX trivalved, shaped as in Fig. 5A and B; note that the male segment IX has extremely long apodemmes and a sternite which are lacking in the female. Segment VII with well-developed fringing setae, shaped as in Fig. 9. Segment VIII of male shaped as in Fig. 8; note that the sternite has a well developed V-shaped cut which is readily apparent in the figure. Male genitalia bulbous; shape variable by species. Lateral lobe of male genitalia shaped as in Fig. 4E. Spermatheca variable in shape by species.

KEY TO SPECIES

Pronotum with 3 black setae along each lateral margin; spermatheca as in Fig. 3F; median lobe of male genitalia as in Fig. 4G; pronotum length 0.65-0.70; elytra length, 0.55-0.60............ obtusa

Pronotum with 6 black setae along each lateral margin; spermatheca as in Fig. 5A; median lobe of male genitalia as in Fig. 4F; pronotum length, 0.51-0.57; elytra length, 0.45-0.51............ alperti

Goniusa obtusa (Le Conte)

Figs. 3F, 4C, D, and G

Goniusa obtusa Le Conte 1866: 373, Collection of Museum of Comparative Zoology, Pennsylvania.

Goniusa obtusa, Casey 1906: 348, transferred species; Fenyes 1920: 235, pl. 5, Fig. 2, stated "almost surely" myrmecophilous.

Color reddish brown throughout; head somewhat darker than the rest of the body. Dorsal surface of the head, pronotum, and elytra shiny and feebly punctate except for the pronotal disk of the male which is shagreened and with shorter setae. Rest of the body clothed with an even visiture of fine yellow setae; the quantity and distribution of these setae can be seen in Fig. 4C. Pronotum with 3 black setae along each lateral margin; their position is best seen on the left side of Fig. 4C. Abdomen with many evenly distributed recumbent yellow setae, with an apical row of erect setae which vary in number and an antepapal erect seta on each side of each tergite. Tergites VII and VIII with many more erect setae anterior to the apical rows. Sternites with many recumbent and erect setae. Median lobe of male genitalia shaped as in Fig. 4G. Spermatheca shaped as in Fig. 3F.

Measurements: Pronotum length, 0.65-0.70; elytra length, 0.55-0.60. Number measured, 12.

Material examined: Type, female No. 6258, no further data. Massachusetts: 14, 4.5 mi W. Ashby, Middlesex Co., 18.IV.1970,
North American Goniusa

Goniusa alperti n. sp.
Figs. 1, 2, 3A-E, 4A, B, E, F, H-J, 5-10

Color reddish brown throughout; head somewhat darker than the rest of the body. Dorsal surface of the head, pronotum, and elytra shiny and feebly punctate except for the pronotal disk of the male which is shagreened and with shorter setae. Rest of the body clothed with an even vestiture of fine yellow setae, the quantity and distribution of these setae can be seen in Fig. 4B. Pronotum with 6 black setae along each lateral margin; their position is best seen in Fig. 4B. Abdomen with many recumbent yellow setae but these are far less frequent than in G. obtusa. Each tergite with an apical row of erect black setae which vary in number and with 1 antepatral erect seta near each lateral edge. Tergites VII and VIII with many more erect antepatral setae. Stermites with an apical row of erect black setae; posterior sternite with increasing numbers of antepatral rows. Median lobe of male genitalia shaped as in Fig. 4F. Spermatheca shaped as in Fig. 5A.

Measurements: Pronotum length, 0.51-0.57, elytra length, 0.47-0.51. Number measured, 12.


Fig. 5. Goniussa alperti. A, Female abdominal segment IX, and spermatheca; B, Male abdominal segment IX.


Fig. 6. Goniussa alperti. Pronotum of male. Note the shagreened area in the center of the pronotum and that the setae are shorter than at the edges. X90.

Fig. 7. Goniussa alperti. Pronotum of female. Note that the center of the disk is not shagreened and that the fine setae are uniform in length. X91.
LARVA OF G. ALPERTI

A figure of the larva is given in Fig. 10. The setae have been inked in on half of the photograph. The larva has the usual aleocharine features which include the median gland on tergite X, the three segmented antennae with a bifurcation called a sensory appendage of the 2nd segment. Ocelli arranged as in Fig. 10. Labrum, mandibles, and maxillae shaped as in Fig. 10. Urogomphi shaped as in Fig. 10. When more species are known, probably only the chaetotaxy will separate species. Two instars, both larger than egg size, were present among the specimens.

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collections under their supervision. I thank E. O. Wilson and D. R. Smith for the host ant identifications credited to them in the text. The initials given in parentheses above indicate the deposition of specimens cited in the text. Specimens in the Kistner collection are indicated (DK).

Olga Nicolayeff, Harvey Moyer, William Wade, and Daniela Griffin, all of California State University, Chico, provided technical assistance.

Fig. 10. Larva of Goniusa alperti: A, Right mandible; B, Left mandible; C, Antenna; D, Labium; E, Maxilla; F, Terminal segments of the abdomen; G, Entire larva, dorsal, setae are inked in on the right half.

REFERENCES


FEATURE PHOTOGRAPH

Mite (Phalodiscus sp.) clinging to tibia of Eclipta hamatum (Fabricius). Note how the mite clings by grasping the tibial setae. The sculpture and setae pattern of the mite is very similar to the sculpture of the tibia. Thus when the ant grooms her leg a similar sensory input would be achieved. Since the mite would then be groomed at that time, it would move the setae it was grasping in a manner similar to actual grooming movements of the ant thus permitting a grooming sensory input via the setae. SEM photo (X40) of an ant-mite preparation made in Tikal, Guatemala, January 1974. Photo and prep made by D.H. Kistner.