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Studies of the Subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Part I: A Revision of the Neotropical Genus *Xystosomus* Schaum

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ABSTRACT

Erwin, Terry L. Studies of the Subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Part I: A Revision of the Neotropical Genus *Xystosomus* Schaum. *Smithsonian Contributions to Zoology,* number 140, 39 pages, 72 figures, 1973.—The neotropical genus *Xystosomus* Schaum is revised. Twenty-two species are described as new; ten of thirteen previously described species are retained as valid, with the other three names being reduced to junior synonyms; and the species originally described as *Xystosomus insularis* is transferred to the genus *Tachymenis*. A key to the species is given for adults and pertinent characteristics are illustrated. All taxa are described or redescribed and partially illustrated. Six infrageneric evolutionary lines are discussed and the characteristic body forms of four lines are illustrated in habitus. Distribution for each species is listed by locality, and a map shows the range of each species group. Evolutionary considerations, natural history, and behavior are discussed where data are available.

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Studies of the Subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Part I: A Revision of the Neotropical Genus *Xystosomus* Schaum

Terry L. Erwin

Introduction

This is the first paper to be issued in a long series that will review all groups of the subtribe Tachyina. My ultimate goal is a faunal analysis of the world Tachyina, hence the purpose of each part in the series is to present various data (taxonomy, natural history, behavior, distribution, etc.) for each genus or a generic group (if small numbers of species are included in each genus) in a way that can be used easily in the subsequent overall analysis. The present part deals with a moderate-sized neotropical genus of mostly arboreal or subarboreal Tachyina.

The species of the genus *Xystosomus* have never been collectively reviewed. The literature consists of brief and mainly inconclusive species descriptions by Bates (11 species in five papers, 1871–1884) and Schaum (2 species in two papers, 1860, 1863). Other than in catalogs, I have seen no mention of the genus in the literature since the time that Bates and Schaum wrote, except for Darlington's (1939: 86) *Xystosomus insularis,* which is not a *Xystosomus* but a *Tachymenis* [*Tachymenis insularis* (Darlington), new combination] (Figure 2). Members of *T. insularis* have converged in body form with members of *Xystosomus* so much that only a comprehensive study of all known species of *Xystosomus* and other primitive Tachyina has unveiled its true nature and its probable role in the evolution of the Tachyina; this will be discussed further in a forthcoming generic reclassification.

The immature stages of *Xystosomus* are unknown, but notes on habits and habitats of the adults were recorded by Bates (1871b) and by Nevermann on his excellent specimen labels. Also, my wife and I made observations of living beetles in the field and laboratory that supplemented observations made previously in Mexico by George Ball and me. This information is given under each pertinent species description and then summarized and analyzed under the section on natural history at the end of the paper.

Until now, the systematic concept of this genus was that of a heterogeneous assemblage of tachyine-like beetles with a great amount of diversity, but there was no clear evidence presented that they were related among themselves or to any other group (s) of the Bembidiini. With the benefit of a background study on all the rest of the world Tachyina, I conclude that the *Xystosomus* species form four general trends of evolutionary develop-

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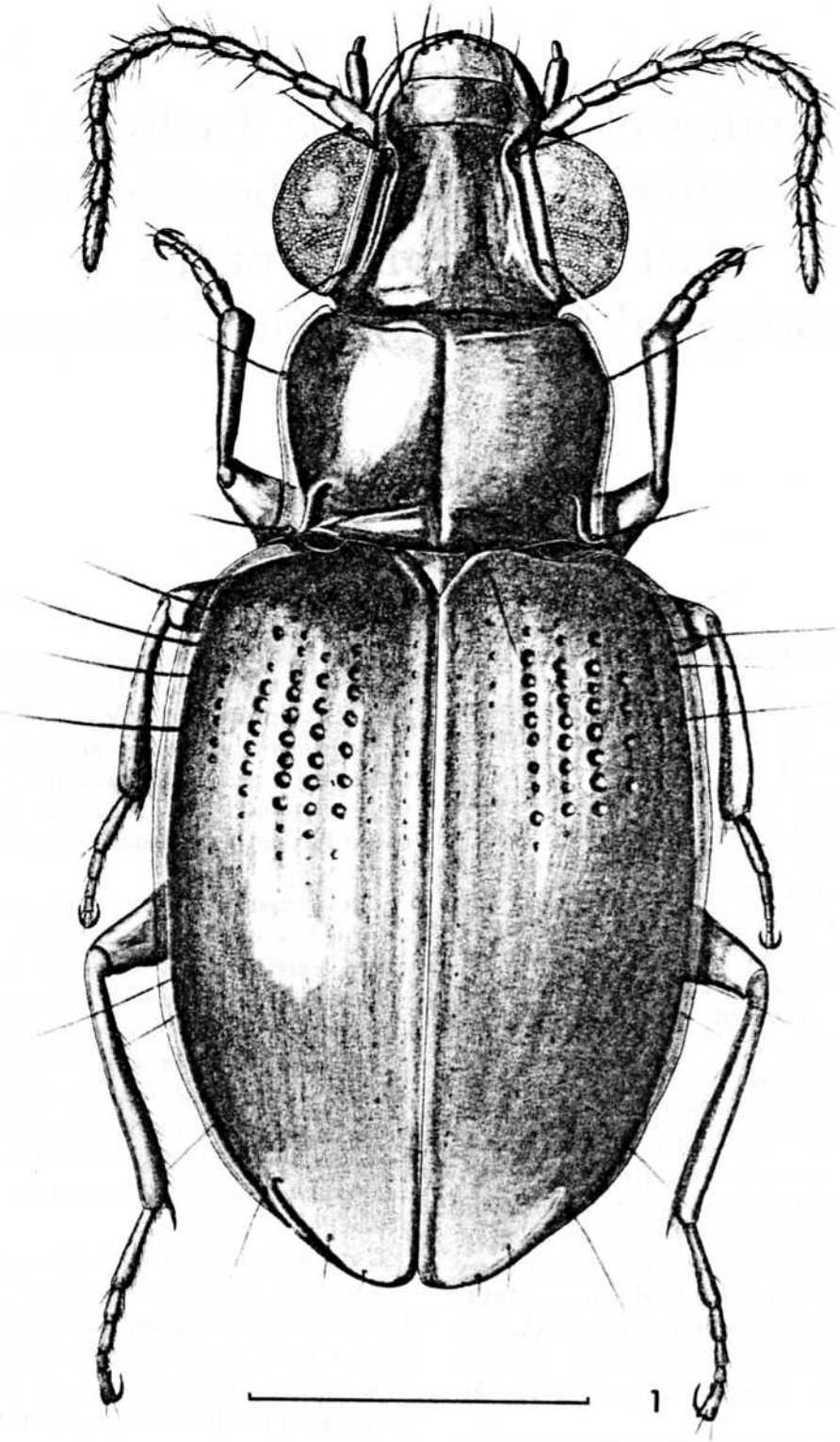

FIGURE 1.—Habitus of *Xystosomus elaphrinus*, male, from Kartabo Point, British Guiana.

ment (the *gruti* group trend, the *elaphrinus* group trend, the *microtretus* group trend, and the *parainsularis-inflatus-laevis* group trend). One of these trends, the latter, has been duplicated in members of at least one associated primitive genus, *Tachymenis* (wingless-globose body form). I have treated this latter complex as three species groups because I think they are morphologically convergent, all arising from different parts of the *gruti* group. I also conclude that the overall classification of *Xystosomus* and of some other genera of Tachyina is best handled in species groups rather than by erecting countless subgenera to reflect these evolutionary trends and other trends in the Tachyina. Lastly, I conclude that *Xystosomus* members form a link between *Bembidion* and its allies (Bembidiina) and Tachyina but that they are true Tachyina by virtue of numbers and kinds of apomorphic trends. The evidence for the above is presented below along with descriptions of new taxa and redescriptions of previously described taxa.

Phylogeny and zoogeography of *Xystosomus* species are discussed in only a general way here, but they will be elaborated upon in another part of the Tachyina study where all generic components can be discussed together.

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METHODS.—This study is the result of the examination of more than 300 specimens of *Xystosomus* species and thousands of specimens of other Tachyina. Unfortunately, members of *Xystosomus* species are difficult to collect, and even though many major Neotropical collections were examined, very few (compared with other Tachyina groups) individuals were found. Hopefully, the informa-

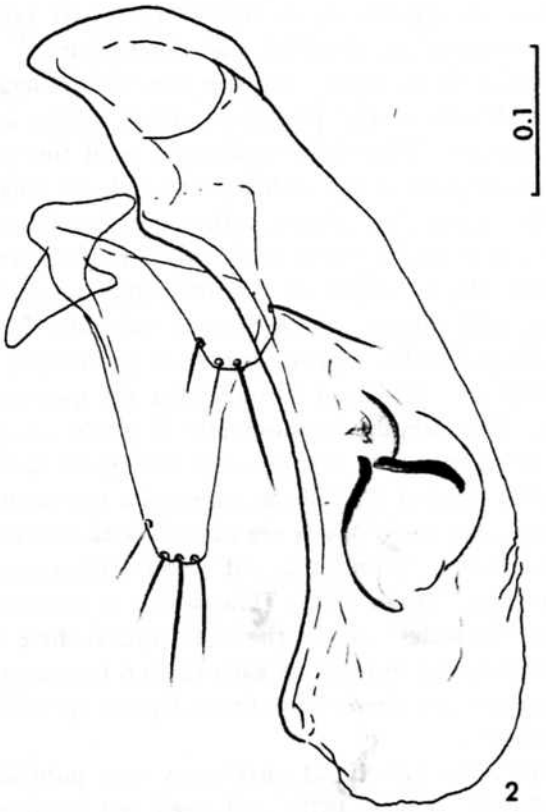

FIGURE 2.—Male genitalia, left lateral aspect of *Tachymenis insularis* (Darlington) from Loma Vieja, Dominican Republic.

tion here will stimulate collectors and natural historians to look in the proper habitats for these interesting beetles.

Methods of dissection, illustrations, and procedure (except as noted below) are the same as those used by me in the past (Erwin 1970, 1972). The short line accompanying the illustrations equals 1.0 mm unless otherwise noted. In the 1970 paper, I outlined my criteria for recognizing species, subspecies, and supraspecific taxa and they need not be repeated here.

I changed some parts of the format of species descriptions here to make them shorter and easier to use. For example, all data concerning aspects of natural history are given under that single heading rather than dividing them into separate statements, and a summary of all natural history data is given near the end of the paper. Also, variation is discussed separately from the description only where sufficient material was available from enough localities. I have seen all type-specimens mentioned. Finally, the species are numbered for easier reference between key, checklist, and descriptions.

Measurements used here are the width/length ratio (W/L) of the pronotum, total width, and total length. The width measurement of the pronotum is taken at the widest point and the length is taken along the midline, both of which are made with the pronotal plane level. W/L is given as $\bar{x}$ (mean ratio value for all specimens measured), together with the total range of ratio variation. Total length and width measurements are given only as a range of upper and lower limits on specimens seen. The length measurement is made as one measurement from the apex of the elytra to the anterior edge of the labrum unless the specimen is so bent that these points are out of focus, in which case the head, pronotum, and elytra are measured separately (Erwin 1970). The width is measured across the widest part of the elytra unless these are separated, and in this case each elytron is measured separately and the two resultant figures are added together.

The code for elytral chaetotaxy was published previously (Erwin 1972) and need not be duplicated here. The code is based on a study of all groups of known Tachyina, but it has an "open-ended" numbering system in case new setal positions are discovered in poorly represented groups (e.g., Australian Region groups).

The abbreviations given in the acknowledgments indicate the museums or personal collections from which studied specimens were borrowed. The abbreviation used for the National Museum of Natural History (formerly United States National Museum) is USNM. Locality records are listed in the following order: Country, state and/or province, exact locality, and abbreviation of depository.

Checklist of *Xystosomus* species

The *gruti* group
1. *X. gruti* Bates (1871a:248)
2. *X. ampliatus* Bates (1884:290)
3. *X. nigripalpis*, new species
4. *X. strigosus* Bates (1871a:248)
5. *X. iris*, new species
6. *X. sculpticollis* Bates (1871b:266)
7. *X. negrei*, new species
8. *X. aetholius*, new species
9. *X. anterocostis*, new species
10. *X. sublaevis* Bates (1882:146)
11. *X. sulcicostis* Bates (1882:146)
12. *X. apicisulcatus*, new species
13. *X. batesi*, new species
14. *X. seriatus*, new species
15. *X. ovatulus* Bates (1871a:247)
16. *X. grossipunctatus*, new species

The *elaphrinus* group
17. *X. elaphrinus* Bates (1871b:267)
18. *X. notiophiloides*, new species
19. *X. spangleri*, new species

The *microtretus* group
20. *X. microtretus*, new species
21. *X. polytretus*, new species

The *parainsularis* group
22. *X. parainsularis*, new species
23. *X. bisulcifrons*, new species

The *inflatus* group
24. *X. inflatus* (Schaum) (1859:202)
25. *X. convexus*, new species

The *laevis* group
26. *X. laevis*, new species
27. *X. paralaevis*, new species
28. *X. laevimicans*, new species
29. *X. impressifrons*, new species
30. *X. niger*, new species
31. *X. tholus*, new species
32. *X. turgidus* (Schaum) (1863:89)

Genus *Xystosomus* Schaum

Xystosomus Schaum, 1863:89.

TYPE-SPECIES.—*Tachys inflatus* Schaum (1859: