A REMARKABLE EXAMPLE OF SEXUAL DIMORPHISM IN STRONGYLIUM (COLEOPTERA: TENEBRIONIDAE)

C. A. TRIPLEHORN

Department of Entomology, The Ohio State University, 1735 Neil Avenue, Columbus, Ohio 43210

ABSTRACT

An unusual modification of the protibia in males of a species of Strongylium (probably S. decoratum Maklin) from Panama is described and illustrated. A Strongylium species from Brazil with almost identical coloration and having a similar protibial modification in the male is described. Such modifications have never been described for any of the members of the enormous genus Strongylium.

The genus Strongylium Kirby is worldwide in distribution and is the largest genus in the Family Tenebrionidae with over 700 described species (Gebien 1948:519). There are approximately 320 species in the New World tropics and, judging from my numerous, frequently unsuccessful attempts at identification, many more yet to be described.

The bright colors and unusual patterns of many of the species have attracted collectors who ordinarily pass over the more prosaic and drab species which constitute most of the family. The result is that most collections contain at least a few specimens of the colorful species of Strongylium.

Although I have never undertaken a serious study of this genus, except for a review of the depauperate fauna of America north of Mexico, consisting of 10 species (Triplehorn and Spilman 1973), I have examined an enormous number of specimens over the past 30 years, in the major museums in North America, London, and Paris.

Most sexual dimorphism I have observed in Strongylium has been rather subtle. In many species, the males are smaller and more slender, frequently have longer antennae, and sometimes have abdominal sternae with a depression (flat in females); in some species the eyes are widely separated in the female and practically contiguous in the male. There are also differences in the density and length of setae on either the protibia or profemur and some males have patches of short, dense setae on the metasternum that are absent in females. Suffice it to say that most sexual dimorphism thus far observed in Strongylium has not been spectacular.

I was thus understandably totally unprepared for the remarkable sexual modification in a series of three specimens, which I tentatively determined as Strongylium decoratum Maklin, sent to me in a miscellaneous lot of Tenebrionidae for identification by James E. Wappes. Two are females and the other, the subject of this note, a male. They were collected in the Panama Canal Zone, Pena Road Area, V-18-1981 by J. E. Wappes.

The identification was made using the key, description and illustration of Champion (1888:363, tab. XV, fig. 18). The species was described by Maklin (1864:257) from Costa Rica and later reported by him (1867:365) from Bolivia. Champion reported only a single female from Chiriqui, Panama, which he
stated differs from Mäklin's description of *S. decoratum* enough that he considered it "doubtless a variety of that insect." There is no doubt that the specimen reported by Champion from Chiriqui and the ones from the Canal Zone are the same species.

The Canal Zone specimens are slightly larger than the single female from Chiriqui (length given as 14 mm). The male is 16.8 mm long, 4.5 mm wide. The females are 14.5 × 4.1 mm and 16.8 × 4.9 mm. The coloration of all these specimens (both male and female) is identical: head, prothorax and scutellum bright metallic green; elytra with approximately basal ½ yellowish, the apical ⅜ metallic bluish-green with a band of the apical color alternating with a band of the basal color occupying the middle portion. The antennae have the basal 4 and apical 3 articles reddish-yellow, with articles 5–8 blackish; the prothoracic leg is reddish-yellow except for the tarsus which is black; meso- and metathoracic legs are colored alike with a little more than the basal half of the femora metallic bluish-green, the remainder of the femora and the tibiae are reddish-yellow and the tarsi are black; the entire ventral surface is bright metallic bluish-green; the lateral margins of the pronotum have no trace of a marginal bead separating pronotum from hypomeron.

The female protibia is unmodified but that of the male (Fig. 1) resembles a miniature, unhinged lobster claw and the deep cleft is lined with long, stiff, golden setae, somewhat reminiscent of the antenna cleaner on the basal protarsomere of the honey bee.

In addition to the remarkable protibial modification of the male of *S. decoratum*, the profemur of the male is bent, conforming to the modified tibia, and the anterior (inner) face has a loosely arranged row of long, straight, fine golden setae. The row of setae continues onto the trochanter where individual setae are stouter, stiffer, denser and recurved at their tips. The female lacks these setae and the profemur is not bent.

A single additional male specimen of the same species, identical to the one collected by Wappes was recently sent by Dr. L. S. Kimsey (University of
California, Davis). This specimen was collected on Barro Colorado Island, Canal Zone, Panama, V1-20-81, by R. B. and L. S. Kimsey and measures 17 mm x 4.6 mm.

Complicating the apparently straightforward sexually dimorphic character described above is a series of 4 specimens (1 male; 3 females) in the collection of Rolf L. Aalbu. These are all labelled: Brasil:Mato Grosso, Sinop (12°32'S, 55°37'W), X-1974, M. Alvarenga.

The coloration of the head, pronotum, scutellum and elytra of the 4 Brazilian specimens is identical to that of the Panamanian ones. Two of the females have the basal half of the meso- and metafemur metallic green and the outer half reddish (as in those from Panama), but the antennal segments are all uniformly reddish. The male and one of the females have the entire meso- and metafemora metallic green and the antennae reddish except for articles 5–7, which are blackish (one less dark segment than those from Panama).

Coloration can be misleading and I would most likely have ascribed the differences between specimens from Panama and from Brazil as intraspecific variation were it not for protibial and other modifications in the lone Brazilian male.

The Brazilian male has the protibia modification very similar to that of the Panamanian males except the “thumb” of the “lobster claw” is shorter and the lower part, from which the tarsus arises, is narrower, the inner face is fringed with long, closely spaced setae, which extend from the “thumb” almost to the base of the tibia and continue (although much shorter and less dense) to the apex, forming a V-shaped area surrounded by setae. The metatibia is flattened and expanded medially, the inner face is densely setose and the 5th abdominal sternum is broadly and deeply excavate with long, dense pale setae flanking the concavity. The metatibia and 5th abdominal sternum are unmodified in the Panamanian males.

It appears almost certain that two species are involved here, one of which should prove to be the S. decoratum described by Mäklin.

It seems incredible to me that such a unique sexual modification would appear in only one or two species of a genus the size of Strongylium. Surely there must be others. Even more intriguing is the possible function of the “lobster claw.” One immediately suspects a grooming device or perhaps a grasping modification used in courtship. Whatever its function, it is interesting to speculate on its survival value and how it evolved since the vast number of other species of Strongylium lack such a marvelous device.

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LITERATURE CITED


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