

THE COSMOPOLITES BANANA WEEVILS¹

(Coleoptera : Curculionidae : Rhynchophorinae)

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Abstract: A key to the 2 species of *Cosmopolites* and illustrations of adults and male and female genitalia are given. *Cosmopolites pruinosus* Heller is for the first time recorded from banana and from the Caroline Is., Western Pacific.

The rather large black weevil, *Cosmopolites sordidus* (Germar), is a pest of economic importance in many areas where bananas are grown, and it is known as the Banana Root Borer or the Banana Root Weevil. It is a Malaysian native, but it has been spread so widely by commerce in both the eastern and western hemispheres that it is now found in most countries where bananas are grown as a crop. The genus *Cosmopolites* contains a second described species (*pruinosus* Heller), but it is poorly known and so closely resembles its congener that it has been confused with the common banana borer in some collections. It is probable that other allied species remain to be discovered.

Through the kindness of the United States National Museum and Rose Ella Warner, Systematic Entomology Laboratory, U. S. Department of Agriculture, I have been able to study some specimens of *Cosmopolites pruinosus* Heller, two of which were identified by Heller. The name *pruinosus* was not published until 1934, but Heller named specimens *pruinosus* for C. F. Baker in 1922, and the name was used as a manuscript name by Faust much earlier. This species has puzzled me for a long time, and it remained unknown to me until recently. After studying the Heller specimens of *pruinosus* from the C. F. Baker collection in the National Museum, I was able to determine specimens of the species in a mixed lot of *Cosmopolites* collected in Micronesia. Because *Cosmopolites pruinosus* has been carried to and established in Micronesia, there is reason to believe that it may become more widely spread, and it may develop into another banana pest of economic importance.

I am now pleased to present details which should be found useful to those who have occasion to study *Cosmopolites* weevils. The two known species are rather closely similar in superficial appearance, and they may easily be confused, especially when they are dirty. The most easily observed external differences between the two species are the nature of the pruinosity on the dorsum and the character of the elytral striae and intervals. The following key describes these details which can be seen with a hand lens.

Genus *Cosmopolites* Chevrolat

Cosmopolites Chevrolat, 1885, Ann. Soc. Ent. Fr. (VI) 5:289 (Type-species: *Calandra sordidus* Germar, by monotypy and original designation)

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KEY TO THE SPECIES

1. Elytra with striae mostly well impressed and some intervals appearing elevated; most intervals on dorsum in part distinctly raised and polished (polished areas bare of pruinosity), especially basad, and the elytra (in clean specimens) distinctly vittate **sordidus** (Germar)
2. Elytral striae mostly feebly impressed and in some places not impressed between striae punctures; intervals almost everywhere flat, or nearly flat, none on dorsum raised and none polished and elytra and pronotum rather evenly pruinose overall **pruinus** Heller

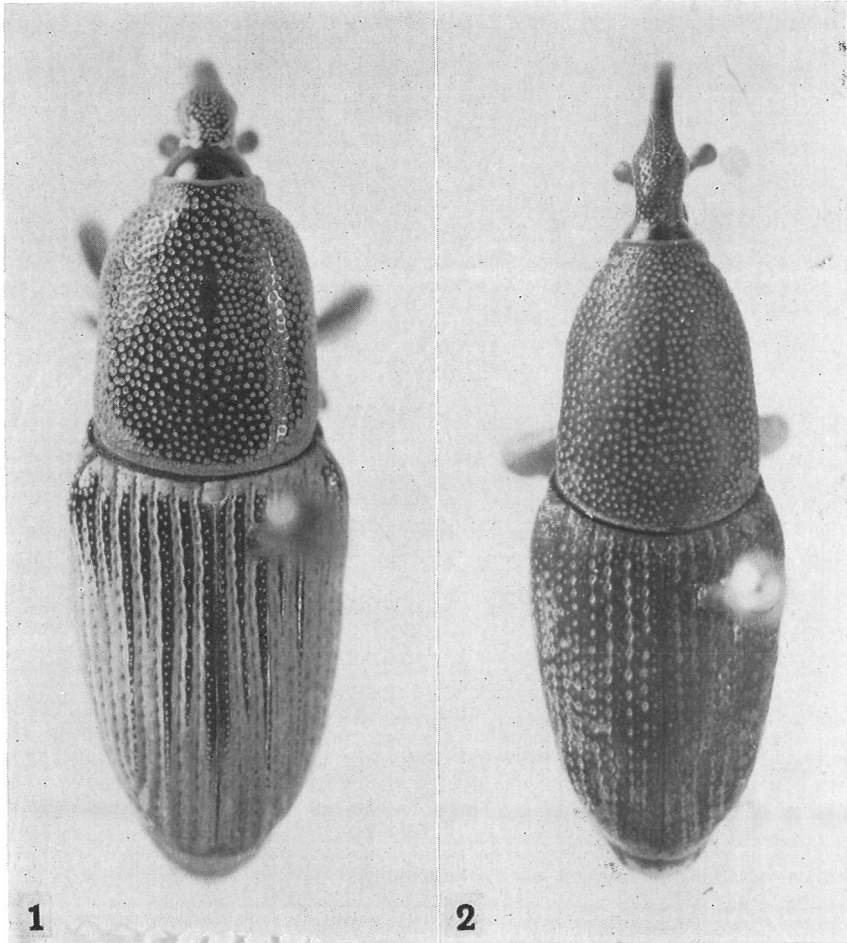


Fig. 1 & 2. 1, *Cosmopolites sordidus* (Germar), ♀, Florida, U. S. A. Total length: 11.6 mm. Note the highly polished disc of the pronotum and the partly bare, polished elytral intervals that give a vittate appearance to the elytra. 2, *Cosmopolites pruinus* Heller, ♀, Mindanao, Philippines, det. by Heller. Total length: 14.5 mm. (U. S. National Museum photographs.)

Cosmopolites pruinosus is a duller insect with the surfaces of the pronotum and elytra distinctly more mat than those of *sordidus*, and the elytra are not vittate. The illustrations display differences in the shapes of the pronota. The disc of the pronotum of *sordidus* is bare of pruinosity and conspicuously shiny in contrast to the dull, pruinose pronotum of *pruinosus*. There are numerous differences in the genitalia, and these features can be demonstrated best by the use of illustrations. The reader is referred to the accompanying figures where various details are delineated.

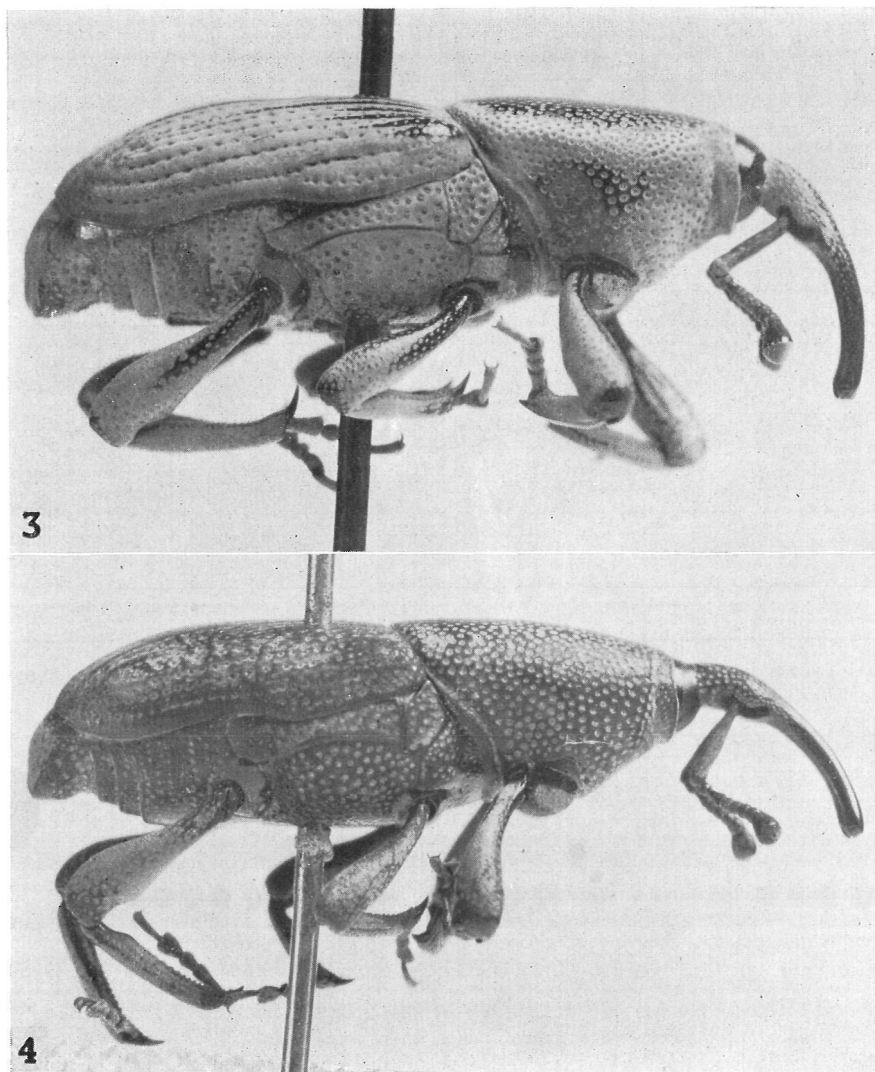


Fig. 3 & 4. 3, Lateral view of ♀ of *Cosmopolites sordidus* (Germar) in fig. 1. 4, Lateral view of ♀ of *Cosmopolites pruinosus* Heller in fig. 1. (U.S. National Museum photographs.)

Cosmopolites pruinus Heller Fig. 2, 4, 5-9, 16-20.

Cosmopolites pruinus Heller, 1934, Philip. J. Sci. **54** (2): 303.

DISTRIBUTION: Borneo (Mt Kinabalu); Philippines (Luzon, Mindanao); Caroline Is. (Ponape, Kusaie).

Nothing appears to have been known concerning the biology of this weevil, but I have examined specimens taken from banana stools in Micronesia. Heretofore it has been recorded only from Borneo and the Philippines, but I have seen specimens from Ponape and Kusaie in the Caroline Is. Additional details will be published in a forthcoming paper on the Rhynchophorinae of Micronesia.

Cosmopolites sordidus (Germar) Fig. 1, 3, 10-15, 21-25.

Calandra sordidus Germar, 1824, Insectorum Species Novae Aut Minus Cognitae..... p. 299.

Cosmopolites sordidus: Chevrolat, 1885, Ann. Soc. Ent. Fr. (VI) **5**: 289.

For synonymy, bibliographic and other details, see Zimmerman, 1968, Pacif. Ins. **10** (1): 47-77.

DISTRIBUTION: Widely spread over much of the the Oriental and Indo-Pacific area and in various parts of Africa, Madagascar, various islands in the Indian and Atlantic Oceans,

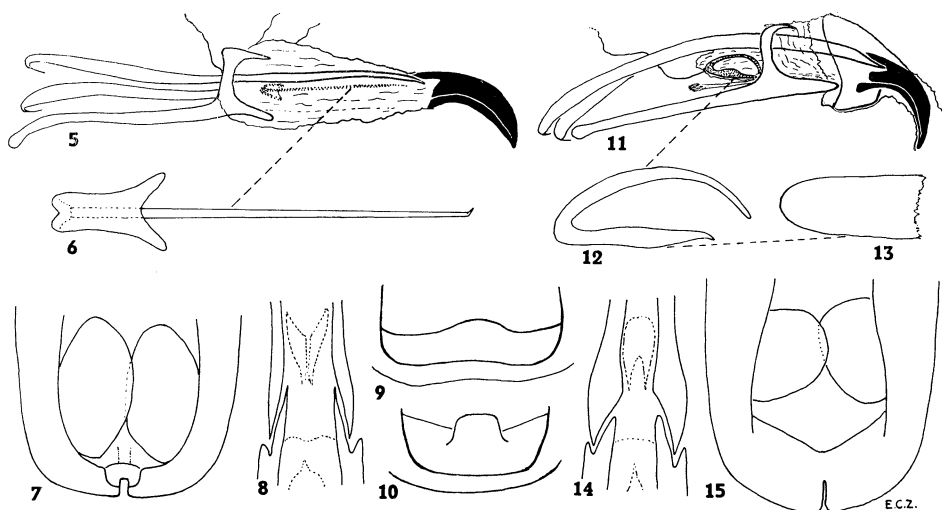


Fig. 5-15. 5-9, Details of a ♂ of *Cosmopolites pruinus* Heller from Mt Kinabalu, Borneo: 5, lateral view of aedeagus and associated parts with 2nd connecting membrane removed and aedeagus pulled caudad; 6, ventral view of armature of endophallus; 7, dorso-caudal view of apex of aedeagus; 8, dorsal view of junction of aedeagal apodemes and base of aedeagus (the aedeagus is at the bottom part of the drawing); 9, caudal view of the dorsally infolded hind margin of caudal abdominal sternite. 10-15, Details of a ♂ of *Cosmopolites sordidus* (Germar) from Tahiti: 10, caudal view of the dorsally infolded hind margin of caudal abdominal sternite; 11, lateral view of aedeagus and associated parts with 2nd connecting membrane intact and aedeagus retracted; 12, lateral view of armature of endophallus; 13, ventral view of ventral part of the same; 14, dorsal view of junction between aedeagus and aedeagal apodemes (the aedeagus is at the bottom of the figure); 15, dorso-caudal view of the apex of aedeagus.

North, Central and South America and the West Indies where bananas are grown.

It is noteworthy that in male *Cosmopolites* the so-called "spiculum gastrale" (9th sternite) is aborted. The posterior part of the "second connecting membrane" (Sharp & Muir, 1912, *Trans. Ent. Soc. Lond.*, p.482) is distinctly, although thinly sclerotized (fig. 11), and the right side of this thickening in part evidently represents the fused remnant of the 9th sternite. The aedeagal apodemes are distinctly articulated and not fused to the aedeagus, as demonstrated in fig. 5, 8, 11 and 14. There is a pair of pale, thinly sclerotized apophyses that lie dorsad of the apophysis of the tegmen (1 is shown below the armature of the endophallus or internal sac in fig. 11). The endophallic armatures are conspicuously different in the 2 species (fig. 6, 12). When the dorsal infolded part of the 5th externally visible abdominal sternite is exposed to view in caudal aspect, one can immediately see that the mesal surface is raised in a broad, low, discal mound in *pruinus*, but *sordidus* has a very different, strongly defined, elevated, flange-like medial process, as illustrated in fig. 9 and 10. The apices of the aedeagi also display easily seen distinctive features (fig. 7, 15).

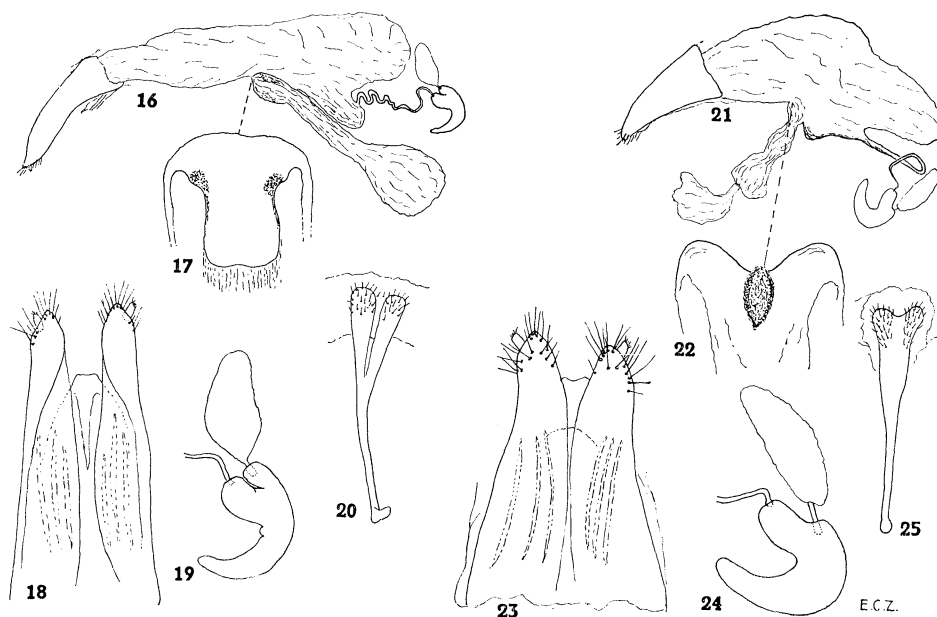


Fig. 16-25. 16-20, Details of the genitalia of a ♀ of *Cosmopolites pruinus* Heller from Surigao, Mindanao, Philippines: 16, lateral view of genitalia; 17, ventral sketch of sclerotization at junction of common oviduct and bursa copulatrix; 18, ovipositor; 19, spermatheca; 20, 8th sternite. 21-25, Details of genitalia of a ♀ of *Cosmopolites sordidus* (Germar) from Tahiti: 21, lateral view of genitalia; 22, ventral sketch of sclerotization at junction of common oviduct and bursa copulatrix; 23, ovipositor; 24, spermatheca; 25, 8th sternite.

The female genitalia of the 2 species are diagrammed in fig. 16 to 25. Attention is called particularly to the differences in the spermathecae, the sclerotization of the 8th sternites and the sclerotizations of the ventral side of the junction between the common oviduct and the bursa copulatrix.