

Metamasius hemipterus (Linnaeus) recently established in Florida

(COLEOPTERA: CURCULIONIDAE)¹

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INTRODUCTION: Metamasius hemipterus (Linnaeus), a pest of sugarcane, bananas, and other tropical plants, was collected by R. M. Baranowski on 22 October 1984 at Homestead, Florida, in cassava roots. This constitutes the first established infestation of this species in the continental U.S.

HISTORY: Two previous finds of this weevil in Florida were interceptions and apparently did not result in establishment: 1) one adult (dead and covered with mold) was found at Miami, Florida, 19 March 1973, G. H. Gwin, in a Cuban store; 2) one adult was collected at Apopka, Florida, 14 May 1979, R. M. Remington, on candelabra cactus (Euphorbia trigona Haworth) shipped from the Dominican Republic. Surveys, conducted by DPI inspectors after these finds, were entirely negative. However, these finds indicated the potential for possible establishment.

The Homestead infestation was discovered in a single cassava plant brought to the Agricultural Research and Education Center (AREC) for demonstration and then left next to a royal palm tree for several weeks. The plant was locally grown, but it was not possible to determine whether the weevils were present when the plant was brought to the station or after it was there for some time.

Subsequent surveys were conducted in November, 1984 and included: cassava roots as bait placed over several square miles; cassava grown on the station; native coontie (Zamia pumila Linnaeus) tubers; banana plantations; native bromeliads; and nursery plants imported from the Dominican Republic (including an extensive dumping area).

All surveys were negative and no weevils were found except in the original cassava roots. These were destroyed and the surrounding area was treated with carbofuran. A commercial pineapple plantation in Highlands County was surveyed with negative results.

DESCRIPTION: (Fig. 1-2) This weevil is easily distinguished from other Florida species by the color (red to yellow and black) and size (9-14 mm long). Similar species here include the banana root borer (Cosmopolites sordidus Germar) and the yucca weevil (Scyphophorus acupunctatus Gyllenhal), but both are uniformly black. The only native species of Metamasius is mosieri Barber which lives in bromeliads. It is red and black, but there are 2 round spots on the elytra, and it is smaller (6-9 mm long).

The color pattern of M. hemipterus is variable and is responsible for taxonomic confusion. They range from the pattern shown (Fig. 1-2) to the elytral base being 1/2 to 1/3 red and the remainder mostly black; the pronotum and venter are black to red and black; the femora are red, red with black apices, or red with black bands or smudges.

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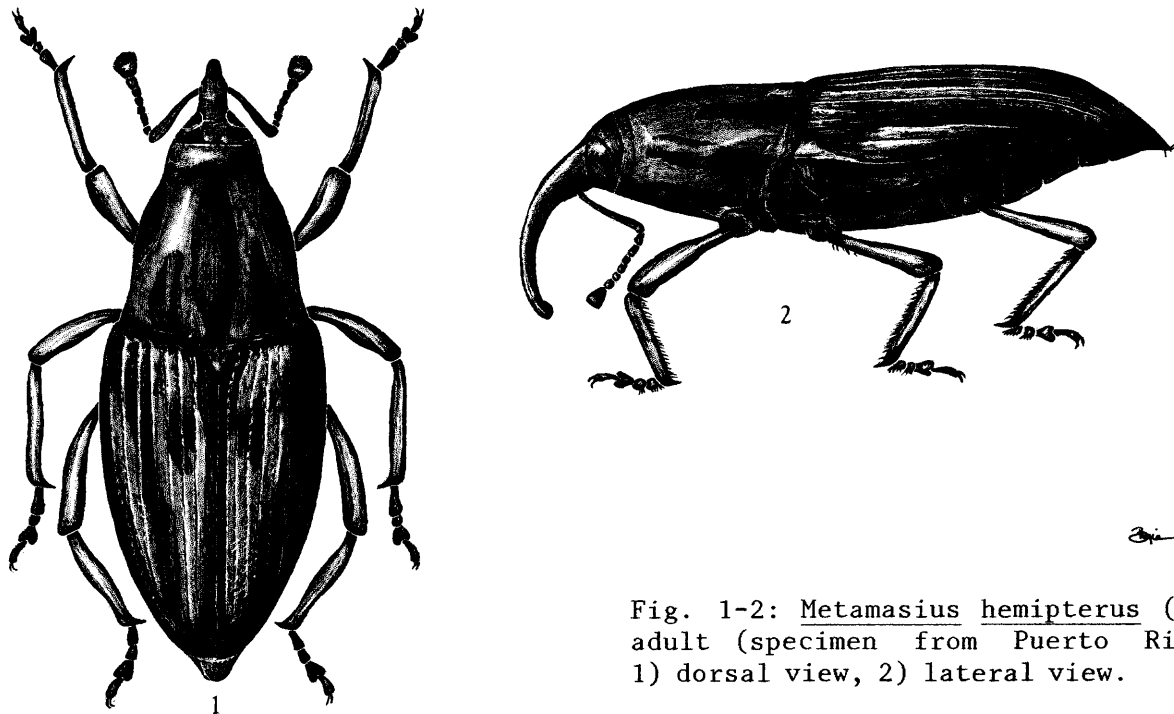


Fig. 1-2: Metamasius hemipterus (L.), adult (specimen from Puerto Rico); 1) dorsal view, 2) lateral view.

The larvae are typical legless weevil grubs and similar in most general respects to other members of the Rhynchophorinae. Morphological structures useful for distinguishing the species include the setal pattern on the head capsule, the epipharynx, the thoracic spiracle, and the mouthparts. These details are thoroughly treated by Anderson (1948) and Cotton (1924).

TAXONOMY: The variable color pattern and the wide distribution have both contributed to the several names used for these weevils. Further study is required to clarify the status of the "subspecies" hemipterus, sericeus (Olivier), and carbonarius (Chevrolat). Vaurie (1966) (and several other authors) mentioned that the 3 may not be species, and stated that "...I find no differences among the forms, except for the color pattern of the elytra, pronotum, or venter. It may be argued that these three forms are not even subspecies, but only color varieties..." She did maintain their subspecific status, which was followed in the recent checklist by O'Brien and Wibmer (1982). Although the names are in doubt, the pattern on the Homestead specimens matches closest those from the Greater Antilles known as M. h. sericeus.

HOST PLANTS: The 2 most common host plants mentioned in the literature are sugarcane and bananas. The weevils appear to be attracted to many plants that are rotting, broken, damaged, or weakened, as well as "...rotten fruits of mamey, papaya, mango, maga, guava, and pineapple" (Wolcott 1950). It has also been incriminated as damaging the following palms: coconut and royal palm sheaths; stumps of Iriartea ventricosa Martius and Jessenia bataua Burret in Brazil; and has been intercepted in Texas in stem of Chamaedorea sp. (Vaurie 1966).

There is some debate about the economic status of these weevils. They appear to prefer unhealthy plants, but even small injuries attract adults to oviposit. The

resultant adult feeding and subsequent larval infestations can cause serious damage, at least in sugarcane. Raigosa (1974) mentioned a trapping program in Colombia on 5,029 hectares which collected 1,304,521 *M. hemipterus*, and similar high populations were reported in Ecuador, Peru, and Bolivia.

Although they rarely attack a completely healthy plant (a rarity itself in nature), they rapidly invade sugarcane damaged by rats and insects. These plants might survive minor infestations, but heavy populations mentioned above would create serious economic damage. In Puerto Rico (Wolcott 1955), it is called the "rotten stalk borer of sugarcane" or "el gorgojo de la caña podrida". When damaged or rotting cane is left in the field, populations often build up to reinfest the next crop.

BIOLOGY: The general life history probably varies with locality, but the following is presumed typical (extracted from Lepesme and Paulian (1941), Marshall (1916), Vaurie (1966), and Wolcott (1950)). Eggs are laid in crevices (often insect and rat injury) in sugarcane or other hosts, hatching in about 4 days. The larvae molt several times during a 7 week period, feeding in the pith and sometimes boring into healthy tissue. A fibrous pupal case is constructed similar to that of the giant palm weevil (*Rhynchophorus cruentatus* Linnaeus). The pupal stage is spent in this cocoon for about 10 days. The adult may transform and remain in the chamber until weather conditions are suitable for emergence.

DISTRIBUTION: The distribution of 3 color forms extends from central Mexico (latitude 20 degrees N) south through Central America to northern Argentina and Uruguay; and throughout the West Indies from Cuba to Trinidad. It has been introduced into West Africa (Lepesme and Paulian, 1941), French Cameroons, and Gabon. The population discovered at Homestead, Florida is the only U.S. record, although it has been intercepted at ports of entry many times.

SURVEY & DETECTION: Because weevils are attracted to damaged and rotting plant materials, these should be checked regularly. Various traps, using fermenting sugarcane, would provide a convenient tool for any extensive surveys. Any suspicious weevils should be preserved in alcohol and sent to the senior author for identification.

CONTROL: Teran (1968) used sections of cane dipped in various insecticides for control of *M. bilobus* Hustache in Bolivia. Raigosa (1974) designed traps to collect adults, without the use of toxic chemicals, and these could possibly be effective in Florida if a large infestation is discovered. The traps consisted of cut bamboo sections filled with masticated and fermenting sugarcane, and placed on the ground near cane damage. The attracted, and apparently intoxicated, weevils were collected every 48 hours and destroyed by placing them in containers of gasoline.

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