

The pepper weevil (Anthonomus eugenii Cano)
in Florida¹ (COLEOPTERA: CURCULIONIDAE)
H. R. Burke² and R. E. Woodruff³

INTRODUCTION: Anthonomus eugenii Cano was described as new and noted as a pest of peppers in Mexico in 1894. Since then it has become considerably more widespread and is often a major pest in areas where peppers are grown.

DESCRIPTION: The weevil has the typical oval body (fig. 12) of the genus Anthonomus (as in the boll weevil). The size is variable, ranging from about 2 to 3.5 mm long. Color varies from dark mahogany to nearly black, depending mostly on the age of the adult. The apical two-thirds of the tibiae are yellowish orange. More complete descriptions can be found in the following: (adults) Elmore, Davis, and Campbell 1934; (larva) Ahmad and Burke, 1972; and (pupa) Burke, 1968. The larva (fig. 4) of the pepper weevil is very similar to larvae of other species of Anthonomus and can be separated from these only with difficulty. Pepper weevil larvae can be distinguished with microscope slide mounts made of the head capsule, mouthparts, and larval skin. The pupa (fig. 3) has an additional pair of distirostral setae which will serve to separate it from all other Anthonomus species with which it is likely to be confused, as well as long, straight pronotal setae and paired posterior processes of the ninth abdominal segment.

BIOLOGY: The most complete biological study was conducted by Elmore, Davis, and Campbell (1934) in California. Goff and Wilson (1937) studied the life history in Florida. The following summary of the biology is taken from these papers.

Eggs are usually deposited in flower buds or young fruit or occasionally in the fruit pedicel. Duration of the oviposition period and the total number of eggs deposited by each female are highly variable. In California each female deposited an average of 341 eggs over an average period of 72.2 days. Incubation period of eggs in June in Florida was 2.5-3 days. Up to 5 days were required for incubation of eggs in California; these differences may be due to different experimental conditions. Duration of the larval stage varies considerably. Goff and Wilson reported this period to be 6 to 9 days; Elmore, Davis, and Campbell stated that the average duration was 12.3 days. Pupation takes place in a cell constructed in the fruit by the mature larva. The pupal stage has a duration of 3 to 6 days. Adults begin feeding immediately after emergence from the pepper. They feed on buds, young fruit, and in periods of absence of these parts, on tender leaves. Several generations may occur each year. In Florida adults have been found every month except December and January.

HOSTS: Bell, Chile, and various other sweet peppers are attacked by the pepper weevil. Eggplants occasionally serve as hosts, especially when these are grown in close proximity to infested pepper fields. The only wild host on which A. eugenii was consistently found in California was the black nightshade, Solanum nigrum L., and it is apparently the original host.

DISTRIBUTION: It was first reported in the United States at Boerne, Texas in 1904 (Walker 1905). It subsequently appeared in California in 1923, Arizona in 1927, and Hawaii in 1933. The first Florida record was in 1935 (Goff and Wilson 1937). Records are also available for most of Mexico, from Guatemala and El Salvador, and from Louisiana, Georgia, New Mexico, New Jersey, and North Carolina.

1/ Contribution No. 492, Bureau of Entomology

2/ Professor, Dept. Entomology, Texas A & M Univ., College Station, Texas, 77843

3/ Taxonomic Entomologist, Div. Plant Ind., P.O. Box 1269, Gainesville, Florida, 32602

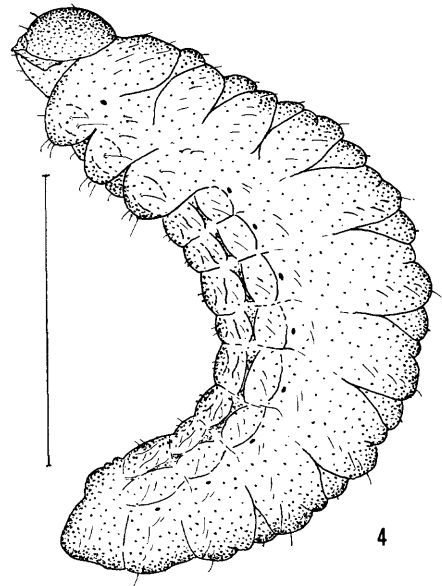
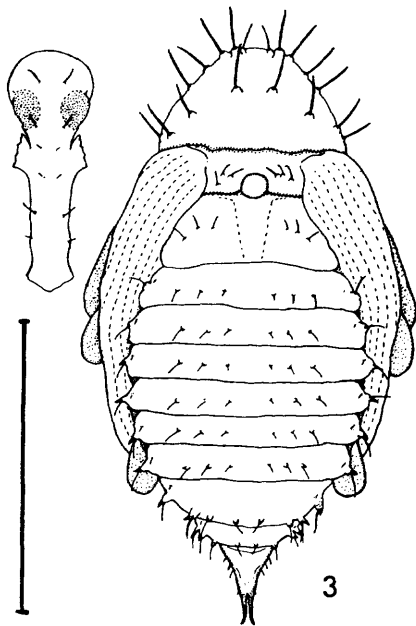
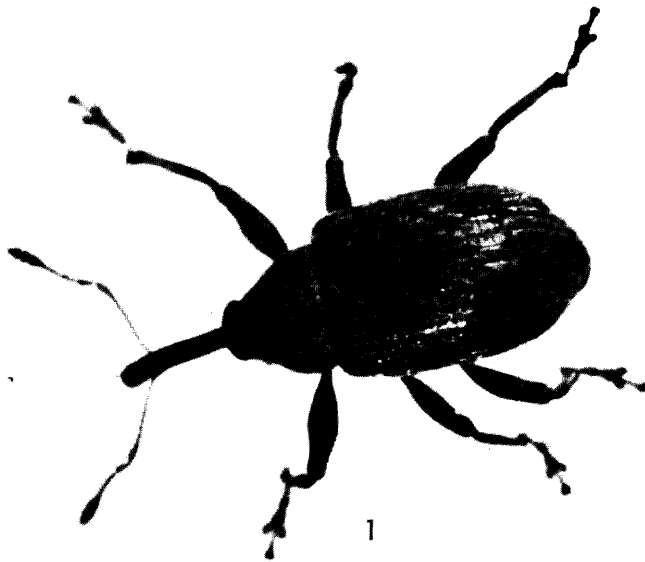




Fig. 7: Anthonomus eugenii adult, larva, and damage to interior parts of bell pepper.

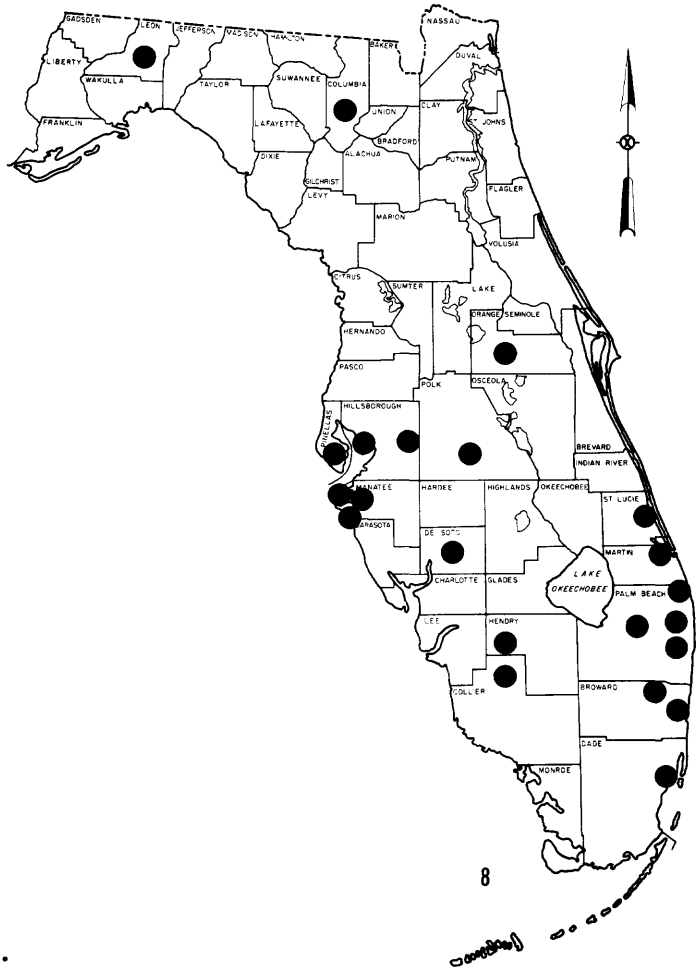


Fig. 8: Florida distribution of Anthonomus eugenii

In Florida, it has been found scattered in most of the peninsula (fig. 8). The original infestations were in the Bradenton - Sarasota area of Manatee Co. From 1945 to 1972 (when DDT and other hydrocarbons were extensively used) there are no Division of Plant Industry records. However, heavy infestations suddenly appeared in 1972 on the east coast in Palm Beach and Broward counties (Genung and Ozaki 1972). The known Florida distribution is as follows: Broward Co.: Fort Lauderdale; Collier Co.: Immokalee; Columbia Co.: Lake City; Dade Co.: Miami; Desoto Co.: Arcadia; Hendry Co.: Felda; Hillsborough Co.: Plant City, Ruskin, Tampa; Leon Co.: Tallahassee; Manatee Co.: Bradenton, Palmetto, Tallevast, Terra Ceia; Martin Co.: Stuart; Orange Co.: Oakland, Orlovista; Palm Beach Co.: Boynton Beach, Delray, Indian Trail Ranch, Pompano; Pinellas Co.: Pinellas Park, St. Petersburg; Polk Co.: Lake Wales.

TAXONOMY: Anthonomus eugenii was originally described by D. Cano y Alcacia in 1894 from specimens collected in Mexico. Champion described the species as Anthonomus aeneotinctus in 1903 but shortly thereafter recognized that this name was a synonym of A. eugenii (Champion 1907). It has since been known only by the name Anthonomus eugenii.

Fig. 1-4: Anthonomus eugenii Cano; 1) adult, dorsal view, approximately 25x, 2) adult, lateral view, approximately 25x, 3) pupa, dorsal view with head and rostrum shown in ventral view (after Burke 1968), line = 2mm, 4) larva, lateral view, line = 2mm. Bell pepper cut open, showing weevil and larva inside.

DAMAGE AND ECONOMIC IMPORTANCE: Primary damage is caused by development of larvae in flower buds and young fruit. Infested buds and fruit usually fall, but in case the latter do not dehisce, damage may still take place by larvae destroying a large portion of the seeds and cores. Some damage may be caused to the fruit by feeding punctures of the adults (fig. 5). Larvae may sometimes develop in the pod wall, but usually they feed in or on the seeds and in the seed receptacle (fig. 6-7).

SURVEY AND DETECTION: Typical pepper damage spots (fig. 5) can be seen readily. Larvae, pupae, and adults can be found by cutting open peppers and noting internal damage as in fig. 6-7. Surveying should be done in pepper plantings and on the wild black nightshade (Solanum nigrum).

CONTROL: The University of Florida, IFAS, recommends toxaphene (8E) at the rate of 3 pints/acre with no application 5 days before harvest or Kryocide (96% WP) at the rate of 25-50 lbs/acre with no pre-harvest restriction.

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