

Grape Leaf Skeletonizer

two parasites of the western skeletonizer colonized
in successful search for natural enemies of pest

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A small gregarious wasp—*Apanteles*, sp. "A"—and a tachinid fly—*Sturmia harrisinae* Coq.—which are natural enemies of the western grape leaf skeletonizer—*Harrisina brillians* B. & McD.—are firmly established in San Diego County.

Since its accidental introduction into California sometime prior to 1941, the western grape leaf skeletonizer, has been confined successfully to San Diego County through the joint efforts of state and county agricultural agencies.

Most growers in the infested areas are familiar with the black moths of the skeletonizer, the younger larvae feeding in soldier rows, and the colorful yellow last stage larvae with black and blue cross-stripes.

Sporadic Outbreaks

Prior to its arrival in California, the skeletonizer was known to occur from Utah and Colorado southward into central Sonora and Chihuahua, Mexico. The skeletonizer's history as a grape pest in this region has been characterized by sporadic outbreaks—sometimes on large commercial plantings but especially on backyard vines.

Sporadic outbreaks of a pest usually indicate that it is under partial control by natural enemies.

A search to find parasites attacking the skeletonizer in California failed. Therefore, the University of California initiated a program of biological control for the purpose of introducing natural enemies into the state.

Exploration was begun in 1950 in Ari-

zona, New Mexico, Sonora and Chihuahua. The following two years, exploration was continued in these states and extended to include eastern United States and most of the other states of Mexico where species related to the skeletonizer occur.

Natural Enemies Found

The explorations uncovered 22 species of parasites, two species of predators, and two diseases.

The actual or potential relationships of these organisms to the skeletonizer had to be analyzed to determine the beneficial species and especially to prevent the introduction of hyperparasites—parasites of useful parasites. After it was positively ascertained that the species involved was a primary parasite, its adaptability and effectiveness were investigated thoroughly.

In the course of the study of the complex of natural enemies: 15 species proved to be primary parasites, 10 of which were either native or adaptable to the skeletonizer; five species, while primary parasites of related insects, did not transfer to the skeletonizer; and, seven of the 22 species proved to be hyperparasites.

Although no parasites had been re-

lationship to the skeletonizer was established, four appear to be of incidental importance only. The other six species have been reared in considerable number and subjected to intensive study.

The established parasites—a wasp and the fly—are from Arizona where they attack the skeletonizer and they show promise in the areas of San Diego County where they were introduced.

Parasites of equal rank—if their field activity matches that of the laboratory—are two braconid wasps—*Pelecyctoma harrisinae* (Ashmead)—and—*Apanteles* sp. "B." Both of these wasps were reared from zygaenid genera other than *Harrisina*.

Apanteles sp. "B" like *Apanteles* sp. "A" is gregarious. It was found at Rio Blanco, Veracruz and Zitácuaro, Michoacan, Mexico. The other braconid wasp—*Pelecyctoma*—is widely distributed in eastern United States. It is solitary, has a very short life cycle and turns the host larvae into pinkish colored mummies.



Full grown skeletonizer larvae magnified about 2.5 times showing typical leaf damage caused by this stage.



Second stage grape leaf skeletonizer larvae magnified about 2.5 times.

corded previously, 12 species were reared from the skeletonizer in Arizona and Chihuahua, four of which proved to be secondaries. At least three of the total species found in the explorations were new to science.

Of the species for which a primary

Further natural enemies may be reared from the large collections of the skeletonizer made in 1952. The diseases of the skeletonizer, also, may prove to be a factor in reducing its density. While it is still too early to predict what the final outcome will be the biological control work has produced encouraging results.

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Grape leaf skeletonizer female moth magnified about 2.5 times.