

Mesquite Twig Girdler: A Possible Means of Mesquite Control¹

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Highlight

The mesquite twig girdler (*Oncideres rhodosticta* Bates) was found to inflict considerable damage to mesquite in Texas and may prove to be a valuable biological control agent for this noxious species. Preliminary observations in infested areas indicated that about 90 percent of the mesquite trees had been attacked by the girdler and that about 40 percent of all branches from 0.5 to 2.0 cm in diameter had been girdled.

Mesquite (*Prosopis glandulosa*) infests millions of acres of southwestern rangeland and is increasing in distribution and density. Since the use of traditional mechanical and chemical methods has

been unsuccessful in abating the spread of mesquite, other methods of control should be examined. Furthermore, public concern about environmental pollution has curtailed the use of some herbicides. The use of insects has possibilities in the control of mesquite and other noxious species. Biological control has proven highly successful on other noxious species of perennial plants, including Klamath weed (*Hypericum perforatum*) and pricklypear (*Opuntia* spp.) (Holloway, 1964). Biological control may be the most promising method of maintaining mesquite populations at low levels.

Many insects have been reported to damage mesquite (Huddleston and Ward, 1968; Swenson, 1969). Swenson (1969) reported that the

mesquite twig girdler (*Oncideres rhodosticta* Bates) inflicted an average damage of about 10 percent to mesquite trees during the autumn of 1968 on the Spinning Ranch in Garza County, Texas. The purpose of this study was to determine the life history and habits of the mesquite twig girdler and the extent of its damage in Texas.

Life History and Habits

The mesquite twig girdler (Fig. 1) is a long-horned beetle in the family Cerambycidae. The larvae are called round-headed borers. Most round-headed borers that attack mesquite bore into dead or dying wood; however, the mesquite twig girdler attacks living stems in order to provide a suitable habitat for the development of its immature stages. The female chews a ring through the bark and into the wood of stems of about 0.5 to 2.0 cm in diameter (Fig. 1). About 10 to 20 eggs are deposited beneath the bark in the stem beyond the girdle. The eggs are white, 3 to 4 mm long, and about 1 mm in diameter.

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FIG. 1. Adult mesquite twig girdler (*Oncideres rhodosticta* Bates).

The eggs hatch in about one to four weeks and produce pale yellow larvae which grow to about 2 cm in length. The larvae feed upon the dying wood up the stem from the girdle. The larvae pupate in late summer within the stems that have been fed upon by the larvae. Adults emerge in early autumn and feed on tender bark of young twigs. The adults mate and lay eggs before killing frosts occur, and the insect overwinters in the larval stage. Adults are about 1.5 to 2.0 cm in length. They are charcoal black in color with a transverse

gray band across the elytra. Each elytron is dotted with about 35 small patches of orange pubescence.

Observations of a Mesquite Twig Girdler Attack

During the autumn of 1969, mesquite in several localities in Texas was found to be damaged by the mesquite twig girdler. Damage by this insect was localized in several areas including Ward, Garza, and Hardeman counties. Girdling is usually restricted to branches 0.5 to 2.0 cm in diameter and always results in death to the portion of

the branch above the girdle. Mesquite girdler outbreaks are localized and infested areas vary from a few hundred to many thousands of acres. Preliminary rearing studies indicate that a high incidence of parasitic wasps (Hymenoptera) may hold mesquite girdler populations in check.

Estimates of damage by the mesquite twig girdler were made north of Pyote, in Ward County, which is in the Trans-Pecos region of Texas. Vegetation in the area is typical of arid mesquite-creosote associations. Soils in this area are Springer loamy fine sand or sandy loam and the topography is nearly level. The average annual precipitation is about 30 cm. Mesquite trees in this area are shrub-type and have a high percentage of small limbs that are preferred oviposition sites of the mesquite girdler.

About 90 percent of the mesquite trees had been attacked by the mesquite girdler, and about 40 percent of all limbs from 0.5 to 2.0 cm in diameter had been girdled. To show the degree of damage to mesquite, photographs were taken of trees with girdled branches intact, and later with all girdled branches removed (Fig. 2).

Discussion

An attack by the mesquite twig girdler will significantly reduce food reserves and total photosynthetic area of mesquite trees. Per-

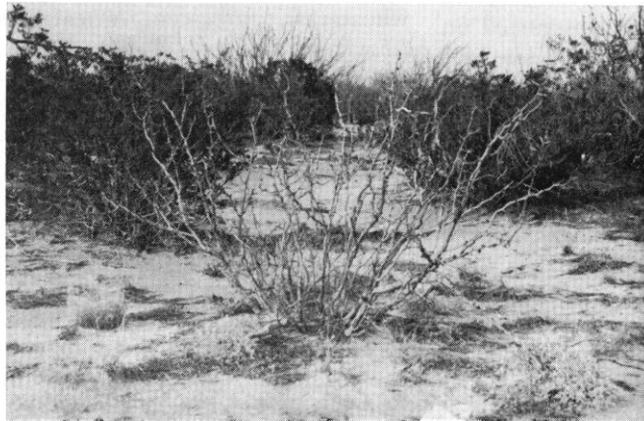


FIG. 2. Mesquite shrub attacked by twig girdler: (Left) Shrub with girdled branches intact; (Right) Shrub with girdled branches removed.

haps this native insect may be augmented by mass rearing, by transporting adults to new areas free of natural enemies, or by controlling parasites and predators, so that its potential to destroy mesquite may be more fully expressed. Future studies will be made of the insect's ecology to determine the possibility of its use as a biological control agent. Information will be obtained concerning alternate hosts, parasite and predator complexes,

diseases, and more specific details on the life cycle of the mesquite twig girdler. Perhaps the mesquite twig girdler, along with a complex of other native and introduced insects and diseases, may prove to be useful in a biological control program for mesquite in the southwestern United States.

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