

# BIOLOGICAL CONTROL OF *HOMALODISCA COAGULATA*

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**Reporting Period:** The results reported here are from work conducted from October 1, 2000 to October 31, 2002.

## INTRODUCTION

Although the glassy-winged sharpshooter (GWSS), *Homalodisca coagulata* (Say), occurs throughout the Lower Rio Grande Valley (LRGV) of Texas, it is never abundant and is usually difficult to locate. Although there is an extensive local citrus industry, eggs are only occasionally found in orchards. This insect appears to be most evident in urban areas. Earlier, informal surveys were conducted to collect egg parasitoids for shipment to California for release. Following extensive examination of various plant species, it was found that oviposition occurred during two fairly distinct generations, most abundantly on the native leguminous tree, Texas mountain laurel, *Sophora secundiflora* (Ortega) Lag. ex D.C. (Leguminosae) and varieties of crape myrtle, *Lagerstroemia indica* L. (Lythraceae). Once their favorite oviposition hosts were identified in 2000, a survey was begun to assess the impact of parasitism and predation of egg masses. Also, a qualitative survey of breeding hosts was made.

## OBJECTIVES

1. Determine the seasonal impact of egg parasitoids.
2. Determine breeding host plants in the Lower Rio Grande Valley of Texas.
3. Record biological and behavioral attributes of the most important parasitoids.

## RESULTS AND CONCLUSIONS

During two years of the survey, 993 and 1,153 egg masses were sampled during 2001 and 2002, respectively. Most were collected from *S. secundiflora* (March-May) and *L. indica* (late May through summer and fall) in Weslaco, TX. All parasitism was by wasps in the genus *Gonatocerus* (Mymaridae). In 2001, 86% of all egg masses on *S. secundiflora* were parasitized, 7% were predated, nymphs emerged from 12%, with 1% unknown (n = 125 masses). On *L. indica*, 85% were parasitized, 8% predated, with 11.4% nymphal emergence (n = 993 masses). During 2002, egg masses on *S. secundiflora* leaves showed 74% of the egg masses were parasitized, 4% incurred some predation and 27% indicated at least some nymphal emergence (n = 285 masses). For *L. indica*, 89% were parasitized, 8% predated, with 8% nymphal emergence (n = 691 masses). Most, but not all parasitized masses were completely parasitized. *Gonatocerus morrilli* Howard, *G. ashmeadi* Girault and *G. triguttatus* Girault were recovered. *G. triguttatus* was the most important species, with the other two species generally only appearing at the very beginning and very end of the seasons.

Mature adult GWSS were seldom seen on trees bearing eggs. Nymphs were observed on a very wide variety of plants, almost always on new growth. Spiders were often observed with captured nymphs and adults.

Observations were made on biological and behavioral attributes of *G. triguttatus*. At 27°C, development from egg to emergence was 12.8 d for males (n = 111); 13.3 d for females (n = 70). Males lived 6.6 d; females lived 6.0 d, when provided pure honey for food. Sibling mating took place on or in the vicinity of the egg mass within confinement of Petri dishes. Unparasitized GWSS eggs eclosed after 7.6 d.

Female parasitoids antennated the egg mass prior to ovipositing but did not oviposit in linear sequence. Nevertheless, they almost always parasitized the complete mass. However, the brochosomes significantly hindered oviposition time. Brochosome particles quickly accumulated on tarsi and antennae, and resisted preening attempts to remove them. Frequently, the parasitoid would leave the mass to spend several minutes preening.

Overall, egg parasitism of GWSS was high throughout the year in the LRGV of Texas, primarily by *G. triguttatus*, but *G. ashmeadi* and *G. morrilli* also occur, though in much lower numbers. A sample of over 50 egg masses in San Antonio, TX during the summer of 2002 yielded only *G. ashmeadi*. Triapitsyn and Phillips (2000) reported *G. triguttatus* from NE Mexico and Weslaco, TX, and although Triapitsyn et al. (1998) didn't report this species in collections from elsewhere, it was recently reported from another sharpshooter host in Apopka, FL (Triapitsyn et al. In press). Thus, the range of *G. triguttatus* may be confined to extremely southern areas only.

The purpose of the white powdery brochosomes that female GWSS place around the egg masses has been a matter of conjecture (Hix 2001, Rakitov 2002). While the material may serve multiple purposes, it clearly slows down the time *G.*

*triguttatus* is able to complete oviposition of GWSS egg masses. Nevertheless, the high discovery rate of egg masses by parasitoids clearly demonstrates that parasitoids possess efficient host location mechanisms and are important natural enemies of GWSS in south Texas.

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