Project Leaders:
Mark S. Hoddle and Serguei Triapitsyn
Department of Entomology
University of California
Riverside, CA 92521

Cooperators:
David J. W. Morgan
CDFP, PDCP
Mt. Rubidoux Field Station
Riverside, CA
Guillermo A. Logarzo
USDA, ARS
South American Biological Control Laboratory
Washington, D.C.

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ABSTRACT
This is a new project, which is expected to be completed within one year. Cultures of two species of mymarid (Hymenoptera: Mymaridae) egg parasitoids of proconiine sharpshooters (Hemiptera: Cicadellidae; Proconiini) of Argentina origin (Gonatocerus tuberculifemur (Ogloblin) and Gonatocerus “sp. 6”) as well as of two species of Gonatocerus of Mexico origin (G. morrilli (Howard) and G. new sp. near morrilli) are being maintained in a UC Riverside quarantine laboratory. Basic biological data are being collected on these species, which are candidate agents for “classical” biological control against the glassy-winged sharpshooter (GWSS), Homalodisca coagulata (Say).

INTRODUCTION
Recommendation 3.12 of the National Research Council report on research priorities for Pierce’s disease (NRC 2004, p. 74) suggests that support for “classical” biological control is preferred over augmentation if inoculative releases result in self-sustaining populations and can be shown to be less costly than augmentation. Currently, we have two candidate species of Gonatocerus for classical biological control of GWSS in California, Gonatocerus tuberculifemur (Ogloblin) and Gonatocerus “sp. 6”, both of Argentina origin (Jones 2001; Logarzo et al. 2003; Pilkington 2004). These species were collected in Argentina by G. Logarzo and sent to S. Triapitsyn and are being held in the UC Riverside quarantine. Their colonies were successfully established using GWSS eggs as a host. We are continuing to rear these parasitoids until appropriate release permits are received; then the cultures will be turned over to the CDFA GWSS Biological Control Program for mass-rearing and inoculative releases in California against GWSS. Both parasitoids are very promising, aggressive natural enemies of GWSS, its fictitious host under the quarantine lab conditions. In their native range, G. tuberculifemur occurs both in the temperate South and the arid, hot North-West of Argentina. Both species readily and effectively attack GWSS eggs of almost any age. Biology of G. tuberculifemur was studied both in Argentina (Virla et al. 2005) and under quarantine conditions in the United States (Jones et al. 2005), who also studied its host range for non-target impact studies.

Additionally, two different species of Gonatocerus, G. morrilli (Howard) and G. new species near morrilli (Howard), were collected by L. Pilkington and S. Triapitsyn during the spring of 2005 in the course of their foreign exploration in Mexico (Hoddle & Triapitsyn 2004); their cultures were then established in UC Riverside quarantine. These Mexican species may also be promising agents for the “classical” biological control program against GWSS in California (Hoddle & Triapitsyn 2004).

OBJECTIVES
This project has two main objectives:
1. Maintain quarantine cultures of two species of egg parasitoids of GWSS of Argentina origin (Gonatocerus tuberculifemur and G. “sp. 6”) as well as two species of Gonatocerus of Mexico origin (G. morrilli and G. new sp. near morrilli) and
2. Collect basic biological data on these species for their initial evaluation, necessary for obtaining necessary permits for their release and potential establishment in California.

The following experimental procedures are being used to accomplish these objectives, respectively: (1) Two species of Gonatocerus from Argentina and two species of the same genus from Mexico are being maintained in cages at UC Riverside quarantine facility. Fresh egg masses of the host (GWSS) in Euonymus leaves are supplied by D. Morgan. (2) Collected are data on the biological traits on these species of Gonatocerus, necessary for obtaining proper State and Federal release.
permits. Alternate leafhopper hosts (e.g., eggs of Homalodisca liturata Ball, a native sharpshooter in California) may be tested to determine their potential host ranges.

RESULTS
Currently, we are at the beginning stage of this project. The Mexican cultures have been identified taxonomically as G. morrilli and G. new species near morrilli. The latter has a partially white, partially brown fifth funicle segment of the female antenna. Quarantine cultures of these two species, as well as of G. tuberculifemur and G. “sp. 6” from Argentina, have been successfully maintained by the quarantine technician employed by this project, Vladimir Berezovskiy, using GWSS eggs as a host.

Experiments conducted in quarantine revealed the negative role of superparasitism of the same egg mass on the egg parasitoid colonies, particularly on G. tuberculifemur, in which different female funicle segments may fuse under intense larval competition for resources. Vladimir Berezovskiy also discovered that in G. tuberculifemur, superparasitism of the few available eggs of GWSS by numerous, competing females may also result in low quality progeny (such as a much lower survival rate and often smaller size of the emerging adult wasps) than in cases when females have an abundant supply of host eggs and competition for hosts is not intense.

CONCLUSIONS
This research project would be of benefit primarily to the CDFA GWSS Biological Control Program as well as to other biocontrol specialists and agencies conducting projects against GWSS in California such as the USDA. Ultimately, this project may be beneficial to California’s agriculture.

REFERENCES


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