

**IS THE GLASSY-WINGED SHARPSHOOTER PARASITOID
GONATOCERUS ASHMEADI (HYMENOPTERA: MYMARIDAE) ONE SPECIES
OR A COMPLEX OF MORPHOLOGICALLY INDISTINGUISHABLE SIBLING SPECIES?**

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Reporting Period: The results reported here are from work conducted from mid-September 2002 to November 1, 2002.

INTRODUCTION

Gonatocerus ashmeadi Girault is a common and seemingly widespread egg parasitoid of glassy-winged sharpshooter (GWSS). Location records for *G. ashmeadi* indicate its natural range to be Florida, Louisiana, northeastern Mexico, Mississippi, North Carolina, eastern Texas (which coincides with the presumed native range of GWSS), and southern and central California (the adventive range of GWSS). *Gonatocerus ashmeadi* was collected from eggs of the native smoke-tree sharpshooter, *Homalodisca lacerta* (Fowler), as well as from GWSS eggs before *G. ashmeadi* releases began as part of an organized biological control program in CA. *Gonatocerus ashmeadi* is currently being imported from different areas within the natural range of GWSS and released in California with the assumption that this is one species and not a complex of morphologically indistinct sibling species. Species identifications have been made using light microscopy to determine the presence of key morphological features for *G. ashmeadi*. Light microscopy has failed to reveal any differences between different *G. ashmeadi* populations except for some specimens from central and southern Tamaulipas and San Luis Potosí, Mexico (Triapitsyn et al. 2002). Due to the minute size of adult *Gonatocerus* parasitoids (1.2-1.7 mm in length), their taxonomic identification is very difficult without careful and costly preparation, which involves mounting on microscopic slides. The morphological characters that are used for differentiating between closely related *Gonatocerus* spp. can be variable and thus species limits are often difficult to assess without supporting data from biological and molecular data. The purpose of work proposed here is to determine whether *G. ashmeadi* in the native range of GWSS is one species or a complex of cryptic species that can't be separated on the basis of currently employed morphological characters. We intend to use three approaches to determine the species identity of different *G. ashmeadi* populations.

OBJECTIVES

1. Reassessment of key morphological features using scanning electron microscopy (SEM) to determine if subtle morphological differences exist between *G. ashmeadi* populations which could possibly indicate species differences.
2. Conduct mating compatibility studies to determine if different populations of *G. ashmeadi* are reproductively isolated, or if mating occurs, whether offspring are viable thereby defining species groups on the basis of successful interbreeding.
3. To determine if molecular differences exist between *G. ashmeadi* populations collected from different regions by comparing mitochondrial and ribosomal DNA sequences. Molecular dissimilarities of key regions could potentially indicate the existence of different species.

RESULTS AND CONCLUSIONS

Results from these three areas (morphology, behavior, and molecular) are currently under investigation and will be evaluated together to determine whether *G. ashmeadi* as it is currently viewed is a valid species or whether it is an aggregate of morphologically indistinguishable cryptic species.

FUNDING AGENCIES

Funding for this project was provided by the University of California Pierce's Disease Grant Program.