VOUCHERING SPECIMENS OF EGG PARASITOIDS OF THE GLASSY-WINGED SHARPSHOOTER COLLECTED BY THE CDFA PIERCE'S DISEASE BIOLOGICAL CONTROL PROGRAM IN CALIFORNIA AND TEXAS A&M IN TEXAS

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ABSTRACT
This is a new project which has just started; its main objectives are to label (using archival paper and unique plastic database numbers), identify, database (including georeferencing), preserve, and partially dry from ethanol and point-mount about 17,000 voucher specimens of mymarid and trichogrammatid egg parasitoids of the glassy-winged sharpshooter (GWSS). These were either collected (reared) by the CDFA GWSS Biological Control Program personnel in California since 2001 in the course of pre- and post-release surveys, are irreplaceable vouchers of the colonies of the biological control agents that were released in California (both exotic and native), or were collected by staff of Texas A&M in Texas since 2007. The specimens from Texas will be transferred into leak-proof vials with good stoppers to prevent alcohol leakage, labeled properly using acid-free archival paper, and databased using UC Riverside Entomology Research Museum numbering system which then can be made available online if desired. Valuable representatives of each species (at least 10% of all the specimens) will be dried from ethanol using a critical point dryer and point-mounted as museum quality vouchers, and also will be labeled and databased. Taxonomic identifications will be checked and, when necessary, corrected by the PI. Most voucher specimens will be eventually transferred for storage to the California State Collection of Arthropods (CDFA) in Sacramento, its permanent depository; some duplicate representatives and a few taxonomically important specimens will be also deposited in the UC Riverside Entomology Research Museum.

LAYPERSON SUMMARY
Important, irreplaceable, and numerous voucher specimens of the glassy-winged sharpshooter egg parasitoids from California and Texas will be curated in the course of this one-year project. Museum-quality specimens will be prepared and preserved.

INTRODUCTION
Recently (since 1997), major efforts have been undertaken by the CDFA/glassy-winged sharpshooter (GWSS) Biological Control Program to survey for egg parasitoids of GWSS in California and to release several egg parasitoid species (*Anagrus epos* Girault, *Gonatocerus* spp.) from other states in the USA and also northeastern Mexico as part of the classical biological control effort (CDFA 2011).

It is well known that the taxonomic impediment in identification of natural enemies may adversely affect the biological control efforts against agricultural pests. In the case of the GWSS, early misidentifications (due to objective reasons, such as partially inaccurate existing keys) of one of the species of the California native egg parasitoids of GWSS (as *Gonatocerus morrilli* (Howard)) resulted in the inability of biological control practitioners to distinguish them from the introduced "real" *G. morrilli* from Texas and northwestern Mexico. Therefore, contamination of the colonies in the mass-rearing program was noticed only after the molecular methods distinguished them as two genetically different entities. The "California *G. morrilli*" was later described taxonomically as a new species, *Gonatocerus walkerjonesi* Triapitsyn, based on the combination of molecular evidence and some morphological differences that are difficult to observe without special preparation of the specimens (Triapitsyn 2006). Another native species, *Gonatocerus morgani* Triapitsyn, was also described from Orange Co., CA (Triapitsyn 2006); it is now being mass-produced and released in other parts of California infested with GWSS (Son et al. 2011). As proper part of the ongoing biological control program against GWSS, the CDFA GWSS Biological Control Program has conducted extensive pre- and post-surveys of the egg parasitoids of GWSS in California from 2001. These surveys, which also included egg parasitoids of the native sharpshooter in California, the smoke-tree sharpshooter *Homalodisca liturata* Ball, have resulted in collection of about 10,000 specimens of egg parasitoids (Mymaridae and Trichogrammatidae) which are stored, along with voucher specimens of the numerous colonies of GWSS egg parasitoids maintained by the CDFA, in several thousand vials at the CDFA Mt. Rubidoux Field Station in Riverside, CA. Also, Dr. Forrest L. Mitchell has kindly donated to the CDFA GWSS Biological Control Program 900 vials of GWSS parasitoids collected in Fredricksberg Co., TX, by Texas A&M staff. These insects were collected since 2007, each vial containing parasitoids that have emerged from a single egg mass (ca. 8 individuals per vial). Date and location from which each mass emerged have been recorded.

OBJECTIVES

1. Check the taxonomic identities of all the specimens of GWSS egg parasitoids from California; pull out specimens of taxonomic and voucher interest.
2. Transfer of the bulk of the voucher specimens from Texas into leak-proof vials for long-term storage; label properly (using archival, acid-free paper) and database all the vials using barcodes with unique numbers. Fully identify and catalog approximately 7,000 GWSS parasitoids collected by Texas A&M in the native range of GWSS.
3. Prepare valuable representatives of each species (at least 10% of all the specimens) that will be dried from ethanol using a critical point dryer, point-mounted as museum quality vouchers, labeled, and databased.

RESULTS AND DISCUSSION

This is a new project, currently the PI is working on the identifications of the thousands of specimens from California and on pulling out the voucher specimens of taxonomic interest for drying from alcohol and point-mounting, followed by labeling and databasing. Particularly, all the specimens of *Ufens* (Trichogrammatidae) are being identified to species: two are known in North America as GWSS egg parasitoids (Triapitsyn 2003; Al-Wahaibi et al. 2005). As soon as specimens from Texas are received (they are now being prepared to be shipped), work will begin on them as well.

CONCLUSIONS

We are curating these collections to preserve the invaluable voucher specimens for further analyses (including molecular, distributional, taxonomic, biological, etc.), thus making them available. The specimens and information on them will be useful for the California Department of Agriculture GWSS/PD Biological Control Program and biological control research practitioners in this state and beyond.

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