

Mexican Bromeliad Weevil Biological Control Report

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The focus of research has been on establishing a *Lixadmontia franki* colony at the Biological Control Research & Containment Laboratory in Fort Pierce. We have received regular shipments of fly puparia (every two weeks) from the rearing facility in Honduras. The colony at the Panamerican School of Agriculture continues to be strong and produce a large number of puparia. However, very poor emergence of adult flies resulted from shipments received in August and the first two weeks of September. We do not know the cause of this but we suspect it is due to handling by FedEx and the USDA Plant Inspection Station in Miami because emergence from puparia in Honduras is excellent. Fortunately, emergence of adults from puparia in a third September shipment has been very good, and emergence from a shipment in October also has been good. Our caged fly population (currently about 40) is still growing and about 300 weevil larvae have been exposed for parasitism.

Table 1. Fly emergence from puparia received from Honduras.

Date received	Number of puparia	% Emergence
July 13, 2006	60	70
August 3, 2006	60	0
August 18, 2006	100	5
September 1, 2006	90	11
September 14, 2006	100	0
September 28, 2006	99	86
October 5, 2006	50	25*
October 13, 2006	50	NA**

(*): Flies from this shipment are still emerging in good numbers.

(**): Data not yet available

Two new approaches are being tested for parasitism of weevil larvae. Previously, larvae were exposed individually in a portion of pineapple crown or *Tillandsia utriculata*

stem. We are testing the possibility of using multiple (3-5) weevil larvae per pineapple crown and the possibility of rearing and parasitizing weevils in an artificial diet based on Spanish moss (*Tillandsia usneoides*). Previous parasitism levels using pineapple crowns were generally low (about 30%) compared to levels obtained with *M. quadrilineatus* in *Tillandsia* stems in Honduras. We hypothesize that Spanish moss will be more attractive to the flies than pineapple crowns because it is a species more closely related to the *Tillandsia* species normally attacked by *M. callizona*. We are currently evaluating the development of *M. callizona* in freshly ground and compacted Spanish moss and in freshly ground, compacted Spanish moss mixed with agar to preserve humidity and freshness. Weevil larvae placed on these diets are still in good condition and growing. We expect to expose some of these weevils to our fly colony in early November to evaluate parasitism. If this proves successful, it will save time in preparing larvae for exposure to flies and reduce our dependence on pineapple crowns generously but unreliably provided by Publix and Albertson's supermarkets. This experiment is being conducted, in part, with a high school student from St. Lucie Co., who will use the results for a science fair project.

Additional data for non-target testing with *Metamasius mosieri* are needed for publication of results. In order to do these tests a colony of *M. mosieri* is being established in the laboratory.

A proposal for release of *Lixadmontia franki* from quarantine was prepared by H. Frank and R. Cave and submitted to a University of Florida committee for consideration. If approved, the proposal will be submitted to state and federal agencies.

A talk on the bromeliad weevil was presented at the Marine Resources Council in Palm Bay.

Publications:

- Frank, J.H., T.M. Cooper, and B.C. Larson. 2006. *Metamasius callizona* (Coleoptera: Dryophthoridae): longevity and fecundity in the Laboratory. Florida Entomologist 89: 208-211.
- Wood, D.M. & R.D. Cave. 2006. Description of a new genus and species of weevil parasitoid from Honduras (Diptera: Tachinidae). Florida Entomologist 89: 239-244.
- Suazo, A. N. Arismendi, J. H. Frank, and R. D. Cave. 2006. Method for continuously rearing *Lixadmontia franki* (Diptera: Tachinidae), a potential biological control agent of *Metamasius callizona* (Coleoptera: Dryophthoridae). Florida Entomologist 89: 348-353.
- Suazo, A., D. Pú Pacheco, R.D. Cave, and J.H. Frank. 2006. Longevity and fecundity of *Metamasius quadrilineatus* (Coleoptera: Dryophthoridae) females on a natural bromeliad host in the laboratory. Coleopterists Bulletin 60: (in press).
- Cave, R.D., P.S. Duetting, O.R. Creel & C.L. Branch. 2006. Biology of *Metamasius mosieri* (Coleoptera: Dryophthoridae), with a description of the larval and pupal stages. Annals of the Entomological Society of America 99: (in press).