

Mexican Bromeliad Weevil Report

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Although the colony of *Lixadmontia franki* is still strong, the production of pupae was relatively low and erratic during the reporting period. Average weekly production of pupae was 87, with a maximum of 223. In July, 405 pupae were produced, in August 513 pupae, and in September 299 pupae. Trimestral total was 1,217, down 19% from the previous trimester. Possible reasons for this reduction have been addressed.

To date, 2,370 adult *L. franki* (1,233 females, 1,137 males) have been released in the field. For unknown reasons, adult emergence from pupae has been poor. Along with this, many pupae have been supplied to T. Cooper for her laboratory research, leading to fewer flies available for field releases.

July 2008. Sixty-seven flies (37 females, 30 males) were released at the Loxahatchee National Wildlife Refuge, the fifth release at this site. On July 30, 68 flies (35 females, 33 males) were released in Big Cypress National Preserve, the fifth release at this site

September 2008. On September 5, 110 flies (56 females, 54 males) were released at north end of Fakahatchee Strand State Park, the second release at this site.

The method for evaluating establishment of flies at four release sites continues with weevil-infested sentinel pineapples tops left in the field for 2 weeks. No recoveries of flies were made during the reporting period.

LABORATORY RESEARCH:

Laboratory research on *L. franki* has begun in the Entomology and Nematology Department at the University of Florida in Gainesville, Florida. The goals of this research are to determine what factors motivate the flies to mate, the females to larviposit, and the maggots to successfully find and parasitize a host weevil. The results of these studies will be used to increase fly rearing efficiency and to increase our understanding of the fly's ecology. Research will be approached by studying a population of flies in an experimental cage that has been designed to present the flies with choices (see figure 1) and by performing artificial larviposition on host weevils that are prepared in the same manner in which they are presented to the flies in the cage.

On 4 September 2008, 30 fly puparia were picked up from Ft. Pierce and transported to Gainesville, Florida. This population was used for developing the methods and materials for lab research and for designing the cage parameters. Twenty-nine flies emerged between 9 and 20 September; 2 small males died almost immediately. The population persisted until 6 October 2008. Host weevil larvae were exposed to the population from the time of first adult emergence until all flies were dead. The population was reproductively active (based on the presence of developed maggots in females that were found dead and then were dissected) from about 27

September until 4 October when the last female died. Exposed weevil larvae are being monitored for parasitism.

Presently, 60 puparia (picked up from Ft. Pierce on 1 October 2008) are in the puparium chamber in the experimental cage and adults should begin emerging soon. To maintain a high and constant fly population in the experimental cage, approximately 30 – 40 fly puparia will be received from Ft. Pierce on a bi-weekly basis. As the experiments are conducted, all resulting puparia will be added to the experimental cage; if sufficient numbers are achieved, then fewer puparia will be required from Ft. Pierce.

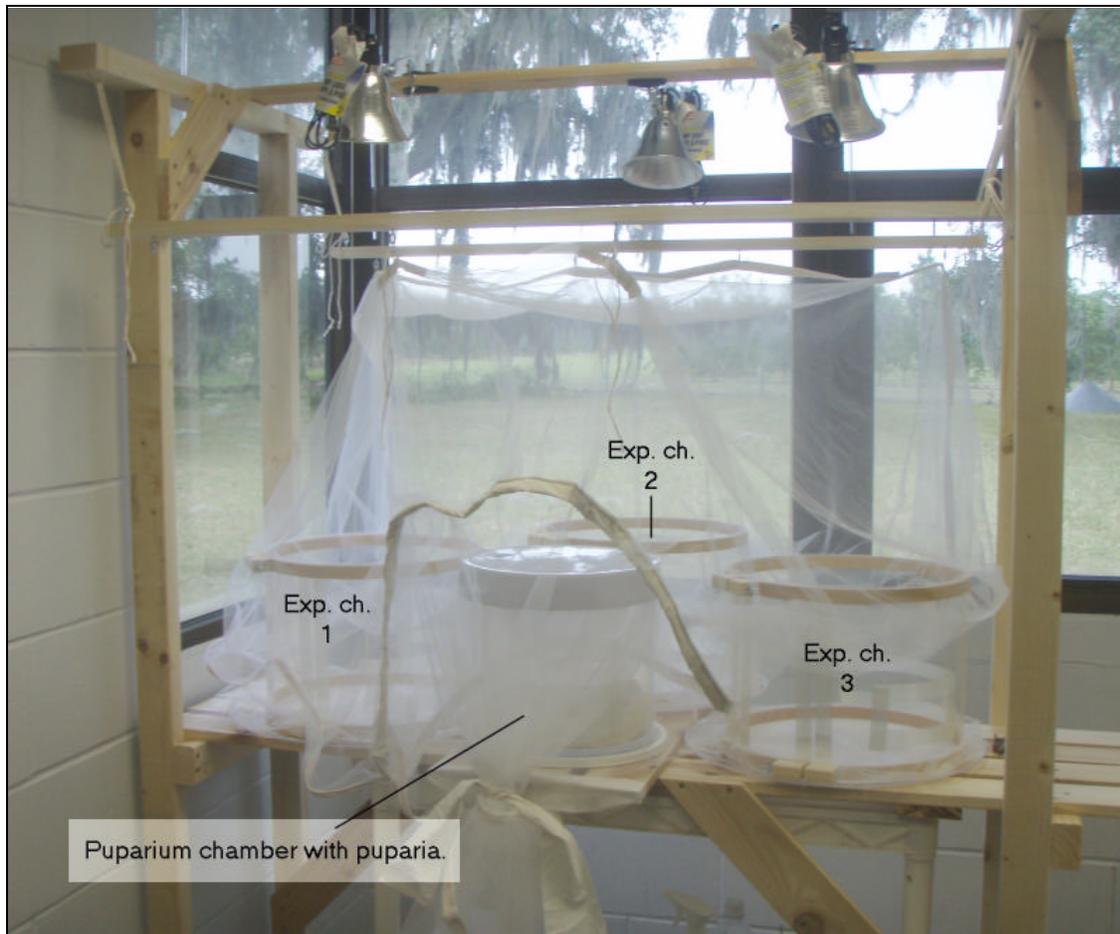


Figure 1: The experimental fly cage has 4 chambers, one for housing puparia and 3 for testing different variables on the fly population. A net is suspended over the chambers, which allows the flies to have access to all of the chambers.

TALKS:

On 14 July 2008, Teresa Cooper presented in a student paper competition at the Florida Entomological Society's annual meeting at Jupiter Beach, Florida. The presentation, titled "Post-release monitoring of a biological control agent, *Lixadmontia franki*, in Florida", was a summary of the fly releases that had been made, the methods for post-monitoring, and the recovery made at Lake Rogers. Teresa received first place in the competition.

WEEVIL AND BROMELIAD MONITORING IN THE ENCHANTED FOREST

The last three trips to the Enchanted Forest for monthly monitoring of the weevil and bromeliad populations were:

25 Jul 2008: Thirteen dead bromeliads were found, all killed by the weevil; 2 had weevil specimens, one a 3rd instar larva and the other a pupa. The larva was not parasitized.

30 Aug 2008: Three dead bromeliads, all killed by the weevil, were found; 1 contained a 5th instar larva. The larva was not parasitized.

A count was made of the visible, large bromeliads remaining in the canopy. The total was 99; this is less than 5% of the first count made in March 2007, which totaled 2,176 (see figure 2).

1 Oct 2008: Four dead bromeliads were found; 3 were killed by the weevil and 1 was dead after going to seed. No weevil specimens were found.

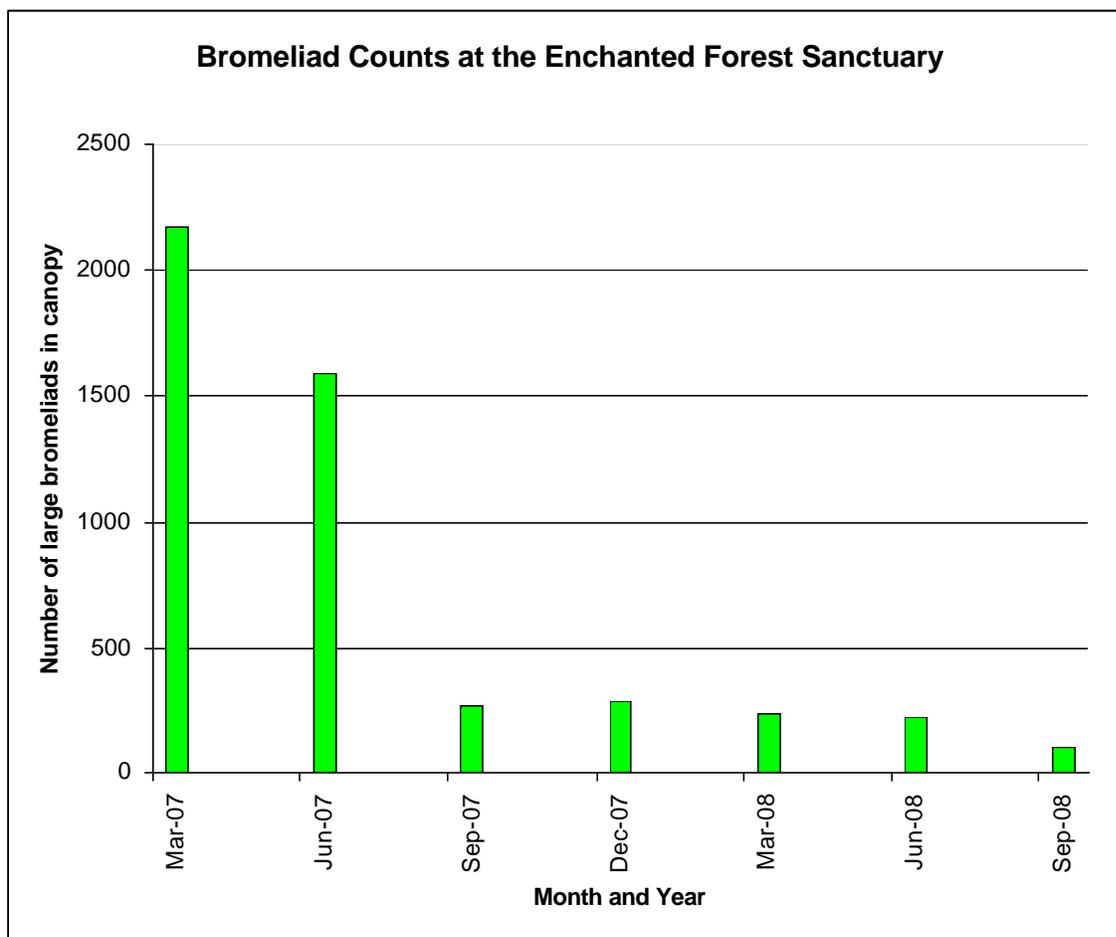


Figure 2: The number of large, living and visible bromeliads in the canopy at the Enchanted Forest Sanctuary since March 2007. Counts are made every 3 months.

PUBLICATIONS:

Cooper, T.M. 2008. Xxxxxxx. Journal of Natural History HAS THIS PUB COME OUT YET?
---No. The Central Article Tracking Systems notes that they have received my proofing of the galleys; they give no indication when publication will occur. I will contact the editor and see if I can get an idea of when this may be.

Suazo, A., R.D. Cave & J.H. Frank. 2008. Reproductive biology and development of *Lixadmontia franki* (Diptera: Tachinidae), a parasitoid of bromeliad-eating weevils. Florida Entomologist 91: 453-459.