

Mexican Bromeliad Weevil Report

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Research on the host bromeliad effect on the Mexican Bromeliad Weevil's oviposition rate, growth and development, and survival continues. We have been testing the weevil's oviposition rate on various bromeliads. The bromeliads are placed individually into cages, with 1 to 15 gravid weevils (Figs. 1-3).

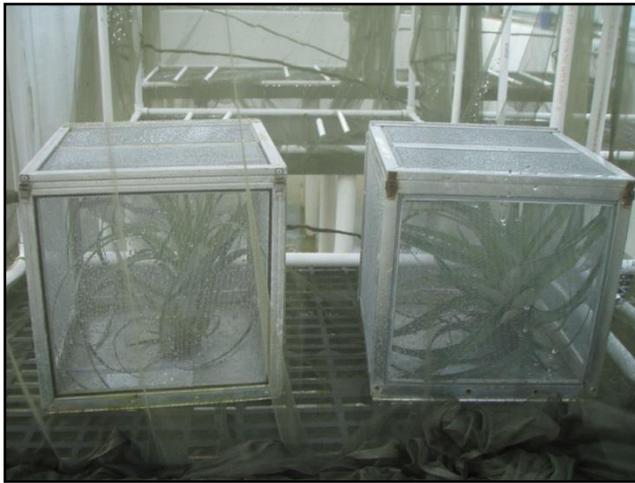


Fig. 1. Florida *Tillandsia utriculata* plants in cages, each with 2 gravid Mexican bromeliad weevils.



Fig. 3. Central American *Tillandsia utriculata* plants in cages, each with 2 gravid Mexican bromeliad weevils.



Fig. 2. Pineapple tops in cages, each with 1 or 2 gravid Mexican bromeliad weevils.



Fig. 4. Central American *Tillandsia utriculata* leaf sample being tested for toughness using a penetrometer.

The weevils remain in the cage for 1 to 5 weeks. Then we break the plants down, recover the weevils, and check each leaf for eggs and larvae. We measure the length and width of the leaves, count the number of leaves, and measure the stem volume and weight, % sugar content, and leaf toughness (Fig. 4). So far, we have tested, or are in the process of testing, 6 Central American *Tillandsia utriculata*, 22 Florida *T. utriculata*, 5 *Guzmania monostachia*, 43 pineapple tops, and 5 *T. fasciculata*. We have begun sorting the data, but we need to do more testing to determine the weevil's oviposition rate on these bromeliads.

We are beginning to test the growth and development of the weevils on whole plants of the same species and varieties and we are re-testing the oviposition rate, growth and development, and survival of the weevil on bromeliad leaf material (rather than whole plants), replicating the research we previously did. As well, we continue to collect samples from Florida *T. utriculata* and Central American *T. utriculata*, with the goal to determine if these two forms of *T. utriculata* are the same species, using DNA analysis. The sampling method is not harmful to the bromeliad; we cut a length of leaf from 3 center leaves, put the leaf material in a baggie with desiccant, and mail it to Ryan Moraski at the Florida Museum of Natural History, who does the DNA sampling. So far, we have collected 43 samples from Florida *T. utriculata* plants and 10 from Central American *T. utriculata*. The Central American *T. utriculata* came from Tropiflora and Russell's bromeliads. The Florida *T. utriculata* came from 3 homeowner's homes (Port Orange, Clearwater, and Fort Pierce) and from the Enchanted Forest Sanctuary. More samples will be collected from State Parks.

Field trips were made to Loxahatchee National Wildlife Refuge on 5 March, 12 March, and 1 April 2014 (Figs. 5 and 6). The *T. fasciculata* and *T. balbisiana* populations in Loxahatchee were monitored from April 2002 to February 2005 in 3 mapped areas in a cypress forest. The bromeliads that died in that time period were counted and



Fig. 5. Loxahatchee National Wildlife Refuge.



Fig. 6. Root balls left where a large *Tillandsia fasciculata* once grew (Loxahatchee National Wildlife Refuge).

cause of death was determined. Monitoring began with 116 bromeliads. At the end of the study, there were 61 bromeliads remaining and nearly all of the dead bromeliads were killed by the weevil. In March 2014, only 2 of the bromeliads remained in the mapped areas. Forest surrounding the mapped areas reflected this loss of bromeliads – there were very few *T. fasciculata* or *T. balbisiana* remaining. We are planning field trips to other state parks and preserves with weevil-infested bromeliad populations that were previously monitored, with the goal to determine the long-term effect the weevil is having on Florida's bromeliads.

We do not have a fly colony at present. We will not be able to get more flies until autumn of this year.