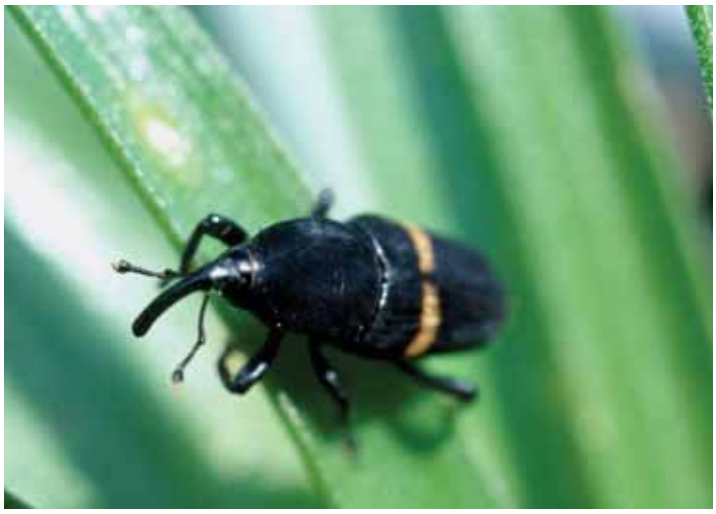
Evil Weevils

by Heidi Aspen Rhoades; Photos by Barbra C. Larson, University of Florida

To me there is nothing more spectacular than being in a shadowy world dotted with spiky bromeliads, some bursting with flowers in a myriad of color forms and some just growing enormously as if some sort of Chernobyl accident had occurred. But the joy that comes from witnessing these colossal and sometimes miniscule plants can quickly turn to sadness. Bromeliads, or "pineapples up in the trees" as most folks refer to them, are under attack. It is quite possible that the wild landscapes we are familiar with will be absent those spiky species, a destiny too awful to fully imagine.

Around 1989, a shipment of ornamental bromeliads from Vera Cruz, Mexico arrived in Broward County. Harbored within the plants, weevils known as *Metamasius callizona* lived undetected. Once they'd polished off their food source, it was time for them to find more, and lucky for them, bromeliads are a local menu item. By the time the weevils were discovered in a Broward County nursery, they had already become established in native bromeliads in the area. Today you will be hard pressed to find a bromeliad in any canopy in Broward County. To date, *Metamasius callizona* has been found in 18 counties and numerous state parks, including the Fakahatchee Strand Preserve, home to some of the most rare bromeliads in the United States.



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Adult Mexican weevil, Metamasius callizona. *Adults range from 11-16 mm (approximately half an inch) in length.*

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Native weevil, Metamasius mosieri. *Adults range from 6-9 mm (1/4 to 1/3 of an inch) in length.*

Before going any further, it should be mentioned that we do have a native weevil, *Metamasius mosieri*. The native weevil is quite distinctive from its Mexican counterpart. In terms of appearance, the native adult weevil is red anteriorly and black posteriorly, whereas the Mexican bromeliad adult weevil is black with a yellow band. The grubs of the two weevil species are indistinguishable. *Metamasius callizona* and *Metamasius mosieri* are cannibalistic but it is not uncommon to find up to 12 *Metamasius callizona* in one plant. *Metamasius mosieri* may lay more than one egg in a plant but only one larva will survive.

When you are out in the field and find bromeliads, give the center leaves a gentle tug. The Mexican bromeliad weevil kills the plant through the tunneling action of its immature stage (larvae), which may consume the entire base. If this is the case, the center leaves will easily pull out of the plant or the plant will fall to the ground still intact or with leaves strewn about. If the center leaves pull out, give the plant a thorough check, including pulling the plant apart and searching for any weevils.

Though monitoring for weevils seems fairly straightforward, I have found a few instances when it is not. For example, it was widely accepted that the native weevil did not inhabit the larger tank bromeliads (*Tillandsia utriculata* and *Tillandsia fasciculata)*; this hypothesis crashed and burned after a cocoon that I had found in a *Tillandsia utriculata* hatched, revealing a shiny red and black weevil. We were relieved that it was a native but it added a new twist. Other aberrations encountered while weevil monitoring include: herbivory, center leaves pulling out without evidence of weevil damage, ground strewn with bromeliads, "plugs" resembling small corks, and entire populations of *Tillandsia setacea* appearing unhealthy.

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It turns out that rabbits, deer, and cattle enjoy browsing on bromeliads. The bromeliad will look like it's gotten a bad haircut

but the plant will survive. I have also found that center leaves from the smaller *Tillandsia* species as well as young *Tillandsia fasciculata* and *Tillandsia utriculata* will pull out easily even if they appear healthy. Ray Creel, a bromeliad enthusiast and conservationist, explained that this can happen when the plants receive too much moisture. Sometimes you can enter a hammock and find bromeliads on the ground; do not panic! Consider the weather; has there been a lot of wind recently? Bromeliads can become dislodged during windy weather and fall to the ground. When this occurs, give the plant a check up and then find a nice nook and replace the plant—it should be fine. Finding an adult *Metamasius mosieri* has been a very rare experience for me, however, I have found evidence of it in the form of a plug. Made of plant material, this plug is constructed by the weevil to keep moisture in the plant and/or protect itself from predators. Finally, if you are in an area and notice a "brown out" of *Tillandsia setacea*, do not be alarmed; this "unhealthy look" is part of the *Tillandsia setacea* life cycle.

If you find weevil damage, map the location and collect weevils if you find them, then contact a weevil team member at the University of Florida (see below). You will want to revisit the area and monitor for flowering and seeding. Seed collection is being used to try to save Florida's native bromeliads. The seeds will be germinated by designated nursery growers and released to the same site after the exotic weevil threat is over. (For more information, visit the Save Florida's Native Bromeliads website at savebromeliads.ifas.ufl.edu). Also on the management front is a biological control agent in the form of a parasitic fly (possible genus *Lixophaga*). Currently, the fly is being studied by Alonso Suazo at the Panamerican School of Agriculture in Honduras (in conjunction with Drs. Howard Frank and Ron Cave of the University of Florida). Studies have confirmed that the fly will readily parasitize *Metamasius callizona* and *Metamasius mosieri*, with evidence suggesting that it prefers *Metamasius callizona.* The fly is found in Honduras and Guatemala; it resides in high elevation cloud forests and has heretofore been very difficult to colonize in the laboratory. Soon it will be brought to the University of Florida's new quarantine center (opened in July 2004) located at the Indian River Research and Education Center in Fort Pierce. This new facility will enable researchers to colonize the fly under optimal conditions (humidity, lighting, temperature and space). It is not yet known when (or if) the biological control agent will be released.

In this age of homeland security, let's not forget our stewardship responsibilities; monitor and keep in touch—it's a highly effective way to conserve the real Florida.

For more information, contact Heidi Rhoades at flscrubj@earthlink.net, Dr. Howard Frank at jhf@ifas.ufl.edu or Dr. Ron Cave at RDCave@ifas.ufl.edu.