



Natural Enemies of Melaleuca

Reuniting Melaleuca with its Natural Enemies

Melaleuca (MEL-ah-LUKE-ah) is a noxious weed that invades precious natural areas in Florida, including the Everglades. It was brought from Australia in the early 1900s for use in landscaping and development, but the hundreds of natural enemies, including insects and diseases, that feed on it in its native home were left behind. Without natural enemies in Florida, melaleuca grows and spreads unchecked, easily outcompeting native vegetation. Because of the threat melaleuca poses to natural areas, it has been placed on the Federal and State Noxious Weed Lists and is now illegal to possess in Florida. For more than a decade, land managers have been fighting this invasive tree with mechanical and herbicidal treatments. Melaleuca's natural enemies could provide another treatment option, one that is biologically based and self-sustaining.

For more information on melaleuca and its management, visit the TAME Melaleuca Web site

<http://tame.ifas.ufl.edu>

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The Invader: Melaleuca

When melaleuca was introduced outside its native range the tree was separated from its coevolved natural enemies (e.g. predators, parasites, and pathogens). Consequently, it was released from the constraints that would otherwise limit its population. Since its arrival in the U.S. 100 years ago, melaleuca has covered hundreds of thousands of acres in South Florida.

The Mission: Biological Control



U.S. Secretary of the Interior Gale Norton releases psyllids onto a melaleuca tree during the first psyllid release event in April 2002.

A successful method of mounting a counterstrike at an invasive species is to release its natural enemies where the invader is found outside its home range. This solution, known

as biological control, does not eradicate the pest, but is intended to decrease populations. Since the search for potential biological control agents began in 1986, over 450 potential agents from Australia have been examined. Agents approved for release must only feed on melaleuca and not harm other plants or animals. For the melaleuca problem in Florida, researchers wanted species that would feed on new growth and reduce seed production. Two insects passed the tests and were released to do their work.

State and federal agencies including the South Florida Water Management District, Florida's Department of Environmental Protection, and the USDA's Agricultural Research Service cooperated to release the two biological control agents described here. While these beneficial insects are now feeding on melaleuca trees across southern Florida, it may take several years for them to reach their full impact, and it may require additional agents to keep melaleuca manageable.

Agent Number 1: The Melaleuca Weevil

Scientific name: *Oxyops vitiosa*

First released in April 1997, melaleuca weevils have been distributed to over 150 locations. Evidence of their presence includes holes or gouges in buds and leaves. Adults are fairly easy to spot on melaleuca – they are gray-brown, with six legs and a snout, and larger than a ladybug (up to 3/8 inch). When touched, they tend to “play dead” and fall to the ground.

Adult weevils may live longer than one year, and females may produce up to 1,000 eggs. Eggs hatch after seven days and spend seven weeks as larvae (immatures). Larvae grow up to 1/2 inch and are sluglike, and trail thin coils of fecal matter. Larvae are usually gray but might appear yellow at times. When the larvae are ready to pupate, they cease feeding, crawl or drop to the ground, and spend about four weeks underground in an earthen capsule. Due to this time spent in the soil, weevils do not fare well in permanently flooded habitats.



Native to Australia, this weevil feeds only on melaleuca.

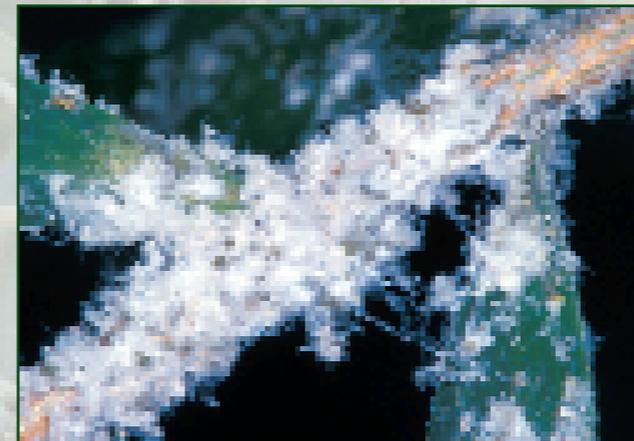
Agent Number 2: The Melaleuca Psyllid

Scientific name: *Boreioglycaspis melaleucacae*

First released in April 2002, the melaleuca psyllid (SILL-id) is difficult to see directly because of its small size (1/8 inch). However, its nymphs (immatures) are easy to detect from the waxy flocculence (white fluff) that they secrete onto melaleuca leaves and stems. This wax is harmless and washes off with rain. Psyllids complete their entire six-week life cycle on the melaleuca tree. Pale to bright yellow eggs are laid on leaves and stems and hatch in about two weeks. Nymphs take around three weeks to develop into adults and cause the majority of feeding damage.



The melaleuca psyllid makes its home only in melaleuca trees. Psyllid nymphs are shown here.



It may look like snow, but in South Florida this white wax on melaleuca means one thing: psyllids at work.

The Results

Both the weevil and the psyllid attack only the melaleuca tree. Due to their preference for new growth, they are most active from late fall through spring, when melaleuca grows most rapidly in Florida. Psyllids may also feed on mature leaves, causing them to discolor and drop. While they have not been observed killing mature trees, these agents can cause mortality in melaleuca seedlings and saplings.

The effects of biological control agents on melaleuca trees include defoliation, stunting of growth, reduction of flower and seed production, and a brownish or generally unhealthy appearance. Research has demonstrated the weevil's ability to cause up to an 80% reduction in flowering. Over time, this damage will reduce the spread of melaleuca stands and the costs related to controlling them. Biological control agents are considered the best method for long-term control of such widespread invasive weeds, and they are a key component of efforts to restore sensitive ecosystems such as the Everglades.

Melaleuca Removal

Melaleuca and other invasive weeds should be removed to prevent their further spread into Florida's natural areas. Contact your county's extension office (see <http://extension.ifas.ufl.edu>) for guidance on removing melaleuca.



These melaleuca leaves show typical damage caused by immature (larval) weevils.