



Natural Enemies of Melaleuca



This brochure was produced by TAME Melaleuca (The Areawide Management Evaluation of *Melaleuca quinquenervia*), a multi-agency project promoting the long-term, areawide management of melaleuca. TAME Melaleuca is funded and coordinated by USDA's Agricultural Research Service, and cooperators include the South Florida Water Management District and the University of Florida's Institute of Food and Agricultural Sciences. For more information, visit our Web site at <http://tame.ifas.ufl.edu>.



Natural Enemies of Melaleuca- An Invasive Weed in Florida

Melaleuca is a noxious weed that invades precious natural areas in Florida, including the Everglades. Brought from Australia in the early 1900s for use in landscaping and development, melaleuca (MEL-ah-LUKE-ah) has no natural enemies in Florida, and as a result, it easily outcompetes native vegetation. Melaleuca has been placed on the Federal and State Noxious Weed Lists and is now illegal to possess in Florida. Could you be harboring this fugitive in your yard?



The Invader: Melaleuca

Melaleuca’s invasion throughout South Florida exemplifies a concept known as biological release. When organisms are introduced beyond their natural range, they are often without their coevolved enemies (e.g. predators, parasites, and pathogens). Consequently, they are “released” from the constraints that would otherwise limit their population. Melaleuca was released from its native enemies in Australia, and since its arrival in the U.S. 75 years ago, it has covered hundreds of thousands of acres in South Florida.

The Mission: Biological Control

A successful method of mounting a counterstrike at an introduced species is to release its natural enemies



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

in its new home range. This solution, known as biological control (or biocontrol), does not eradicate the pest, but is intended to decrease populations. Since the search for potential agents began in 1986, over 450 potential biological control agents from Australia have been examined. Agents approved for release must be shown to feed only on melaleuca, and to not harm other plants or people. For the melaleuca problem in Florida, researchers wanted species that would feed on new growth and reduce seed production. Thus far, two insects have passed the tests and have been 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 biocontrol agents described here. While millions of these insects are now feeding on melaleuca trees across southern Florida, it will take several years for them to reach their full potential, and it may require the introduction of up to ten more agents to keep melaleuca manageable.

Agent Number 1: The Melaleuca Psyllid

Scientific name: *Boreioglycaspis melaleucae*

First released in April 2002, the melaleuca psyllid is difficult to see directly because of its small size. However, its nymphs (immatures) are easy to detect from the copious amounts of waxy flocculence (white fluff) that they secrete onto melaleuca leaves and stems. This “snow” is harmless and washes off with rain. Psyllid nymphs are pale yellow; adults are small (3 mm, or 1/8 inch) and range from yellow-orange to white.

Psyllids (SILL-ids) complete their entire six- to seven-week life cycle on the melaleuca tree. Pale to bright yellow eggs are laid on leaves and stems and hatch in two to three weeks. Nymphs take three to four weeks to develop into adults and cause the majority of feeding damage.



The melaleuca psyllid makes its home only in melaleuca trees.



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

Agent Number 2: The Melaleuca Weevil

Scientific name: *Oxyops vitiosa*

First released in April 1997, melaleuca weevils have been redistributed to over 150 locations. Populations are concentrated in the eastern and western coastal regions of Florida. 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 (6-9 mm, or 1/4 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 from 1 mm to 14 mm (1/16 inch to 1/2 inch), are gray and sluglike, and trail thin coils of fecal matter. 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.

Although the larvae are gray, they often appear yellow due to compounds produced by the melaleuca that are meant to protect the leaves from leaf-eating animals. The extremely specialized melaleuca weevil is not only unaffected by these compounds, but has evolved to use them for its own benefit. After consuming leaf tissue, the larvae excrete these chemicals from their bodies, and research has shown that larvae covered with this sticky secretion are less likely to be eaten by predators such as fire ants.



Native to Australia, this weevil feeds only on melaleuca.

The Results

Both the psyllid and the weevil breed and feed only on 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.



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

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 less verdant appearance. Research has demonstrated the weevil’s ability to cause up to a 90% 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 ingredient in efforts to restore sensitive ecosystems such as the Everglades.

How You Can Help: Removing Melaleuca

Melaleuca and other invasive weeds should be removed to prevent their further spread into Florida’s natural areas. Moreover, melaleuca has been known since 2001 to host the lobate lac scale, an invasive insect pest that attacks over 150 plant species in Florida. This lac scale causes severe decline of its host plants, including melaleuca. Contact your county’s extension office (see <http://extension.ifas.ufl.edu>) for guidance on control of lobate lac scale and removal of melaleuca.