

# Sap-Sucking Psyllid Pesters Pushy Plant

DAVID NANCE (K7872-2)

Released in South Florida in 1997, the beneficial melaleuca leaf weevil, *Oxyops vitiosa*, is a prolific feeder of melaleuca foliage.



GARY BUCKINGHAM (K7658-2)

Melaleuca trees like these have invaded the Everglades in South Florida and are displacing native plants and animals at a rapid rate.

An industrious, sap-sucking insect may help halt the unwanted spread of melaleuca trees in South Florida's famed Everglades. Melaleuca, a fast-growing invader from Australia, is taking over some 14 to 15 acres a day, displacing native plants and animals, drying up wetlands, and creating a fire hazard. All this makes melaleuca a significant threat to the stability of the fragile Everglades ecosystem.

The gnat-sized psyllid (pronounced SILL-id) is a natural enemy of melaleuca. Both adults and young feed on the tree's clear sap. Their favorite sap is inside soft, fleshy tips of melaleuca's newest stems and branches. Young seedlings are the most vulnerable and can be severely damaged by hungry psyllids. But the little insects can also stunt the growth of bigger trees.

Known to scientists as *Boreioglycaspis melaleucae*, the petite insects thwart seed production by damaging tips that would otherwise form branches. Buds that would normally flower on undamaged branches could form seeds the size of a pepper grain. A mature melaleuca tree can produce as many as 60 million seeds every year.

## Psyllid Phalanxes Unleashed

This year, about 100,000 psyllids were placed at South Florida sites ranging from a cluster of melaleuca trees standing in water to an unusually dry pasture dotted with melaleuca stumps. The psyllids' release came after more than 5 years of research by ARS scientists at the Australian Biological Control Laboratory in Indooroopilly, Australia, near Brisbane; their colleagues with Australia's Commonwealth Scientific and Industrial Research Organization; and their co-

SUE WINERTER (K7873-7)



An adult melaleuca psyllid female, *Boreioglycaspis melaleucae*, rests on a melaleuca leaf in quarantine.



investigators at the ARS Invasive Plant Research Laboratory in Fort Lauderdale and Gainesville, Florida. Much of this work has been sponsored by the South Florida Water Management District and the U.S. Army Corps of Engineers.

At Indooroopilly, the ARS and Australian scientists were the first to pinpoint the tiny psyllid's potential for fighting melaleuca. Their indoor and outdoor experiments proved that the diminutive insect confines itself to melaleuca and won't harm other plants, including crops or favorite backyard trees. The researchers developed the extensive scientific data necessary to garner federal and state permissions to import the psyllids into Florida for final testing. That's according to John A. Goolsby, director of the Australian Biological Control Laboratory.

In Florida, the 4 years of ARS and University of Florida cooperative research that followed culminated in winning the approvals necessary for this year's outdoor introduction of psyllids. That was "a first for this insect species in North America," notes Gary R. Buckingham at the Invasive Plant Research Laboratory's Gainesville station. Entomologist Buckingham and Susan A. Wineriter, formerly a senior biologist at the university and now an entomologist with ARS, led the tests that proved psyllids won't attack Florida's native plants.

This winter, as melaleuca forms the tender new tips that psyllids love, the insect colonies should begin to increase, reports ARS entomologist Philip W. Tipping at Fort Lauderdale. "The psyllid's potential is tremendous," he indicates. "By early 2003, we should have a good idea of how many melaleuca trees have been affected at the release sites."

### Psyllid and Weevil: Dynamic Duo

Tipping and co-investigator Paul D. Pratt, an ARS entomologist at Fort Lauderdale, expect the psyllid to complement the efforts of another weed warrior, the melaleuca leaf weevil, *Oxyops vitiosa*. The ARS and Australian scientists pioneered use of this grey-brown, quarter-inch-long weevil to fight melaleuca in North America.

The hard-working weevil's historic U.S. launch in 1997 capped more than a

decade of scrutiny by the scientists. "The weevil's outdoor introduction here," Tipping says, "started with our release of 1,600 at 13 melaleuca-infested sites in south Florida." Today, millions of the snout-nosed weevils are merrily munching on melaleuca throughout the Everglades and South Florida.

Eating the silvery leaves of melaleuca saplings "is what this busy weevil does best," points out Ted D. Center, research leader at Fort Lauderdale. "Losing leaves stresses melaleuca. That means the trees don't put as many resources into producing seeds as they would if they weren't being bothered."

PEGGY GREB (K8997-6)



The lower branch is normal, undamaged melaleuca. The top branch was defoliated by the melaleuca leaf weevil, *Oxyops vitiosa*.

But the weevil most definitely bothers melaleuca. The effects have been especially noticeable along Florida's west coast—from Fort Myers to Naples. There, conditions for the weevil are good. The weather is dry, soils are sandy, and melaleuca stumps profusely produce what the weevils like to feast on most—fresh, young foliage. All these factors favor the Aussie insect's reproduction.

### Weevil Thrives at West Coast Sites

The best results have occurred at two locations: first, a cut-over pasture close to Estero Bay Aquatic Preserve outside Fort Myers and second, clearings at Picayune Strand State Forest in Naples. Melaleuca stumps at both locales have sprouted succulent new leaves. The weevil has reproduced in large numbers and, as a result, has had a greater impact at the Preserve and the Forest than at any of the other original release sites.

In contrast, the east coast of South Florida has not had quite the same fortune. In particular, at the Loxahatchee

National Wildlife Refuge in Boynton Beach, the weevil has not fared well. The refuge doesn't offer the expanses of dry ground that the weevil needs during at least part of the year to complete its life cycle. "But wet soils aren't a problem for the psyllid," explains Pratt, "so the psyllid should add to the effects of the weevil."

Now, with the help of AmeriCorps interns—and funds from the Florida Department of Environmental Protection and the Dade County Department of Environmental Resource Management—ARS scientists are moving the helpful weevils from areas where they have reproduced the most to other areas where they might also flourish. So far, the scientists and interns have relocated a total of over 500,000 of the six-legged bio-control agents to a half-dozen venues.

"Our goal was to use the weevils to minimize the number of seeds that melaleuca produces. That, in turn, would limit the spread of this invasive tree," emphasizes Center. "We are impressed! The weevils are attacking melaleuca everywhere they find it. And we're crediting the weevils with cutting melaleuca seed production by 50 to 90 percent."—By **Marcia Wood** and **Alfredo Flores**, ARS.

This research is part of *Crop Protection and Quarantine*, an ARS National Program (#304) described on the World Wide Web at <http://www.nps.ars.usda.gov>.

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