

# MELALEUCA ERADICATION & OTHER EXOTIC PLANTS | Implement Biological Controls

## REDUCTION OF RISK AND UNCERTAINTY

The biological controls that will be used for the Melaleuca Eradication and Other Exotic Plants Project will undergo an extensive testing and permitting process by USDA to ensure that they're safe for release in the U.S. This testing process has been well-established for over 50-years, and verifies that the insects will not impact any plant species but the intended target invasive exotic plant species, and will have no adverse ecological or economic effects on the native ecosystem or agricultural industries.

Adaptive management strategies will be assessed and implemented during the routine monitoring of field results to allow for real-time adjustments of the release strategy, as needed, ensuring the greatest impacts to the invasive plants.

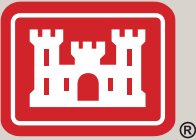
## PROJECT PARTNERSHIP

The agency partnership aims to better coordinate the implementation of biological control activities, and help facilitate a rapid response against old and new non-native introductions. Large-scale rearing, dispersion, and monitoring of permitted biocontrol agents on the four identified plants are scheduled to begin as biocontrol agents are authorized and permitted by the USDA. The project plan sets a 10 to 20-year timeframe to prevent further invasive spread and ecological damage, as well as to slow the prohibitive costs associated with their control. Through the Melaleuca Eradication and Other Exotic Plants Project, implementation and monitoring efforts are projected for 25 years.

Though the project focuses on use of biocontrol agents, it is further intended that a well-planned and integrated pest management approach, using herbicide, mechanical and biocontrol agents, will be part of a multi-agency implementation effort as Everglades' restoration progresses.



FOR MORE INFORMATION



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U.S. ARMY CORPS OF ENGINEERS



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## FACTS & INFORMATION



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The south Florida ecosystem, home of the Florida Everglades, is a nationally and internationally unique and important natural resource. Florida's Everglades, the largest subtropical wilderness in the United States, is home to rare and endangered native plants and animals, many of which are unique to the region. However, due to the introduction of non-native plants in Florida, native plant species in south Florida and the Everglades are threatened.

## PLANTS BEHAVING BADLY HISTORICAL BACKGROUND

Florida's native ecosystems remained relatively undisturbed until a period of intense development began in the 1800s. With the settlement and cultivation of the Florida landscape, humans introduced plants and animals not native to the area. Many of the "exotic" species, such as sugar cane and cattle, were actively cultivated by settlers, and their populations did not readily spread beyond farms and ranches. However, other "exotic" or non-native species introduced established a strong foot hold in the hospitable Florida climate and they soon spread becoming invasive to the natural ecosystem.

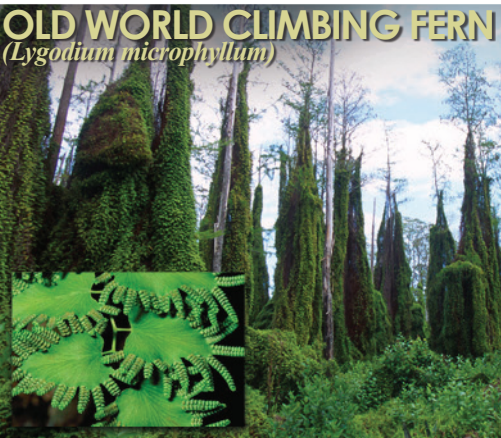
Invasive species can pose a serious threat to the health and function of south Florida's natural environments through direct competition with native plants and wildlife. In the absence of natural controls, some non-native species can also invade residential and urban areas as unwanted pests. Early detection and eradication is the key to preventing a long, costly battle against invasive species.

It's estimated that as many as 25,000 non-native species have found a home in the south Florida region, and now account for more than one-third of all plants in Florida. Of all these species, four are the most infamous: Melaleuca (*Melaleuca quinquenervia*), Brazilian Pepper (*Schinus terebinthifolius*), Australian Pine (*Casuarina equisetifolia*) and Old World Climbing Fern (*Lygodium microphyllum*).

State and federal agencies have had efforts under way for 20 years to combat invasive plants in the greater Everglades. The most promising methods are manual eradication, herbicide application, and implementing biological controls.







SYSTEM-WIDE APPROACH TO COMBAT INVASIVE PLANT SPECIES

The Comprehensive Everglades Restoration Plan (CERP) was developed in coordination with ongoing state and federal efforts. CERP has an overall system-wide goal to reduce and eliminate further intrusion of non-native, unwanted intruders in the Everglades and greater Everglades region, which pose a serious threat to south Florida ecosystem restoration efforts.

The Melaleuca Eradication and Other Exotic Plants Project is a joint effort of the U.S. Army Corps of Engineers, U.S. Department of Agriculture (USDA), U.S. Department of the Interior, South Florida Water Management District, and the University of Florida. This new facility is part of a long-term plan to use biological controls to supplement existing efforts to control and reduce the most aggressive, widespread and problematic invasive exotic plants in south Florida.

The biological controls to combat Melaleuca (*Melaleuca quinquenervia*), Brazilian Pepper (*Schinus terebinthifolius*), Australian Pine (*Casuarina equisetifolia*) and Old World Climbing Fern (*Lygodium microphyllum*) are the focus of this system-wide approach to combat these invasive, non-native, plants.

WHAT IS A BIOLOGICAL CONTROL?

Biological control is the purposeful introduction of natural predators as a means to weaken and suppress invading plants. Biological control agents are used to decrease the invasive plants' competitive advantages over native species and to weaken the invading population by increasing leaf mortality, decreasing plant size, reducing flower and seed production, and/or limiting population expansion. For more than 40 years, non-native biological controls have been introduced to combat non-native invading plant populations in Florida.

THE STUDY AREA

The Melaleuca Eradication and Other Exotic Plants Project encompasses approximately 18,000 square miles from Orlando to the Florida Reef Tract. Kissimmee River, Lake Okeechobee and the Everglades are the dominant watershed that connects a mosaic of wetlands, uplands, coastal areas, and marine areas. The study area includes all or part of the following 16 counties: Monroe, Miami-Dade, Broward, Collier, Palm Beach, Hendry, Martin, St. Lucie, Glades, Lee, Charlotte, Highlands, Okeechobee, Osceola, Orange and Polk.

HOW WILL THE PROJECT IMPLEMENT BIOLOGICAL CONTROLS?

- **Rearing** – Cultivating insects to reduce or stop the reproductive capacities of Melaleuca, Brazilian Pepper, Old World Climbing Fern and Australian Pine
- **Releasing** – Developing a release strategy and distributing these insects more broadly than they are today, and
- **Monitoring** – Regular field monitoring of the approved biological controls and their effects on the exotic non-native species will be conducted to ensure project success

