Implement Biological Controls

The biological controls used for the Melaleuca Eradication and Other Exotic Plants Project 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 except 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 applied during the routine monitoring of field results will allow for real-time adjustments of the release strategy, as needed, ensuring the greatest impacts to the invasive plants.

PROJECT STATUS
The $16.7 million Melaleuca Eradication and Other Exotic Plants Research Annex in Davie, Florida, was completed in 2013; it is the first completed CERP project. The USDA

PROJET PARTNERSHIP
The project focuses on the release of biocontrol agents, but it is intended that a well-planned, integrated pest management approach, using herbicide, mechanical control, and biological control, will be part of a multi-agency implementation effort as the Everglades restoration progresses.

REDUCTION OF RISK AND UNCERTAINTY
Agricultural Research Service produces biocontrol agents in the facility. Prior to completion of the biological controls project, the USDA had tested and released several biocontrol insects to control melaleuca and they have proven very effective. Prior to completion of the facility in Davie, the project was initially focused on biocontrol for melaleuca and several agents were approved, released and have become established in south Florida. Due to the success of the melaleuca biocontrol agents, the focus has shifted and additional biocontrol agents have been approved to control several other problematic species, including Old World climbing fern (Lygodium microphyllum), air potato (Dioscorea bulbifera), water hyacinth (Eichhornia crassipes) and most recently, Brazilian pepper (Schinus terebinthifolius).

As of June 2019, more than 5 million biocontrol agents have been released since the completion of the facility in 2013: 2+ million water hyacinth plant hoppers, 1+ million Lygodium moths, 0.3+ million Lygodium mites, and 2+ million air potato beetles. All agents are proving effective.

PLANTS BEHAVING BADLY
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 introduced “exotic” or non-native species established a strong foothold in the hospitable Florida climate, spreading throughout 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.

FACTS & INFORMATION
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.

HISTORICAL BACKGROUND
It’s estimated that as many as 1,300 non-native plant species have found a home in the state of Florida, and now account for more than one-third of all plants in Florida. Of all these species, the most infamous are 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 more than 20 years to combat invasive plants in the greater Everglades. They have executed an integrated pest management strategy that involves a combination of methods, including mechanical control, 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.

The 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. The facility in Davie, Florida, is part of a long-term plan to use biological controls to supplement existing efforts to control and reduce aggressive, widespread and problematic invasive exotic plants.

WHAT IS 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.

HOW WILL THE PROJECT IMPLEMENT BIOLOGICAL CONTROLS?

- **Rearing** – Cultivating insects to reduce or stop the reproductive capacities of invasive plants that are negatively impacting Everglades restoration efforts.
- **Releasing** – Developing a release strategy and distributing these insects more broadly than they are today.
- **Monitoring** – Conducting regular field monitoring of approved biological controls and their effects on the exotic non-native species to ensure project success.

The Melaleuca Eradication and Other Exotic Plants Project encompasses approximately 18,000 square miles from Orlando to the Florida Reef Tract, including all or part of 16 counties: Monroe, Miami-Dade, Broward, Collier, Palm Beach, Hendry, Martin, St. Lucie, Glades, Lee, Charlotte, Highlands, Okeechobee, Osceola, Orange, and Polk.

Biocontrol Agent by Species

- **Air-potato beetle**
- **Water hyacinth plant hopper**
- **Lygodium moth**
- **Lygodium mite**