MELALEUCA ERADICATION & OTHER EXOTIC PLANTS | Implement Biological Controls

FACTS & INFORMATION

NOVEMBER 2019

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, the introduction of non-native plants threatens native plant species in south Florida and the Everglades.

PLANTS BEHAVING BADLY

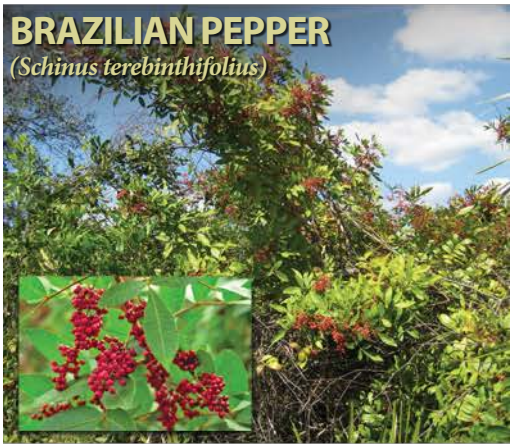
HISTORICAL BACKGROUND

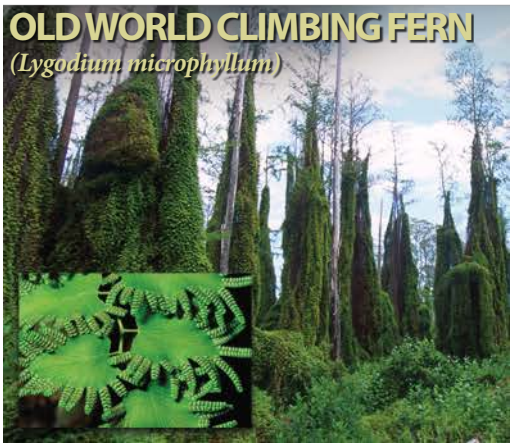
Florida's native ecosystems remained relatively undisturbed until a period of intense development began in the 1800s. With the settlement and cultivation of the Florida landscape, humans introduced plants and animals not native to the area. Many of the "exotic" species, such as sugar cane and cattle,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

It's estimated that as many as 1,300 non-native plant species have found a home in Florida, and now account for more than one-third of all plants in the state. 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*).

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.

State and federal agencies have had efforts under way for more than 50 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. Controlling and reducing exotic plants is an important element of the CERP.

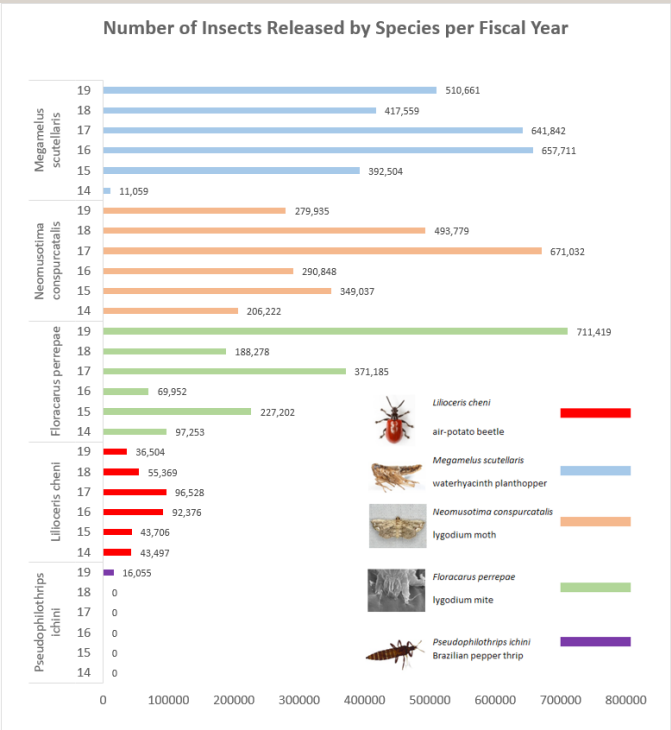
The melaleuca eradication project is a joint effort of the U.S. Army Corps of Engineers, U.S. Department of Agriculture (USDA), U.S. Department of the Interior, South Florida Water Management District, and the University of Florida. The purpose-built facility in Davie, Florida, is part of a long-term plan to use biological controls to supplement existing efforts to control and reduce aggressive, widespread, and problematic invasive exotic plants.

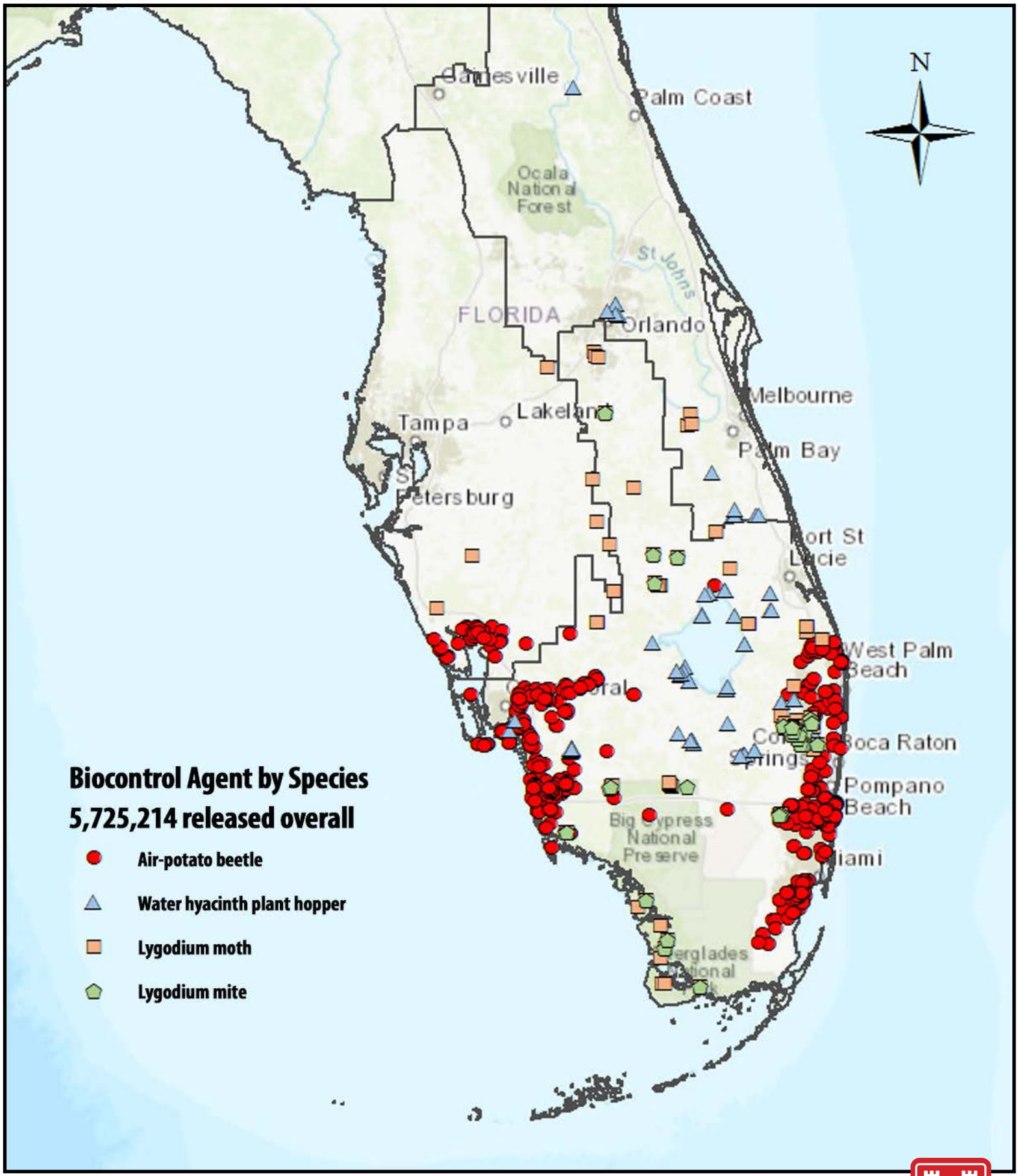
WHAT IS BIOLOGICAL CONTROL?

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.

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Gainesville
Palm Coast
Ocala National Forest
St Johns
FLORIDA
Orlando
Melbourne
Tampa
Lakeland
Palm Bay
St Petersburg
Port St Lucie
West Palm Beach
Boca Raton
Pompano Beach
Big Cypress National Preserve
Everglades National Park
Biocontrol Agent by Species
5,725,214 released overall
Air-potato beetle
Water hyacinth plant hopper
Lygodium moth
Lygodium mite

REDUCTION OF RISK AND UNCERTAINTY

The biological controls used for the project undergo an extensive testing and permitting process by USDA to ensure that they're safe for release in the U.S. Well-established for over 50 years, this testing process verifies that the insects will not impact any plant species except the intended target, 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 Agricultural Research Service produces biocontrol agents in the facility. Prior to Davie facility's completion, the project was initially focused on biocontrol for melaleuca; several agents were approved, released, and have become established in south Florida.

Due to this success, the focus has shifted and additional 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 October 2019, more than 6.9 million biocontrol agents have been released since the facility's completion in 2013: 16 thousand Brazilian pepper thrips, 0.36 million air potato beetles, 1.66 million Lygodium mites, 2.29 million Lygodium moths, and 2.63 million water hyacinth plant hoppers. All agents are proving effective.

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. The project plan prevents further invasive spread and ecological damage, and also reduces the prohibitive costs associated with their control. Implementation and monitoring efforts are projected for 25 years.

This project focuses on use of biocontrol agents, but it is further 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.

FOR MORE INFORMATION

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