Program Name: South Florida Water Management District Invasive Species Management
Project Name: **Invasive Exotic Plant Control in Terrestrial and Aquatic Natural Systems**
Project ID: 2822
Lead Agency: SFWMD

Strategy and Biennial Report Objective Addressed: 2-B.4
Invasive Species Strategic Action Framework Goal: 4

Measurable Output(s): Implementation of invasive species management plans as a coordinated program, including inter-agency collaboration; reduction of total acreage for all priority invasive plant species; attainment of maintenance control for invasive exotic plants such as hydrilla, water hyacinth, water lettuce, melaleuca, Brazilian pepper, Australian pine, and Old World climbing fern.

Project Synopsis:
Several decades of integrated management by the SFWMD, FWC, NPS, FWS and other partner agencies have substantially reduced the abundance of melaleuca in the Everglades Protection Area. The remaining dense stands within the EPA are limited to the northern reaches of the Arthur Marshall Loxahatchee National Wildlife Refuge (Loxahatchee Refuge). The decline in melaleuca was achieved through an integrated approach using aerial and ground-based herbicide applications, mechanical removal, biological control, and strategic use of prescribed fire. Recovery of melaleuca continues, especially in areas once dominated by the plant. However, recruitment rates are much lower and are explained by lower propagule pressure and suppression of small plants from biological controls. Continued low-level control in these areas is planned to prevent full recovery of melaleuca in these areas. Maintenance control has also been achieved for melaleuca within many acquisition areas in the East Coast Everglades Buffer Area, the Florida Keys, Lake Okeechobee, and most natural areas in the Treasure Coast and Kissimmee River regions.

Old World climbing fern remains problematic on many SFWMD-managed lands. The SFWMD continues to search for and remove outlier populations of Old World climbing fern in WCA-3A and WCA-3B tree islands. Unfortunately, there is no active ground-based monitoring program in place to detect the spread of this species during the initial stage of establishment. The expansion of laurel wilt disease—a recently introduced lethal pathogen of the swamp bay (*Persea palustris*)—has a potential to promote expansion of Old World Climbing fern in the WCA's through widespread canopy disturbance. Old World climbing fern remains abundant in portions of the central Kissimmee River basin and throughout much of the Loxahatchee Refuge. Management resources (e.g., herbicide control funding) remain far below what is needed to reduce populations and minimize the spread of this highly invasive plant. Continued implementation of control programs, consistent with the Old World climbing Fern Management Plan (FLEPPC), as well as continued progress with management-related research and biological control initiatives are needed.

The SFWMD continues to maintain water lettuce and water hyacinth at maintenance control levels in most natural water bodies under its jurisdiction. Other species, including hydrilla, West Indian marsh grass, torpedograss, limpograss, and Wright's nut rush remain problematic in the Kissimmee Chain of Lakes region. In addition, large-flowered primrose-willow and Cuban bulrush have become priorities for control in the Kissimmee River basin. The SFWMD continues control efforts for most of these species in collaboration with FWC. The SFWMD also continues to focus on locally-problematic species such as downy rose myrtle (pinelands in northeastern region), shoebutton ardisia (eastern Everglades), and South American water grass (Lake Okeechobee).

Current Status: Regional, coordinated efforts have yielded an Everglades Protection Area with few significant melaleuca infestations. Much of the remaining dense populations are now found on private lands. SFWMD continues to focus on removal of Old World climbing fern and Brazilian pepper throughout the Water Conservation Areas and other SFWMD-managed conservation lands as well as continued follow up control of melaleuca in previously treated areas.
In 2014, the SFWMD and FWC initiated a new collaboration with the FWS to increase much-needed control efforts in the Arthur Marshall Loxahatchee National Wildlife Refuge. FWC is funding and SFWMD is implementing herbicide control of melaleuca and Old World climbing fern in the Refuge to augment the FWS invasive plant management program. This effort is expected to continue in 2015.

Project Schedule:
Start Date: 2007
Finish Date: TBD

Detailed Project Budget Information ($1000) / Expenditures to Date

	2007	2008	2009	2010	2011	2012	2013	2014	Total
Federal	135*								**135**
SFWMD**	10,862	9,038	9,186	7,253	5,706	5,191	5,635	6,339†	**63,915**
Local									
Total	**10,997**	**9,038**	**9,186**	**7,253**	**5,706**	**5,191**	**5,635**	**6,339**	**64,050**

*USDA grant funds (TAME)
**SFWMD: Expenditures to date per fiscal year; Does not include expenditures for vegetation management supporting flood control system (e.g. canal/levee vegetation), Stormwater Treatment Areas, or salaries.
†2014 expenditures includes unbudgeted funds ($900,000) provided by FWC to implement Loxahatchee Refuge control effort.

Contact: LeRoy Rodgers, SFWMD

Old World climbing fern infestation in a cypress swamp, Palm Beach County, FL (LeRoy Rodgers, SFWMD).

Restoration of marsh habitat invaded by shoebutton ardisia and Brazilian pepper begins with mechanical control to reduce biomass before herbicide application. (photo by LeRoy Rodgers, SFWMD