



## SWFWMD Funds Researchers to release Biocontrol agent *Neomusotima conspurcatalis* on Old World climbing fern on District Lands (Part 2)

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A second project was initiated to support the general implementation of the biological control project targeting Old World climbing fern (OWCF), and to have the leaf-feeding moth *Neomusotima conspurcatalis* released on SWFWMD lands. The principal investigator for this project is Dr. Ted D. Center, Invasive Plant Research Laboratory, USDA Agricultural Research Service [Ted.Center@ars.usda.gov](mailto:Ted.Center@ars.usda.gov).

Old World Climbing Fern is an invasive, perennial vine that is native to wet tropical and subtropical regions of Asia, Africa and Australia. First detected in South Florida (Martin County), this troublesome weed now occupies large areas in southern and central Florida and it is spreading north and west into southwest Florida and the northern Florida peninsula. The spread of OWCF is attributed to windblown spores which are produced throughout the year. It is estimated that each fertile leaflet produces approximately 28,600 spores. OWCF is a species of great concern for land managers attempting to manage natural habitats.

OWCF is invading hardwood hammocks, cypress and maple swamps, bayheads, along rivers, coastal prairies, Everglades's tree islands, marshes and flatwoods. It grows and forms thick mats along the ground and into the forest canopy which allows OWCF to smother native plant



Old World climbing fern growing on cypress trees in southern Florida. Photo by Peggy Greb, USDA Agricultural Research Service. Source: Bugwood.org

communities including herbaceous species, shrubs and large trees.

Another significant impact of OWCF is its ability to alter fire ecology. It is flammable and carries fire into wet habitats that are not fire tolerant. The resulting canopy fires in cypress and pine



Female moth *Cataclysta camptozonale* is an Australian native brought to the US to combat climbing fern. Photo by Christine A. Bennett.

Source: <http://www.ars.usda.gov/IS/AR/archive/jan02/>

dominated ecosystems kill canopy and sub canopy trees. Dense infestations of OWCF allow fire to burn through swamps/wetlands that normally function as natural firebreaks.

District staff currently controls OWCF infestations on District lands with herbicide treatments using truck or ATV mounted spray systems or backpack sprayers. In large, heavily infested areas with limited or no access, aerial application is often the only feasible option, but herbicide selectivity is an issue. For these reasons, we have been unable to aggressively treat OWCF infestations in the Flatford Swamp (Manatee County).

Biological control has been a desired management tool for OWCF for many years. In 2008, following twelve years of research, a leaf-feeding moth nicknamed "Neo" from northern Australia and Hong Kong was approved for release to control OWCF. See <http://www.ars.usda.gov/is/AR/archive/jul09/>

[fern0709.pdf](#). While the operational phase of this project has just begun, the initial results look very promising. The Neo moth was released in Jonathan Dickinson State Park in Martin County, Florida in 2008. Within a year large populations of the leaf-eating moth caterpillars developed and defoliated OWCF in the release sites.

Through an agreement between the District and ARS, the ARS released approximately 8,000 moth larvae on the Flatford Swamp property. The project includes a year of quantitative monitoring to document the establishment and overwintering of the moths; documentation of vegetative impacts; and field training to enable District staff to collect and spread the moths to other infested properties. There are private and public lands adjacent to the Flatford Swamp that are also infested with OWCF. It is hoped that the moth will establish and spread to these nearby areas.



Larvae, or caterpillars, of the *Cataclysta camptozonale* moth feed on leaves of climbing fern, weakening the plant. Photo by Jason D. Stanley.

Source: <http://www.ars.usda.gov/IS/AR/archive/jan02/fern0102.htm>



## Recent Research

### ***Imperata cylindrica*, an alien invasive grass, maintains control over nitrogen availability in an establishing pine forest**

Daneshgar, Pedram; Shibu Jose 2009. *Plant and Soil* 320:209-218.

(Shibu Jose is a past CFEOR Director, 2008).

In a field experiment in Florida, USA, <sup>15</sup>N-labeled Ammonium Sulfate was used to compare how *Pinus taeda* seedlings take up and use N in the presence of *I. cylindrica* and native vegetation using three treatments: 1) vegetation free 2) native competition, and 3) *I. cylindrica* competition. *Imperata cylindrica* competition led to smaller pine seedlings with significantly less N content in the pine foliage and roots than those in the native treatment. Competition from *I. cylindrica* for N contributed to the pine seedlings taking up a greater percentage of the applied fertilizer than the seedlings competing with native vegetation; however, because of their reduced growth they were less efficient in utilizing the fertilizer N. The belowground biomass of *I. cylindrica* on average was seven times higher than the native species. Despite its lower N concentration in foliage and roots, it retained significantly more N per hectare compared to the native vegetation. While the native species retained more N aboveground, *I. cylindrica* held significantly more belowground, thus invasion by this grass would lead to a shift of N pools from above to belowground. The fact that we were able to account for 81.5% of the applied fertilizer in the *I. cylindrica* treatment compared to 62.2% in the native treatment suggests that *I. cylindrica* tightly retains most of the available N on site making it a particularly good invader.

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## Upcoming Events

- Colloquium on Plant Pests of Regulatory Significance**  
Jan. 6 – April 21, 2010. Wednesdays at 4:00 PM. The colloquium is part of the [Certificate in Plant Pest Risk Assessment and Management](#) coordinated by the UF-IFAS Plant Medicine Program. The Colloquium and Certificate are available via distance education (Polycom) and/or web; contact IT Specialist Kamin Miller ([kaminm@ufl.edu](mailto:kaminm@ufl.edu); 352-392-3631 Ext. 360) for information about Polycom access.
- Florida Native Plant Society Call for Papers and Posters FNPS 2010 Conference First Notice** The 2010 Annual Conference of the Florida Native Plant Society will be held in Tallahassee, Florida May 20-23. Scientific paper and poster sessions will be held Friday May 21 and Saturday May 22. The Call for Papers and Posters is attached. Please note that the deadline for abstracts is **February 1, 2010**. Contact Paul Schmalzer at [paul.a.schmalzer@nasa.gov](mailto:paul.a.schmalzer@nasa.gov)
- The Florida Natural Resources Leadership Institute: Extension Education in Natural Resource Dispute Resolution and Collaborative Decision-Making** Jan. 27, 2010 at 1:55 - 2:45 PM. Dr. Laila Racevskis, UF Department of Food and Resource Economics. 112 Newins-Ziegler Hall, Gainesville, FL.
- Sustainable use and depletion of natural resources: lessons for the energy system** Feb. 24, 2010 at 1:55 - 2:45 PM. Dr. Stephen Humphrey, UF School of Natural Resources and Environment. 112 Newins-Ziegler Hall, Gainesville, FL.

# Upcoming Events Cont...

- **Forest Stewardship Property Tour at Saturiwa Conservation Area, Property of Mike Adams, 2009 Forest Stewardship Landowner of the Year, St. Johns County.** Feb. 25, 2010. Call the St. Johns County Extension Office at (904) 209-0430 to register.
- **Vegetation Monitoring in a Management Context** March 1-6, 2010. A Natural Training Areas (NATA) workshop and developed for USFS continuing education. Archbold Biological Station, Lake Placid, FL. To register and more information please visit <http://nata.snre.ufl.edu/schedule.htm>
- **The 2010 Southeast Partners in Flight Meeting** March 9-11, 2010. A working group of various stakeholders in the southeast interested in avian conservation and management. The meeting will be held at the UF Hilton Conference Center, Gainesville, FL. For registration forms and more information, please visit: <http://sepif.org/content/view/46/1/>
- **Working Across Boundaries to Protect Ecosystems** March 23-25, 2010. A Natural Training Areas (NATA) workshop addressing how political, social and ecological forces can affect natural areas and innovative management strategies. To register and more information please visit <http://nata.snre.ufl.edu/schedule.htm>



**CFEOR Mission:**

To develop and disseminate knowledge needed to conserve and manage Florida's forest as a healthy, working ecosystem that provides social, ecological and economic benefits on a sustainable basis.

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