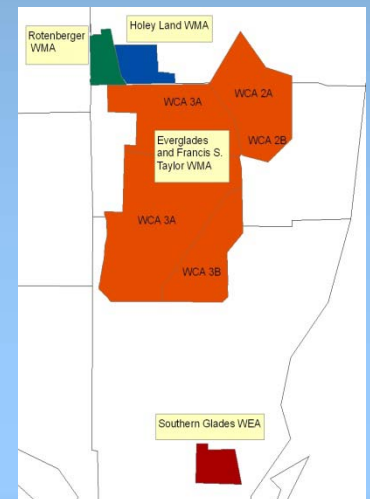
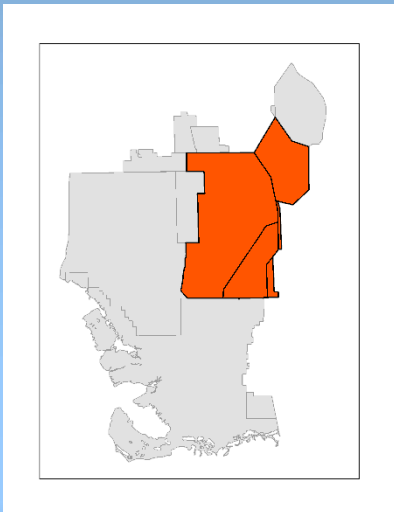


SFWMD: WCA, ECB & Pennsuco
FWC: Everglades and Francis S. Taylor,
Holey Land, and Rotenberger Wildlife
Management Areas
Cooperative: Southern Glades Wildlife
and Environmental Area

SFWMD: Ellen Donlan, Francois Laroche, LeRoy Rodgers

FWC: Jenny Ketterlin,
Marsha Ward



History/Background: WCA-SFWMD & FWC

- Treatment of invasive species
 - Melaleuca treatment by SFWMD started in 1990 in the marsh of the WCAs.
 - Treatment has expanded to other species including Lygodium and Schinus, with FWC and SFWMD coordinating their individual treatment activities.
 - Treatment methods have included mechanical, chemical, aerial, contracted, and in-house.
 - Sketchmapping is now being utilized to target exotics.



History/Background: WCA-SFWMD & FWC

- FWC began tree island restoration in the 1970s which included island creation and planting native trees on degraded islands and spoil mounds
- More recently, large stands of *Schinus* have been removed from islands and native trees and shrubs replanted
- Maintenance of restoration projects and exotics is ongoing but is largely in the maintenance phase
- Prescribed burning is also an important management tool for these areas
- Recent improved coordination between the two agencies on these projects has been vital



History/Background: Pennsuco and ECB

- Pennsuco
 - a mitigation area adjacent to WCA3B. Not all land is acquired at this time.
- Buffer Strip (portion of the ECB)
 - East side of WCA3A
 - West of US27



Priority Plant Species

- **Priority Plants**

- Melaleuca
- Schinus
- Lygodium

- **Newly Detected Plant Species**

- Cestrum is becoming more common on higher ground



Invasive Species Programs-SFWMD

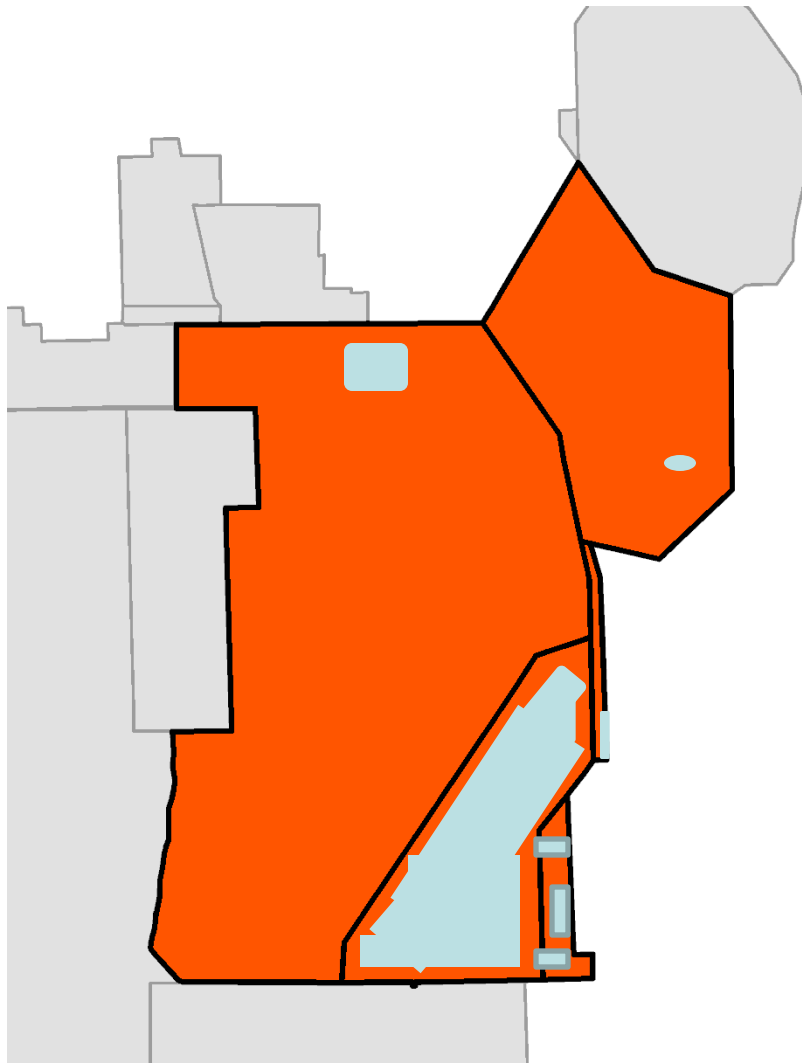
- Invasive species control in WCA, ECB, & Pennsuco
- Description
 - Managing contractors controlling non-native species
- Objective
 - Achieve maintenance control of non-native species
- Partners
 - FFWCC (Sunrise office), FFWCC (BIPM), USDA
- Weedar Partners
 - NPS, USFWS, FWC, & ACOE
- Status
 - On-going
- Funding FY2009 not all projects have been completed
 - WCAs – \$750,000
 - Pennsuco - \$500,000
 - Buffer Strip – \$205,000
 - Rotenberger - \$6,000

Priority Animal Species

- **Priority Animals**
 - Python
 - Swampphen – transmitter phase
- **Newly Detected Animal Species**
 - Flamingos!

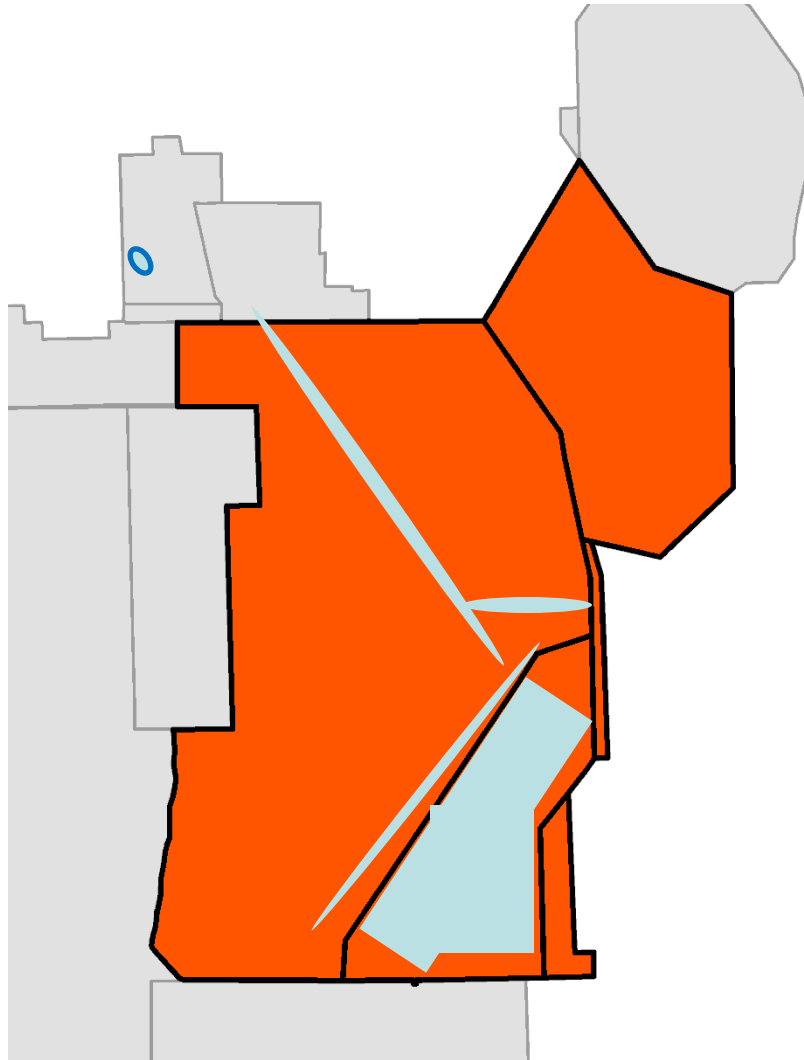


Melaleuca Treatments: 2009 (thru July)



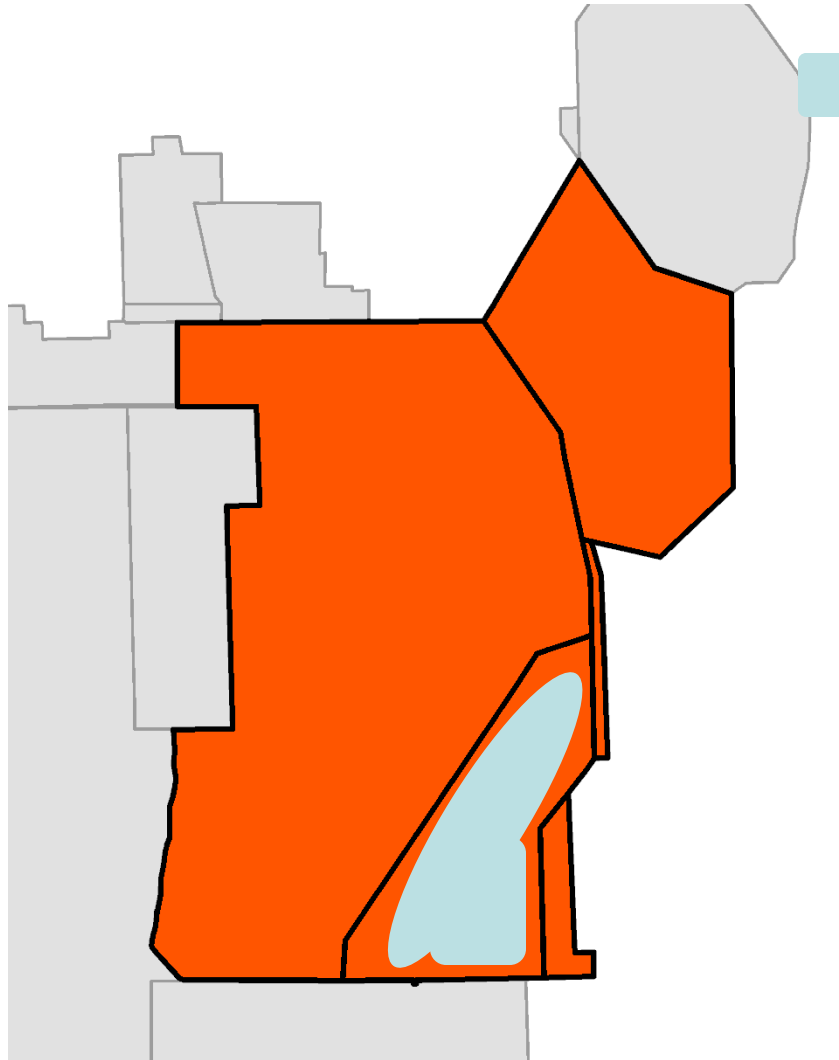
- 170,000 acres covered
- 18,000 acres treated
- Melaleuca was targeted in Pennsuco and the southern portion of the ECB. These areas have high levels of seedlings.
- Melaleuca was targeted in the marsh of WCA3B and a small area of WCA2B and WCA3A.

Schinus Treatments: 2009 (thru July)



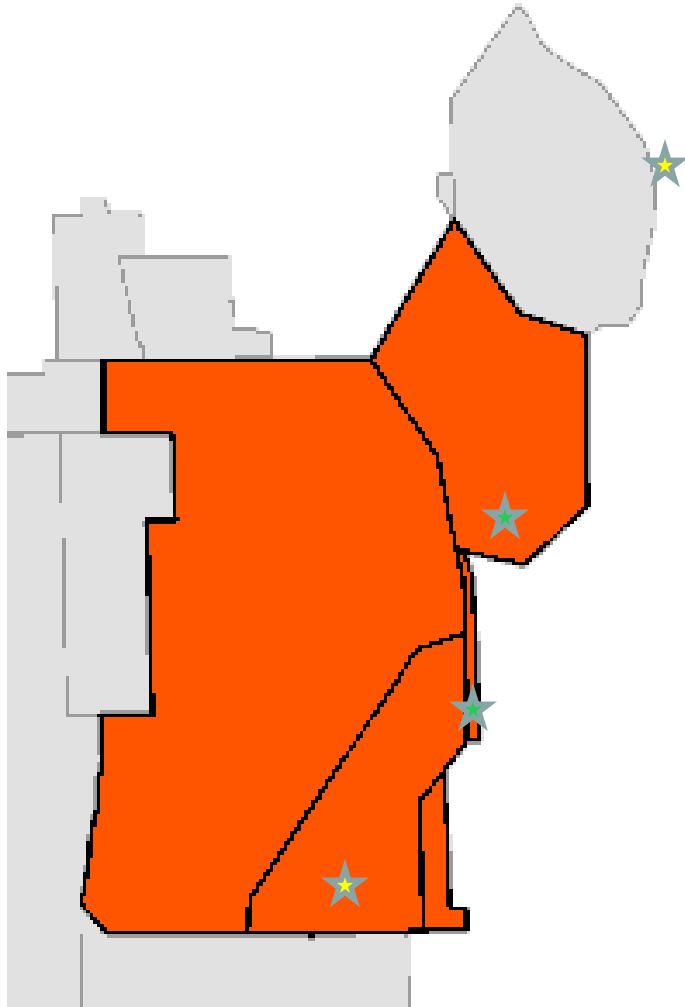
- 1,600 acres covered
- 750 acres treated
- Schinus was treated whenever it was encountered during melaleuca treatment and was targeted in other areas.
- Targeted on spoil piles along Miami Canal and L-67
- Targeted on all islands in WCA3B
- Schinus is treated on levees during normal bank maintenance.
- Crews found pythons along the way.

Lygodium Treatments: 2009 (thru July)



- 118 acres covered
- <26 acres treated
- Lygodium infestation is low
- Retreated previous data points.
- Small plants found on dead melaleuca scattered in the Buffer Strip and Pennsuco.
- Strazulla covered 350 acres and treated 77 acres.

Biological Control Needs



- Yellow stars – Lygodium insects
 - Strazulla
 - WCA3B
- Green stars – melaleuca insects
 - WCA2B
 - ECB (southern end)

Invasive Species Programs--FWC

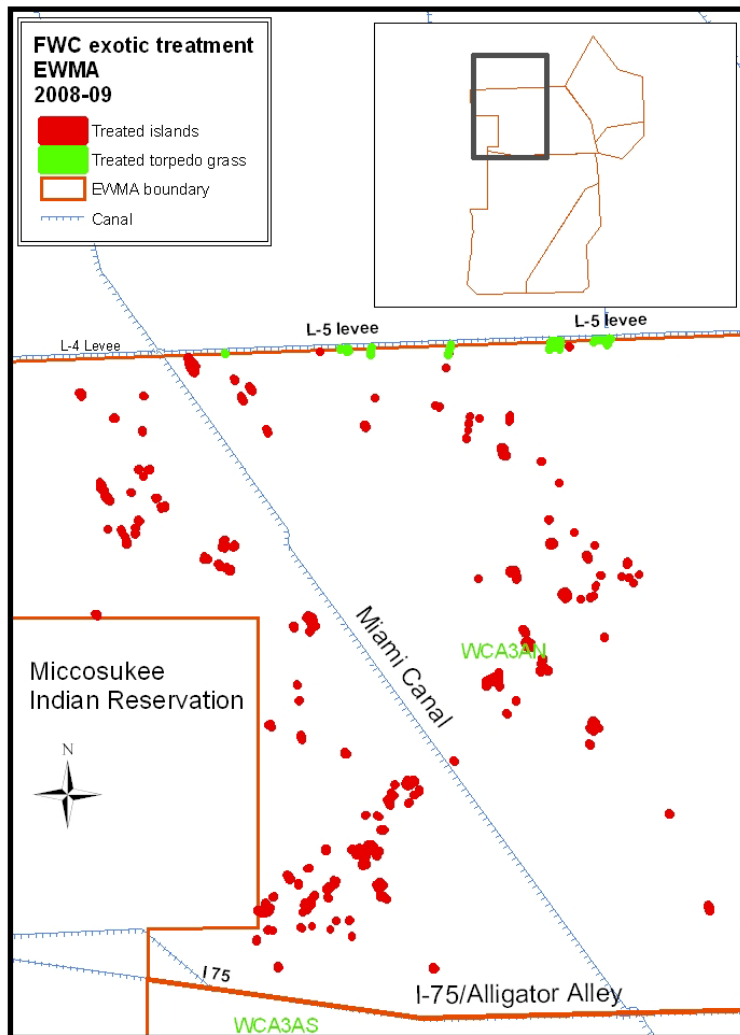
- Invasive species control and tree island restoration within Everglades and Francis S. Taylor Wildlife Management Area
- Description
 - Managing contractors in control and restoration efforts, in-house treatment, Lygodium survey, and prescribed burning
- Objective
 - Achieve maintenance control of all species, restore tree islands to more natural state, implement natural burn regime
- Partners
 - SFWMD
- Status
 - On-going
- Funding FY 08/09: Exotics: \$103, 572; Planting: \$69,900; Maintenance: \$48,950.61; Lygodium survey: \$144,650
- Funding FY 09/10: Exotics: \$55,000; Maintenance: \$20,000
- Annual Summary
 - 548 acres treated and 2,765 trees planted



2009 Everglades Invasive Species Summit

FY 08/09 Exotic Treatment and Survey

Everglades & Francis S. Taylor WMA

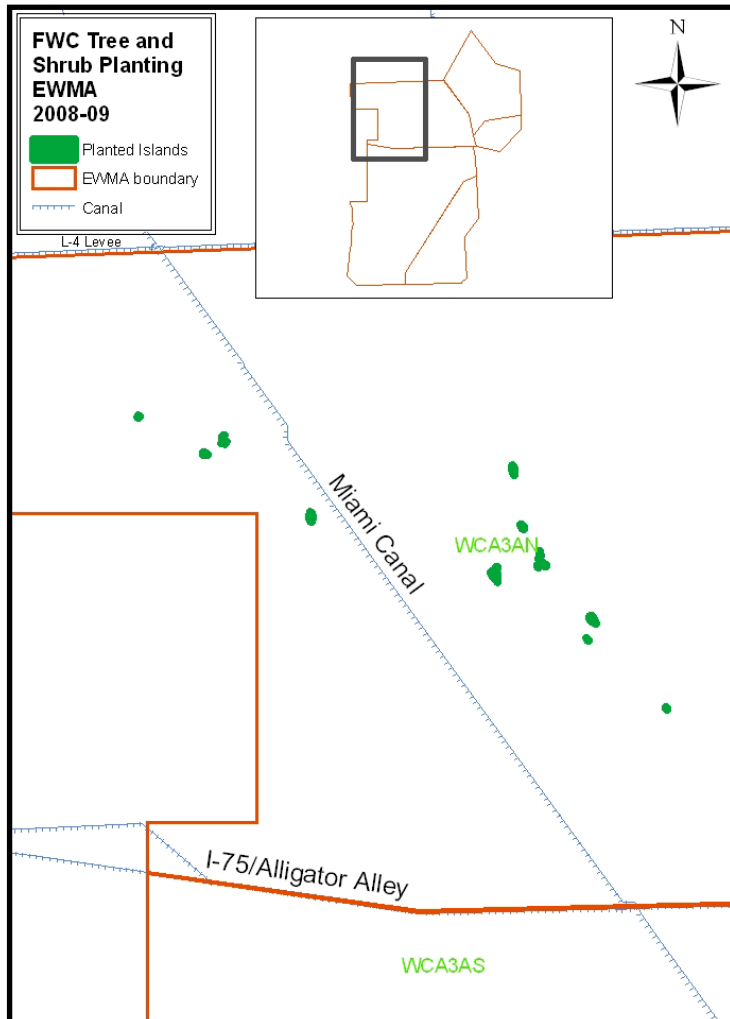


- Total spent = \$103,572 at \$189 per acre = 548 acres
- 274 acres on tree islands—mostly Schinus, some Lygodium
- 255 acres of mostly Schinus along L-4 and L-5 levees and Miami Canal spoil mounds
- 19 acres of torpedo grass off of the L-5 levee
- \$144,650 spent on survey of 360 acres of 34 tree islands for Lygodium that included development of predictive model
- Lygodium found on four islands
- Model not yet sensitive enough

2009 Everglades Invasive Species Summit

FY 08/09 Tree and Shrub Planting/Maintenance

Everglades & Francis S. Taylor WMA



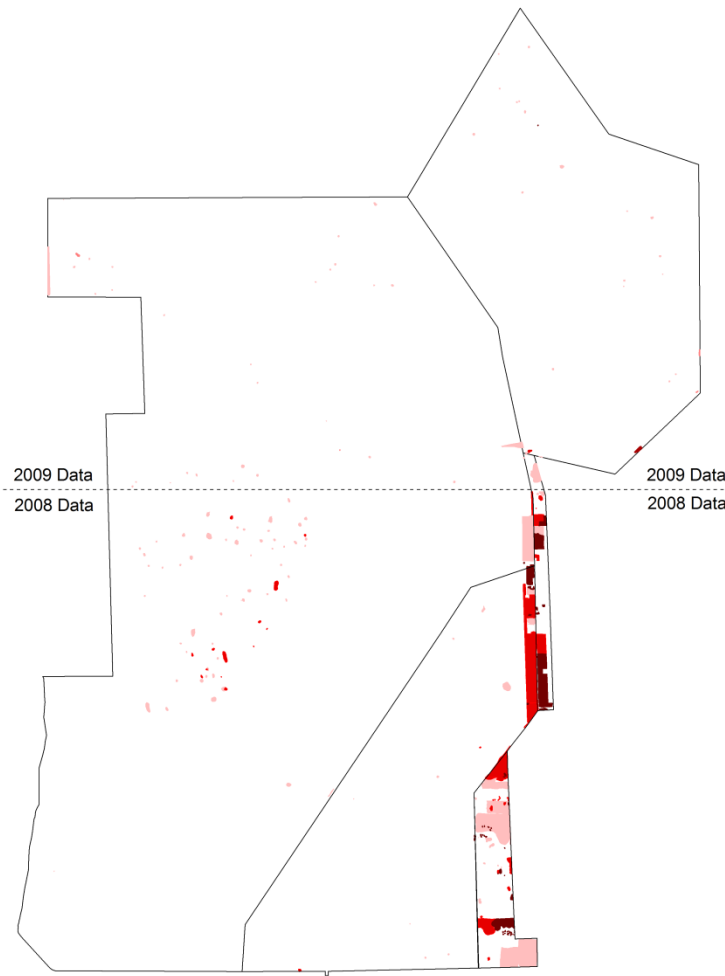
- Total spent planting = \$69,900.00 at \$3,000.00 per 100 trees = 2,765 trees on 20 tree islands
- Total spent on maintenance = \$48,950.61 at \$683.00 per 100 exclosures = 7,167 exclosures maintained on 29 islands

Monitoring

- ECISMA-wide Digital Aerial Sketch-mapping (DASM)
- Lygodium contract – SFWMD Everglades division
- Lygodium contract - FWC
- Tracking restoration activities in ArcMap and Access databases
- FWC – Camera trapping on tree islands in various stages of restoration



Digital Aerial Sketch Mapping



WCA, ECB, Pennsuco

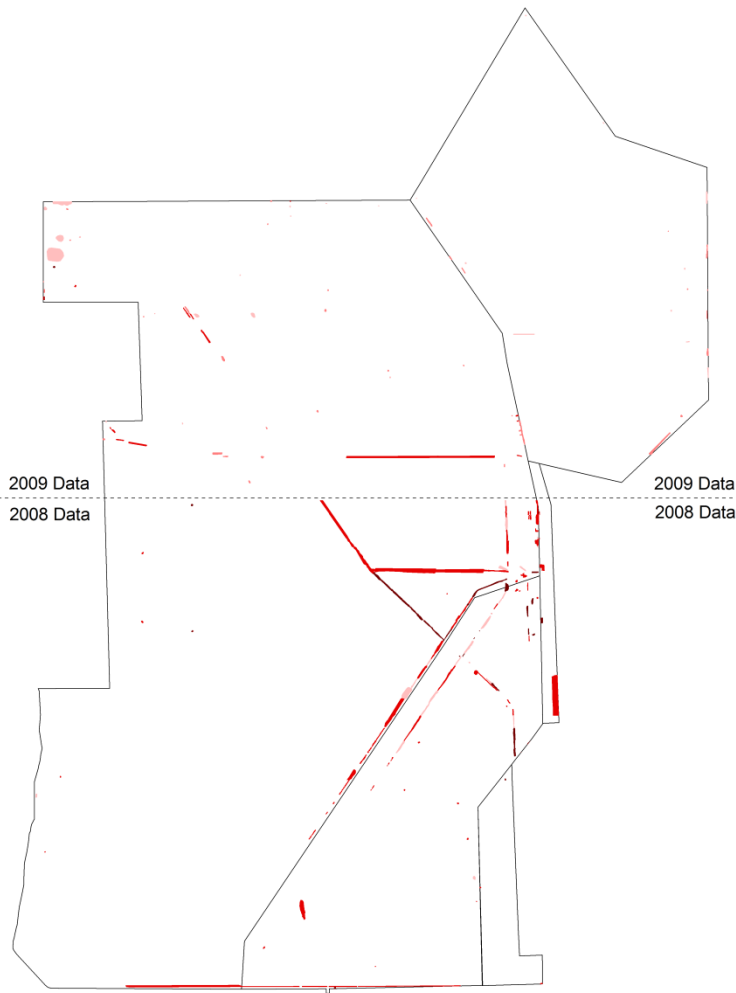
2009 MELALEUCA COVER

	<5 Percent	2,707 acres
	6 - 25 Percent	24 acres
	26 - 50 Percent	12 acres
	51 - 75 Percent	35 acres
	> 75 Percent	1 acre

2008 MELALEUCA COVER

	Low (1-25%)	5,165 acres
	Medium (25-75%)	4,556 acres
	High (> 75%)	1,747 acres

Digital Aerial Sketch Mapping

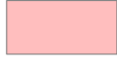


WCA, ECB, Pennsuco

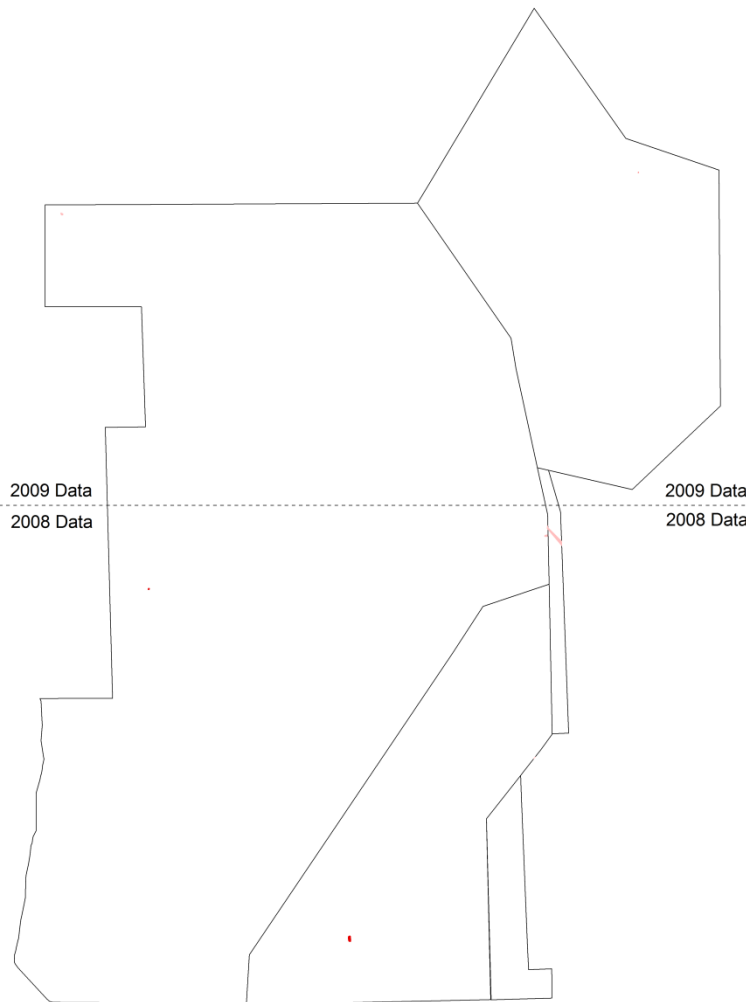
2009 SCHINUS COVER

	<5 Percent	570 acres
	6 - 25 Percent	259 acres
	26 - 50 Percent	475 acres
	51 - 75 Percent	98 acres
	> 75 Percent	6 acres

2008 SCHINUS COVER

	Low (1-25%)	427 acres
	Medium (25-75%)	2,437 acres
	High (> 75%)	370 acres

Digital Aerial Sketch Mapping



WCA, ECB, Pennsuco

2009 LYGODIUM COVER

	<5 Percent	4 acres
	6 - 25 Percent	0.6 acres
	26 - 50 Percent	0 acres
	51 - 75 Percent	0 acres
	> 75 Percent	0 acres

2008 LYGODIUM COVER

	Low (1-25%)	71 acres
	Medium (25-75%)	22 acres
	High (> 75%)	0 acres

History/Background: Holey Land and Rotenberger

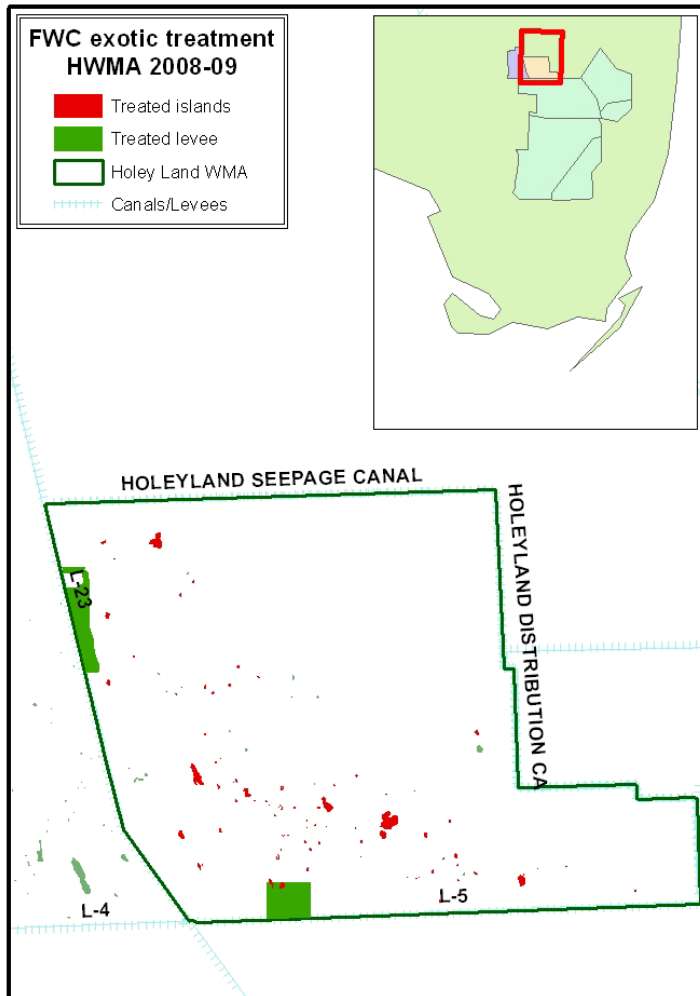
- Managed by GFC/FWC for over 30 years
- Became the responsibility of the FWC Sunrise field office in 2002
- Management activities include invasive plant control, prescribed burning, and tree island restoration
- Invasive cattail and now willow are also concerns in these areas



Invasive Species Programs--FWC

- Invasive species control and tree island restoration within Holey Land and Rotenberger Wildlife Management Areas
- Description
 - Managing contractors in control and restoration efforts, in-house treatment, cattail surveys, and prescribed burning
- Objective
 - Achieve maintenance control of all species, restore tree islands to more natural state, implement natural burn regime
- Partners
 - SFWMD, STA Division and Invasive Species Operations
- Status
 - On-going
- Funding FY 08/09: Exotics: \$141,660.75 in Holey Land & \$129,497 in Rotenberger; Maintenance: \$6,184.56 in Rotenberger
- Funding FW 09/10: Exotics: \$ 30,000 in Holey Land
- Annual Summary
 - 802.5 acres treated in Holey Land, 382 acres in Rotenberger, 876 plant exclosures maintained in Rotenberger

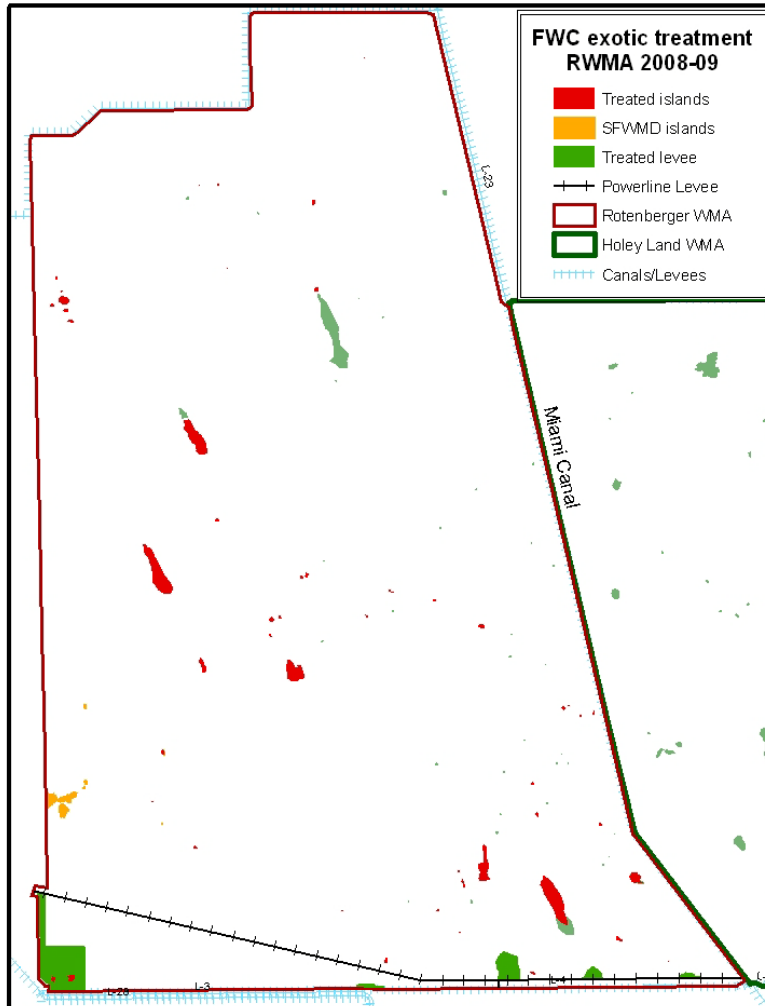
FY 08/09 Exotic Treatment and for Holey Land WMA



- Total spent =
 - \$39,930 at \$165 per acre
 - \$101,730.75 at \$181.50 per acre
- 215.5 acres on tree islands—mostly Schinus, some Lygodium
- 586.3 acres of mix of heavy Schinus and moderate Lygodium off of perimeter levees

2009 Everglades Invasive Species Summit

FY 08/09 Exotic Treatment and Tree island restoration in Rotenberger WMA



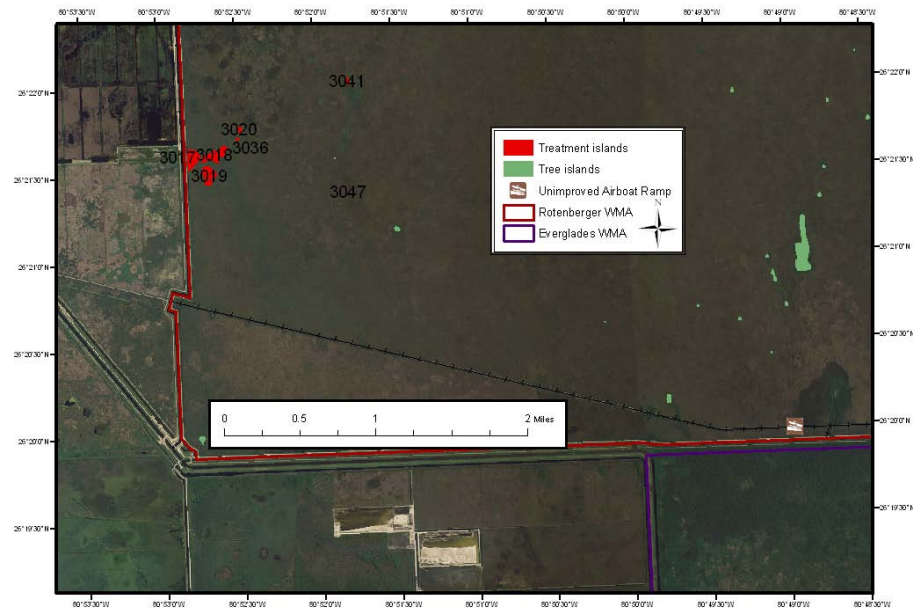
Total spent treating =
\$79,497 at \$219 per acre

- 163 acres on tree islands, islands—mostly Schinus, some Lygodium
- 200 acres off of levees, Schinus and Lygodium

Total spent on maintenance =
\$6,184.56 at \$706 per 100
exclosures for 876 exclosures

2009 Everglades Invasive Species Summit

FY 08/09 Exotic Treatment and Tree island restoration in Rotenberger WMA—Cooperative project



- SFWMD STA Management Division approached us about restoring tree islands
- They spent \$75,000 to remove *Schinus* from half of eight islands
- FWC able to complete work by piggy-backing off of SFWMD treatment contract, and utilizing \$50,000 of left-over money to complete removal and treatment on islands
- SFWMD will pay for 3,000 native trees and shrubs to be planted later this summer—Next week!

Biological Control Needs

- Moth for *Lygodium* growing throughout Holey Land
 - *Lygodium* is growing underneath canopy and in the sawgrass in the marsh
 - Infestations usually dense and there is not enough money to contract survey and treatment of entire area
- *Schinus* is also very thick in some areas of Holey Land, especially the NE corner in the marsh

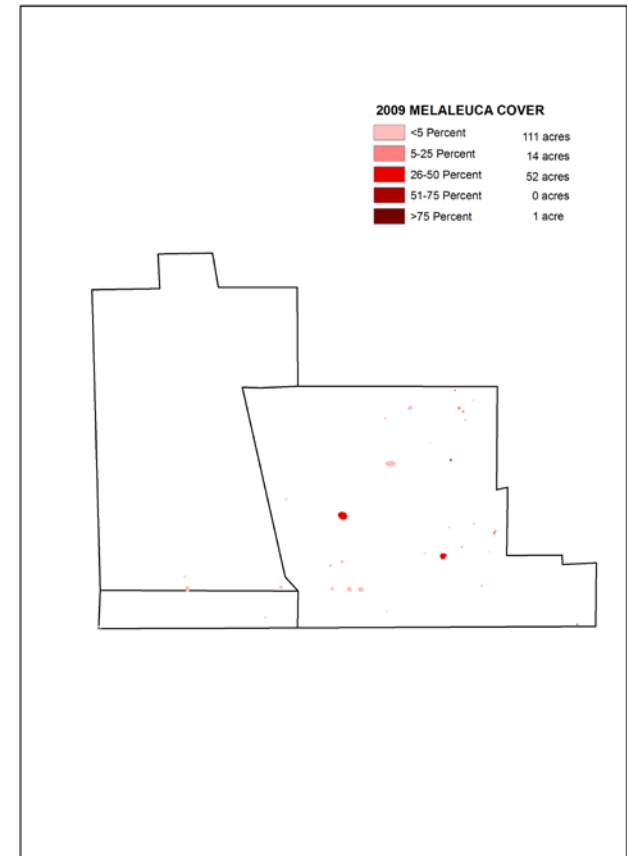
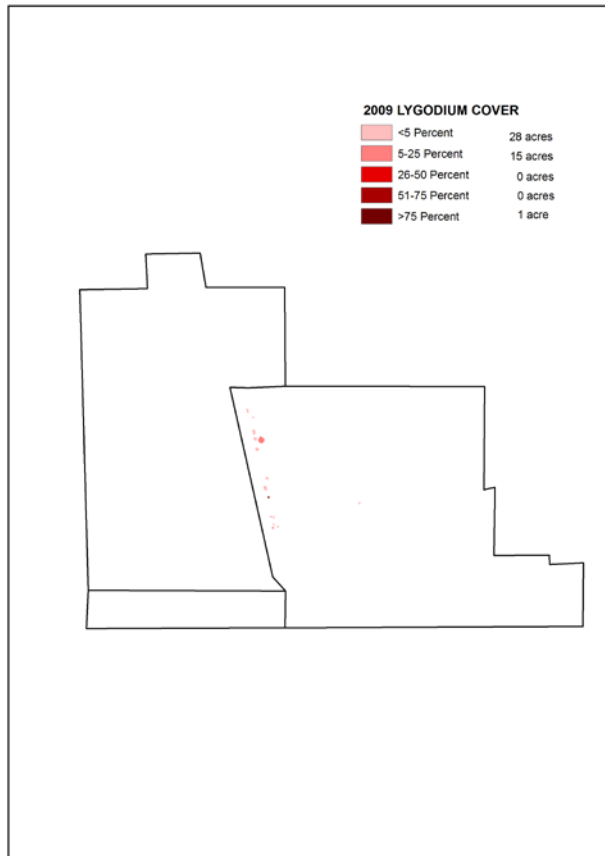


Monitoring

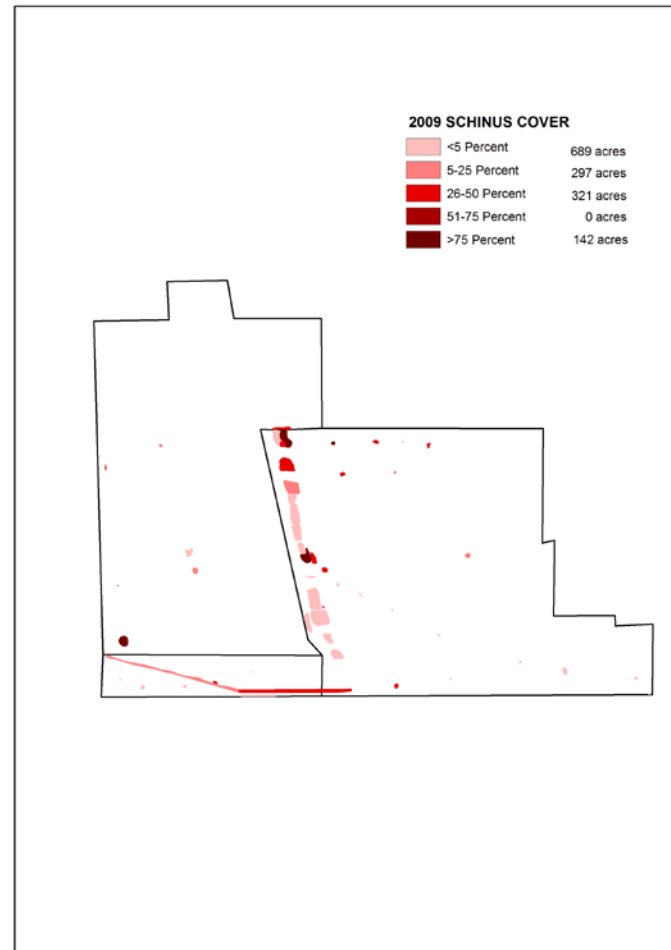
- Digital Aerial Sketch-mapping (DASM) conducted for the first time in Holey Land and Rotenberger
- Tracking restoration activities in ArcMap and Access databases
- Set up photo points in Rotenberger on tree islands in various stages of restoration
- Annual cattail survey for both areas



Digital Aerial Sketch Mapping



Digital Aerial Sketch Mapping



Cattail monitoring in Holey Land

Year	Estimated % coverage
2004	27.0
2005	22.2
2006	22.8
2007	19.4
2008	15.6
2009	17.2

Rotenberger Photo points



Invasive Species Programs—Southern Glades Wildlife and Environmental Area

- Invasive species control and restoration of hammock and pineland areas
- Description
 - Managing contractors in control and restoration efforts, in-house treatment, and prescribed burning
- Objective
 - Achieve maintenance control of all species, restore degraded habitats, implement natural burn regime
- Partners
 - SFWMD is lead, FWC is cooperating
- Status
 - On-going control of Brazilian pepper, Australian pine, Ardisia, Melaluca
- Annual Summary
 - 15 acres treated by FWC staff
 - 50 acres treated by crews contracted through SFWMD



Innovations and Successes

- Follow up is critical. Don't move to new areas too fast.
- Piggybacking off of other agencies' contracts can be a relatively painless process
- Innovation is needed for dealing with invasive cattail and Carolina willow

Any questions?

