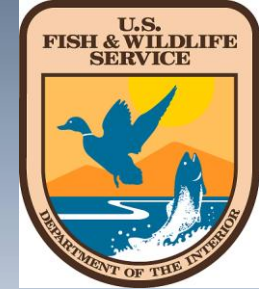


Arthur R. Marshall Loxahatchee

National Wildlife Refuge



Lisa Jameson

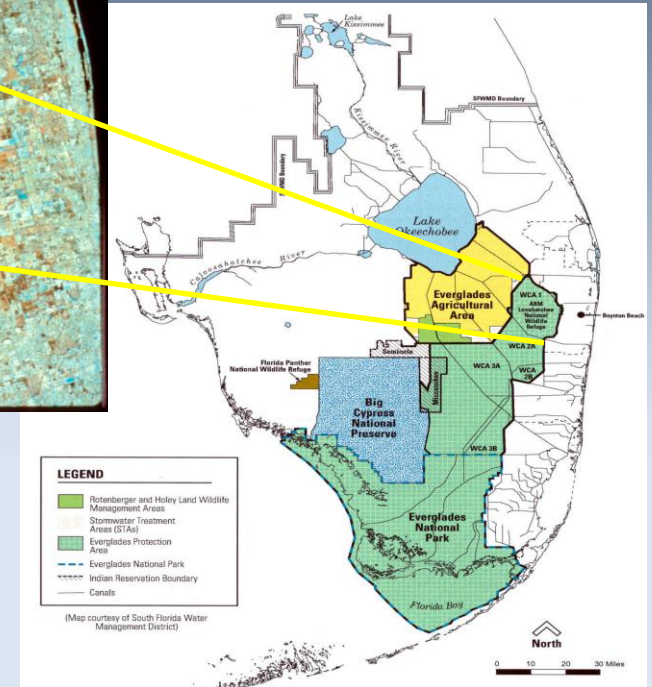
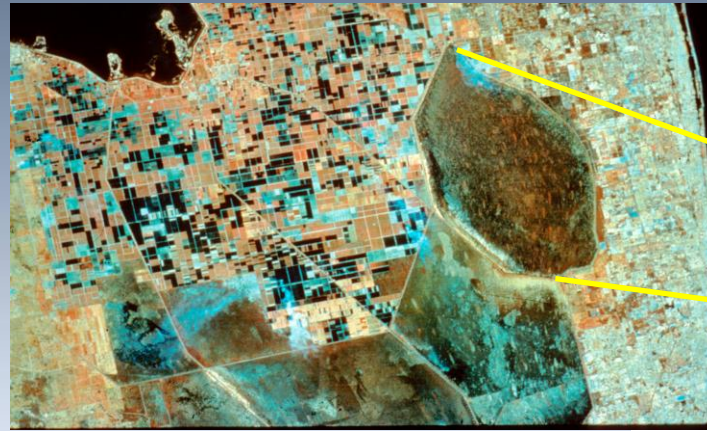
Invasive Species Biologist

United States Fish and Wildlife Service

A.R.M. Loxahatchee National Wildlife Refuge



Invasive Species Programs



Objectives of the Exotic Vegetation Control Program:

- ✓ To achieve maintenance control of all exotic invasive species within the Refuge.
- ✓ Achieve and sustain maintenance level control of Melaleuca, Old World climbing fern, Brazilian pepper and Australian pine by 2017.

Priority Plant Species

Old World Climbing Fern (*Lygodium microphyllum*)

Melaleuca (*Melaleuca quinquenervia*)

Brazilian pepper (*Schinus terebinthifolius*)

Australian pine (*Casuarina equisetifolia*)

Secondary Plants

Hydrilla

Water Lettuce

Water Hyacinth

Carrotwood

Shoebuttan ardisia

Earleaf Acacia

Papaya

Java Plum

Newly Detected Plant Species

Torpedo Grass



Priority Animal Species

- **Priority Animals**

Sacred Ibis - substantiated reports in roosting/nesting bird colonies

Purple Swamp Hen - unsubstantiated report in STA1 northwest of Refuge boundary

Pythons - unsubstantiated reports in the interior and along western levee

Nile Monitor Lizards - unsubstantiated report in compartment D

Iguanas – substantiated report at front entrance gates

- **Newly Detected Animal Species:**

Currently trapping for;

Redbay Ambrosia Beetle (*Xyleborus glabratus*)

Bromeliad Weevil (*Metamasius callizona*)

Gypsy Moth (*Lymantria dispar*)



Pro-activities

Participated in the North African Python Hunt



Baiting for Nile Monitor Lizards??

Sacred Ibis Surveys

Arthur R. Marshall Loxahatchee National Wildlife Refuge

Date: _____

Time: _____

Location: _____ GPS Coordinates

Number # of birds: _____

I.D. accuracy on a scale of 1-10 (1 unsure - 10 positive i.d.): _____

Associated species (ex. Feeding with other ibis, wood storks....) _____

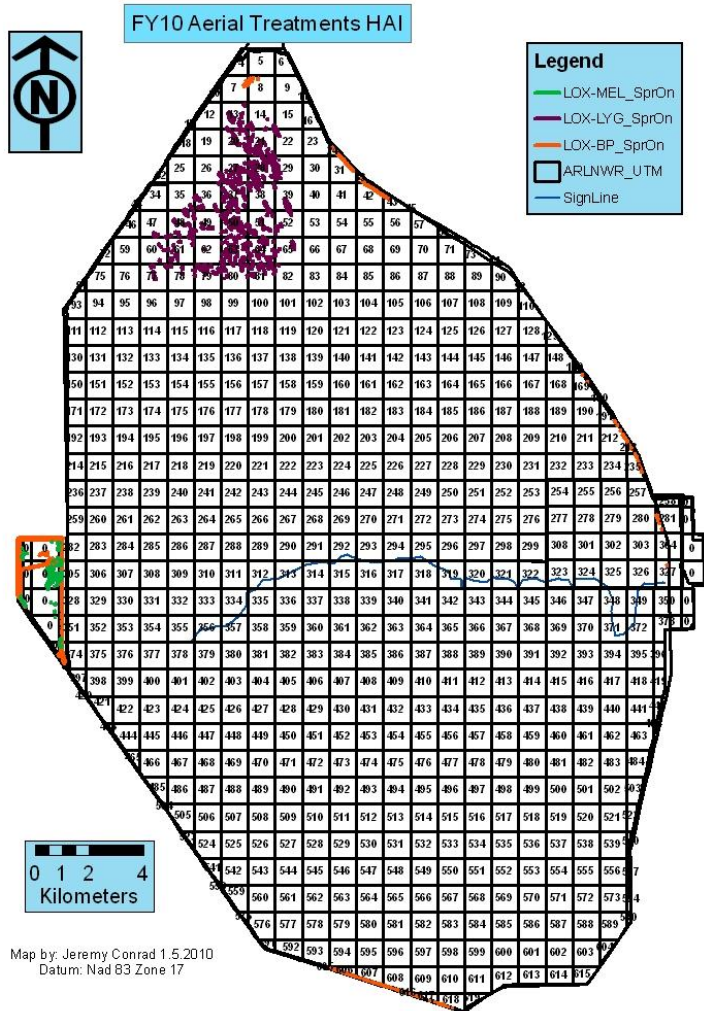
Activity of Sacred Ibis: (ex. Feeding, flying (give direction), nesting, roosting.....) _____

Observer: _____

Comments: _____



Aerial Treatments: FY 2010



**FY2009 Funding Completed in
FY2010, December 2009**

Brazilian Pepper

420 acres - \$57,155

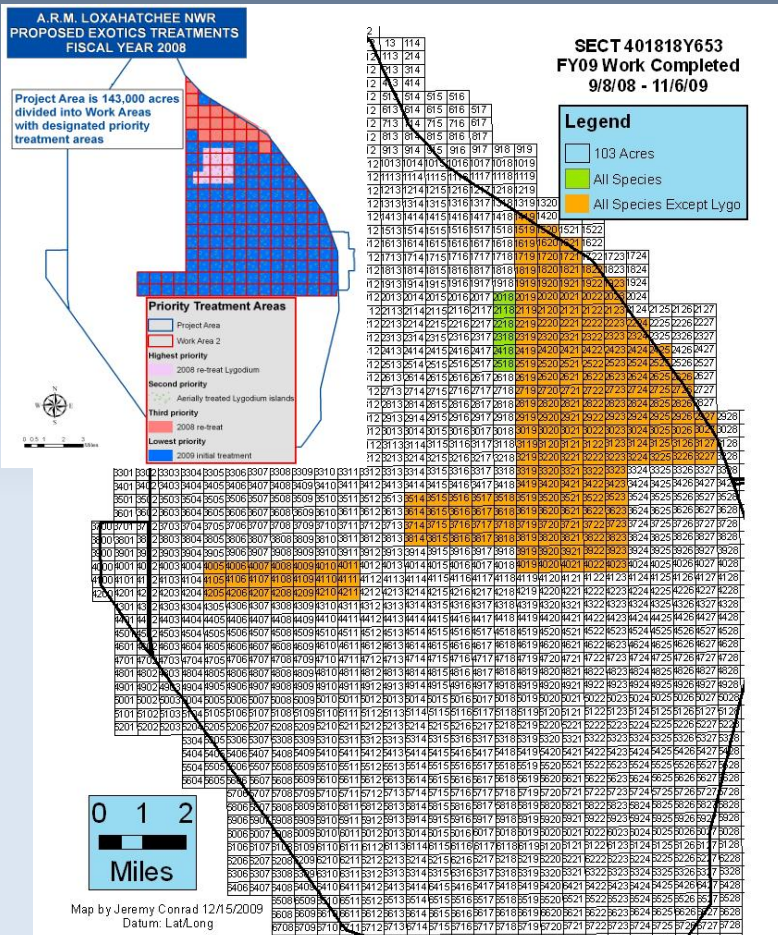
Melaleuca

300 acres - \$62,550

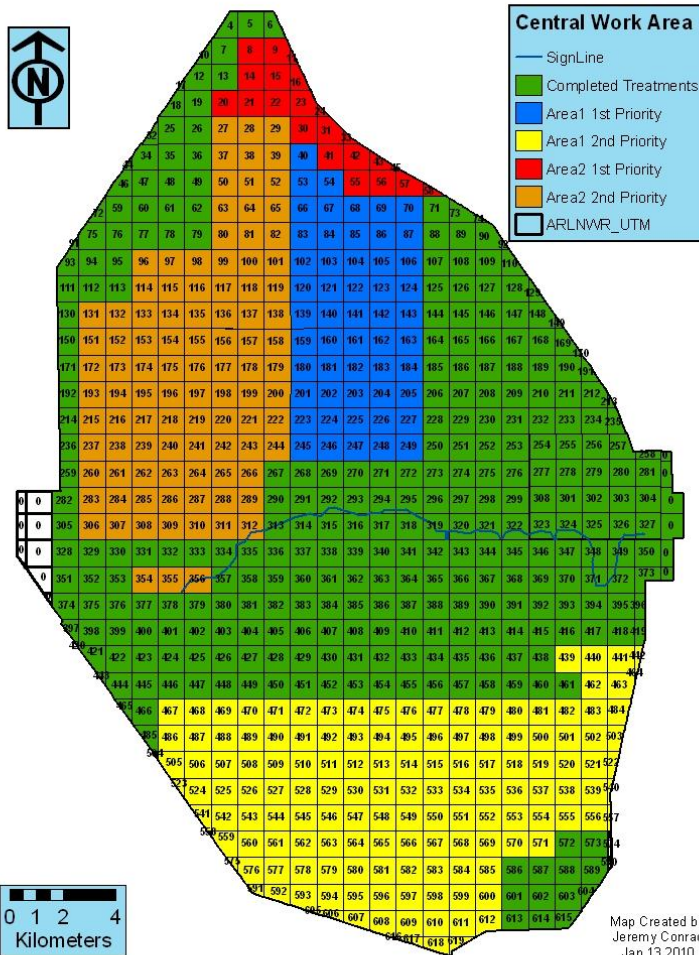
Old World Climbing Fern

1,244 acres - \$200,295

Ground Treatments in FY2010



Ground Treatments in FY 2010



Central Work Area Contracts

Applied Aquatic Management Inc.

Start Date: September 2009

4-Airboats

4-Supervisors

28-Crewmembers

Completed: May 2010

Acres = 7,310

Spent: \$853,099.82

Aquatic Vegetation Control Inc.

Start Date: August 2009

6- Airboats

6- Supervisors

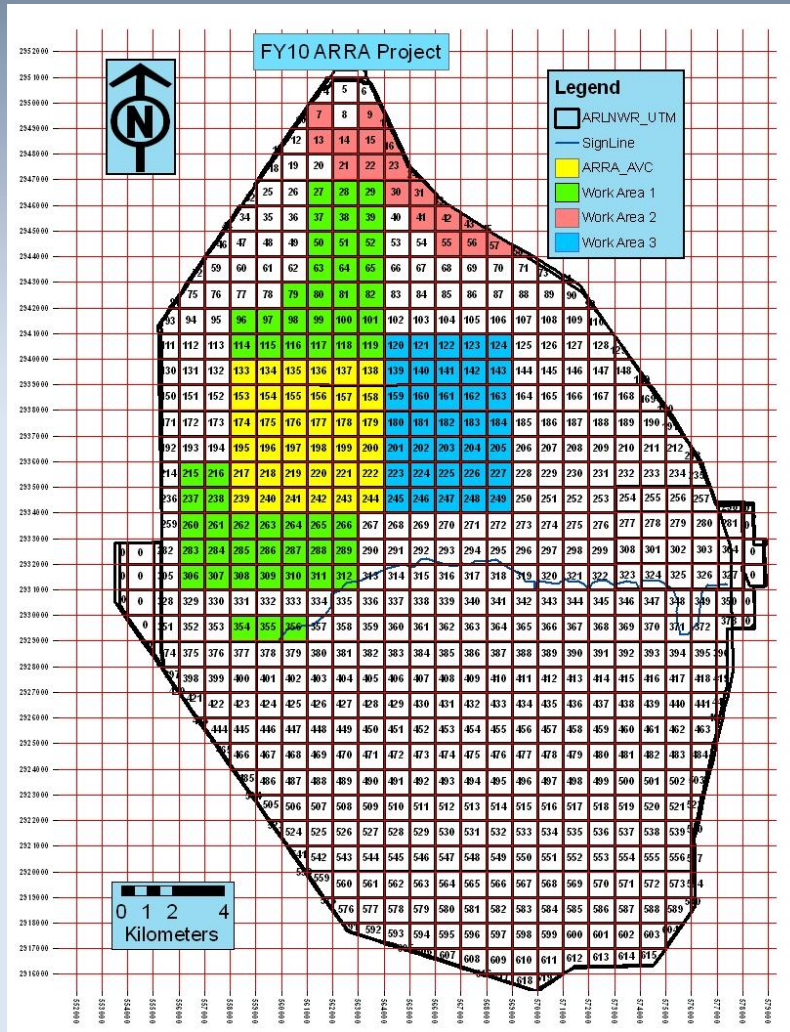
36-Crewmembers

Completed: February 2010

Acres = 5,394

Spent: \$852,968.86

Ground Treatments FY 2010



America Reinvestment Recovery Act (ARRA)

Awarded to:
Aquatic Vegetation Control Inc. (AVC)

Start Date: February 2, 2010

5- Airboats

5- Supervisors

30-Crewmembers

End Date: Fixed Price Contract

To complete: 8,929 acres

Completed to date: 4,250 acres

Cost/acre = \$ 140.00

Fixed Price: \$ 1,250,000

Summary of Treatments from: 10/2009-07/2010

Aerial = 1,964 acres Total cost: \$320,000.00

Ground = 19,322 acres Total cost: \$ 2,462,502.00

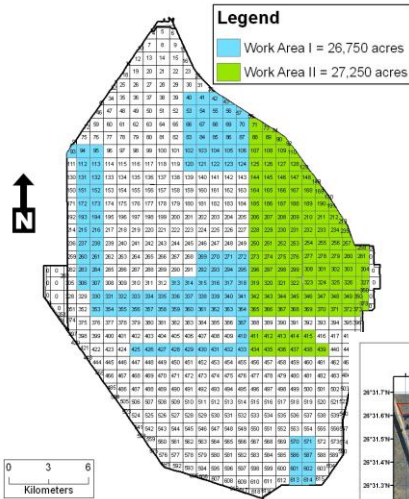
Prescribed Fire = 10,000 acres Total cost: Personal Support

Total acreage = 31,286 Total cost = \$2,782,502.00

Average cost per acre = \$89

Planned Treatments: FY2010

FY 2010 Initial Lygodium Work Areas



Lygodium FY2010

To be Awarded by August 2010

To complete: 54,000 acres

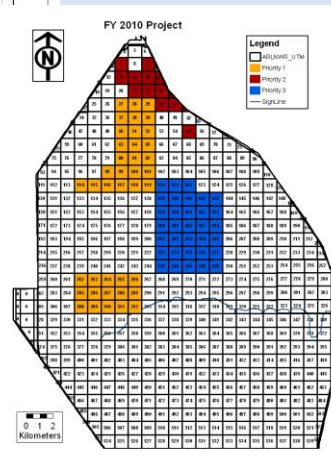
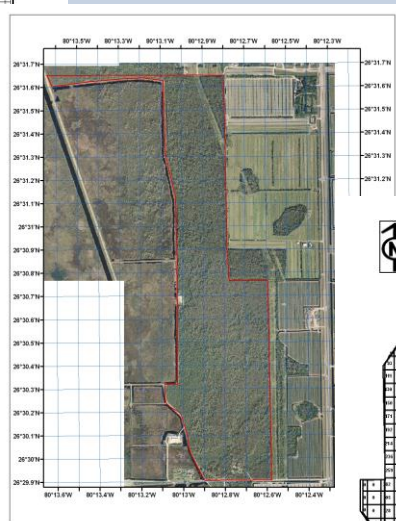
Time and Materials

Cypress Swamp Re-Treatment

To be Awarded by September 2010

To complete: 400 acres

Best Value



Melaluca FY2010

To be Awarded by September 2010

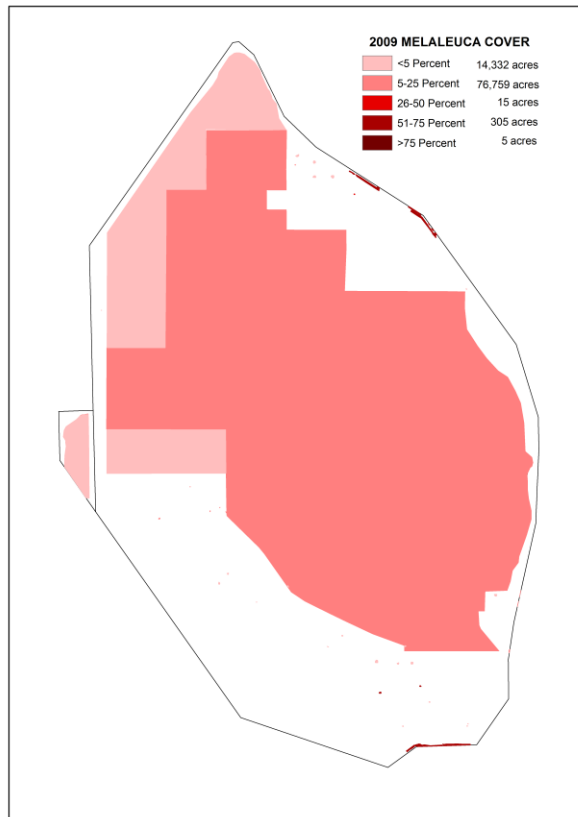
To Complete: 19,422

Time and Materials

Monitoring

- **Systematic Reconnaissance Flights**
2002, 2003, 2005
- **Digital Aerial Sketch Mapping**
(SFWMD, NPS)
2005, 2007, 2008, 2009

Digital Aerial Sketch Mapping



Melaleuca

Coverage Class Acres

High 310

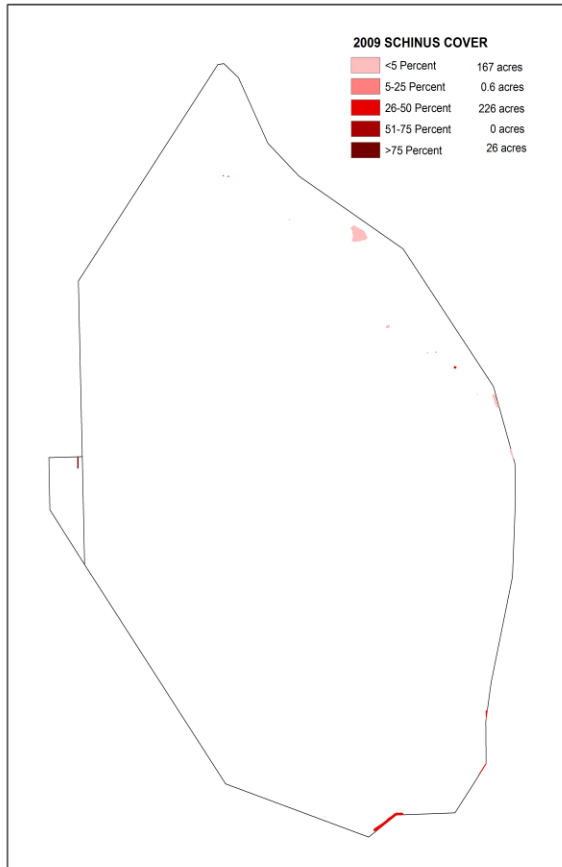
Medium 15

Low 91,091

Total 91,416

*Acres treated
since map was
created,
55,952 acres!*

Digital Aerial Sketch Mapping

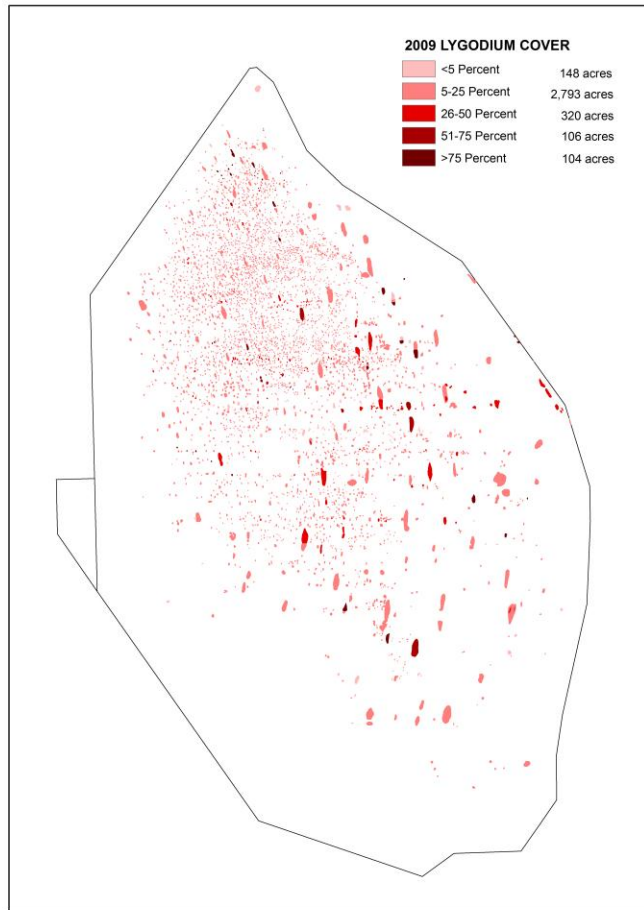


Brazilian Pepper

Coverage Class	Acres
High	26
Medium	226
Low	168
Total	420

*Acres treated since
map was created,
1,586 acres!*

Digital Aerial Sketch Mapping



Old World Climbing Fern

Coverage Class	Acres
High	210
Medium	320
Low	2,941
Total	3,471

*Acres treated since
map was created,
3,709 acres!*

Monitoring



Daily:
Equipment
Personnel
Chemicals
Time
Track Logs

Weekly:
Spot checks on work
Safety

Monthly:
Inspections of treatments
100% treated
90% kill rate

Innovations and Successes

Broad Landscape Controls:

Prescribed FIRE

Used as post chemical treatments, **10,000** acres were treated as a second treatment with prescribed fire.

Innovations and Successes

- **Broad Landscape Controls: Biological Controls**

**Melaleuca Bud Gall Midge, *Fergusonina turneri*
released on Refuge and FLEPPC test plots
outside Refuge 2008 & 2009**

**Brown Lygodium Moth,
Neomusotima conspurcatalis,
“Neo”**

**10,800 larva released at the
Refuge in 2009**



**Water Lettuce Native
Bio-control research
on-going**



Needs & Gaps

Need:

Take advantage of a natural occurrences to reduce populations of invasive exotics.



Cold temperatures caused die off of exotic fish in canals.

Gap:

Understanding the long term affects of chemical treatments on the Everglades?



What areas will restore naturally, and what areas will actively need to be restored?

Needs & Gaps

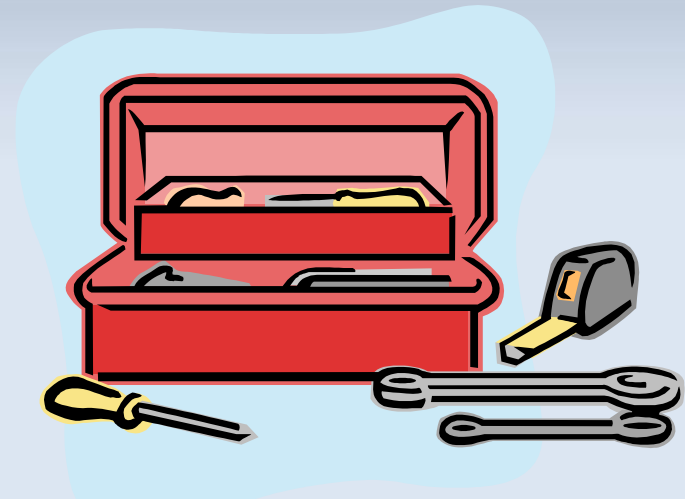
Need:

Work with local land owners to reduce or eradicate invasive species seed sources.



Weeds know, no boundaries!
Contractor: Lake & Wetlands
Management, Inc..

Gap: Having and using all the tools available [chemicals, fire, bio-control, mechanical, water levels.....] in the toolbox.



Knowing when, how, where, how much....
What is the right order and the right amount
to control invasive species... Lygodium??

Questions?

The Worlds Dirtiest Jobs episode of invasive plant removal and prescribed fire at Loxahatchee N.W.R. will air October 2010.



EVERGLADES CISMA

Invasive Species Programs

- Task Name: Removal of Invasive Exotic Plants
- Description: Removal of top four species Melaleuca, Old World climbing fern, Brazilian pepper and Australian pine using chemical, mechanical, fire and biological controls.
 - Objective: Achieve and sustain maintenance level control of Melaleuca, Old World climbing fern, Brazilian pepper and Australian pine by 2017.
- Partners: South Florida Water Management District, Region 4 Invasive Species Strike Team, ECISMA, TCCISMA.
- Start/End Dates: 2000 – 2017
- Status: Assigned
- Funding (FY): \$1,000,000.00 with a request of \$ 4,000,000.00/year
- Annual Summary: FY 2009 = Total acreage = 71,240 , Total cost = \$5,254,173.00 FY2010 to date Total acreage = 31,286, Total cost = \$2,782,502.00