

Invasive Plant Operations Overview

2014 Everglades Invasive Species Summit

LeRoy Rodgers, SFWMD

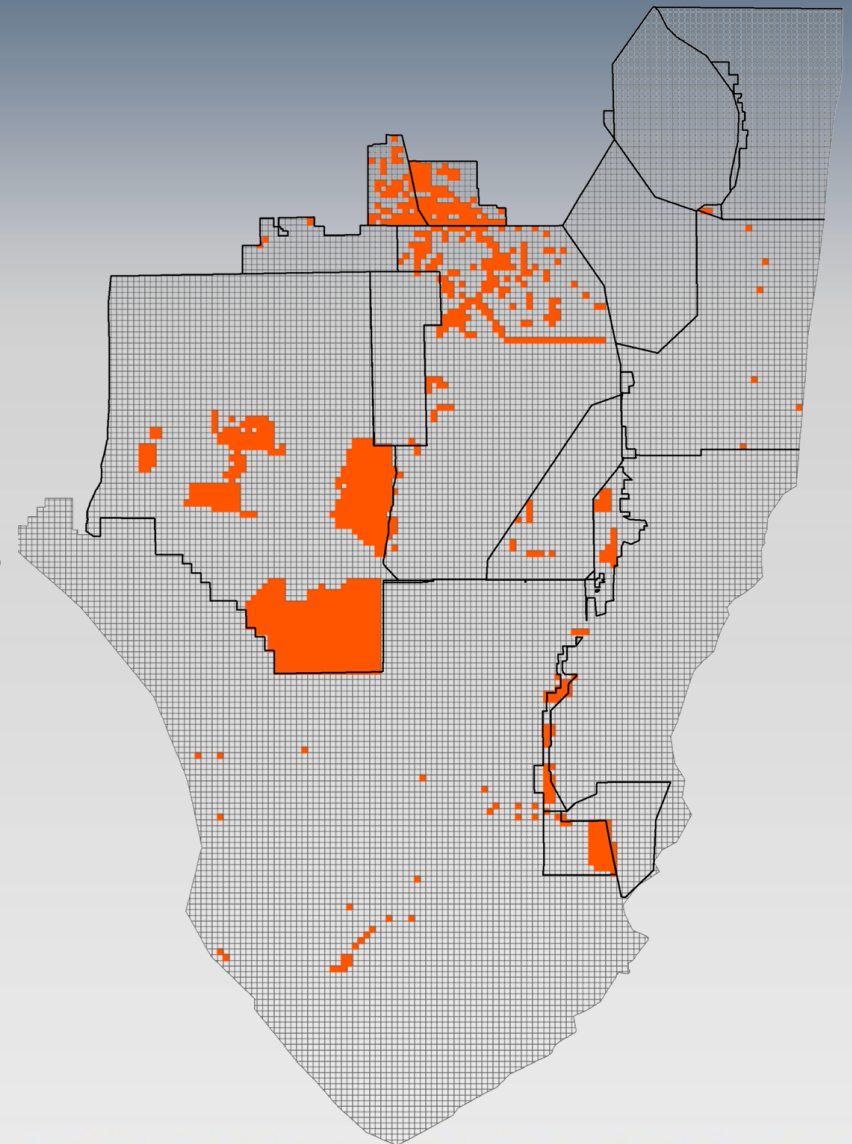


ECISMA Priority Plant Species

Agency/Tribe	Melaleuca	Lygodium	Brazilian Pepper	Australian Pine	Shoebuttan Ardisia	Lather leaf	Portia Tree	Air Potato	Many Cat.1
Big Cypress NP									
Biscayne Bay NP									
Broward County									
Everglades NP									
FP&L									
FWC									
FWS (Lox Refuge)									
Miami-Dade Co.									
Palm Beach Co.									
Seminole Tribe									
SFWMD									

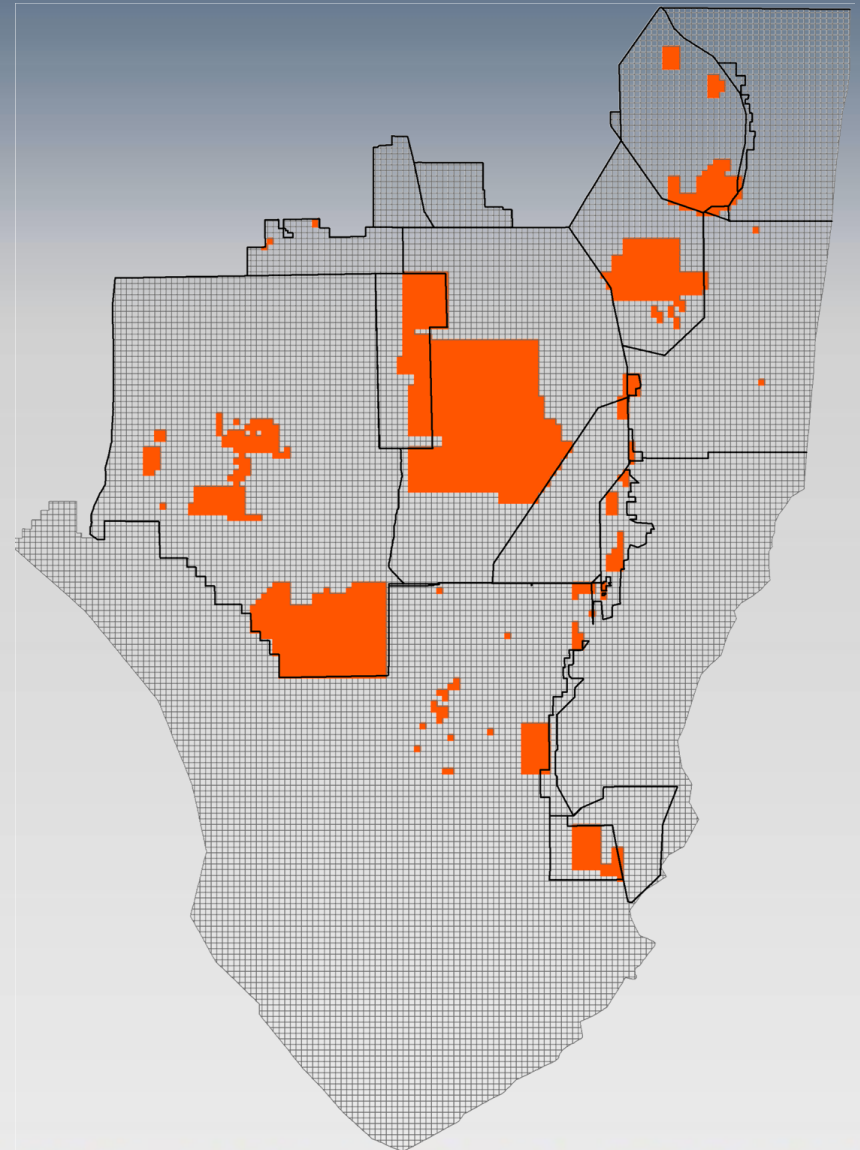
2013/14 Treatments: Brazilian Pepper

- ~128,550 acres swept for Brazilian Pepper
 - Majority of control effort in Big Cypress National Preserve and FWC Wildlife Management Areas



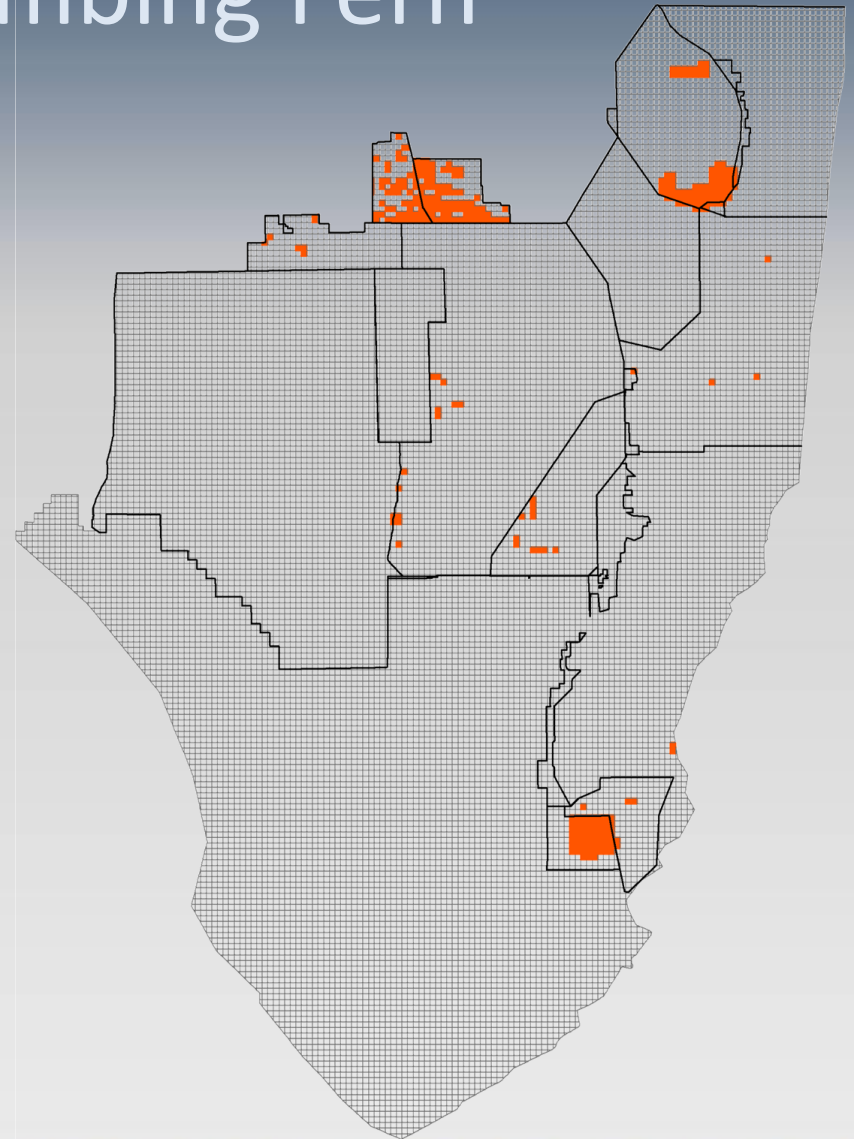
2013/14 Treatments: Melaleuca

- ~ 341,000 acres swept for melaleuca
- Predominantly maintenance control work in nearly all management areas



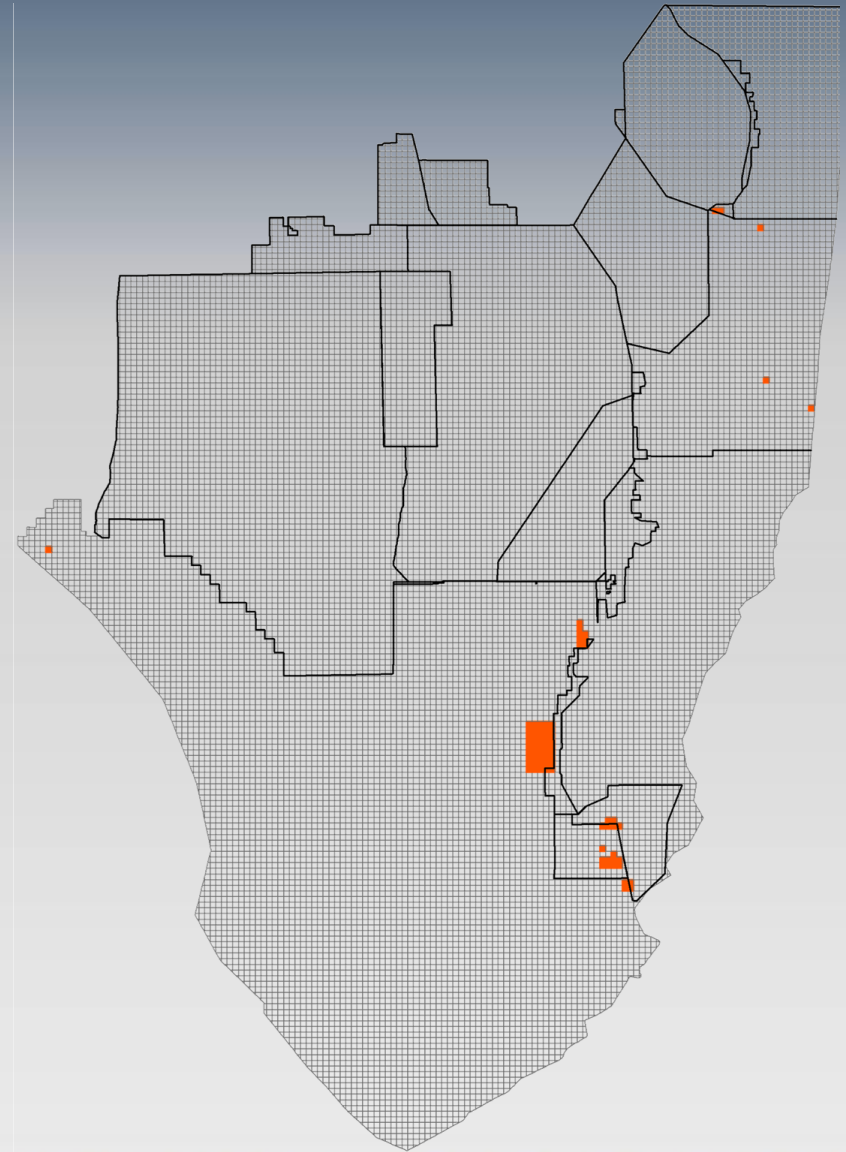
2013/14 Treatments: Old World Climbing Fern

- ~ 18,500 acres swept for OWCF
 - Tree islands and other forested wetlands in Southern Glades, Holey Land, and Rotenberger WMA's
 - Follow up work (post-aerial) and foliar treatments of widely scattered OWCF in Loxahatchee NWR

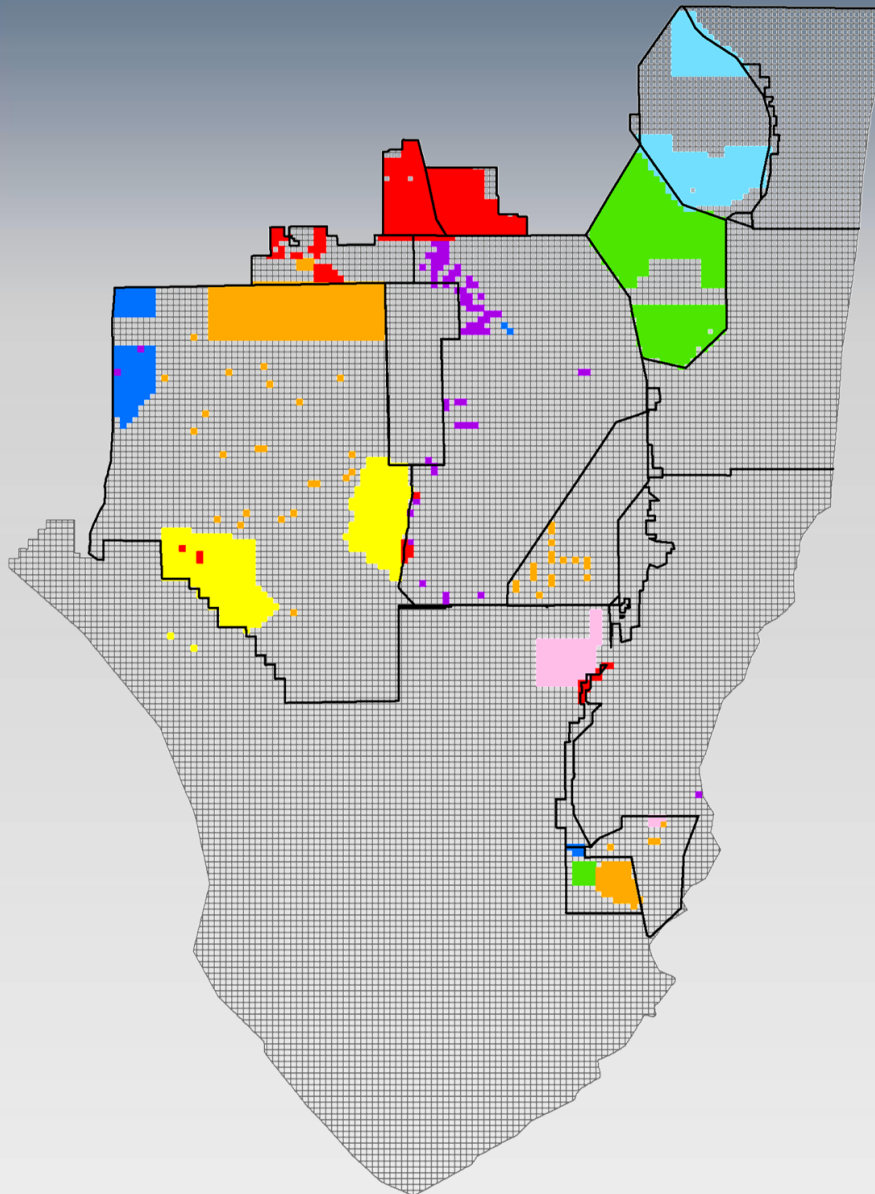


2013/14 Treatments: Australian Pine

- ~ 16,000 acres swept for Australian pine
 - Most work in eastern ENP and Southern Glades



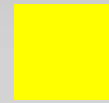
Planned Treatments FY14/15



Brazilian Pepper



Melaleuca



Melaleuca, Brazilian Pepper



Melaleuca, Australian Pine



Melaleuca, Lygodium



Lygodium, Brazilian Pepper



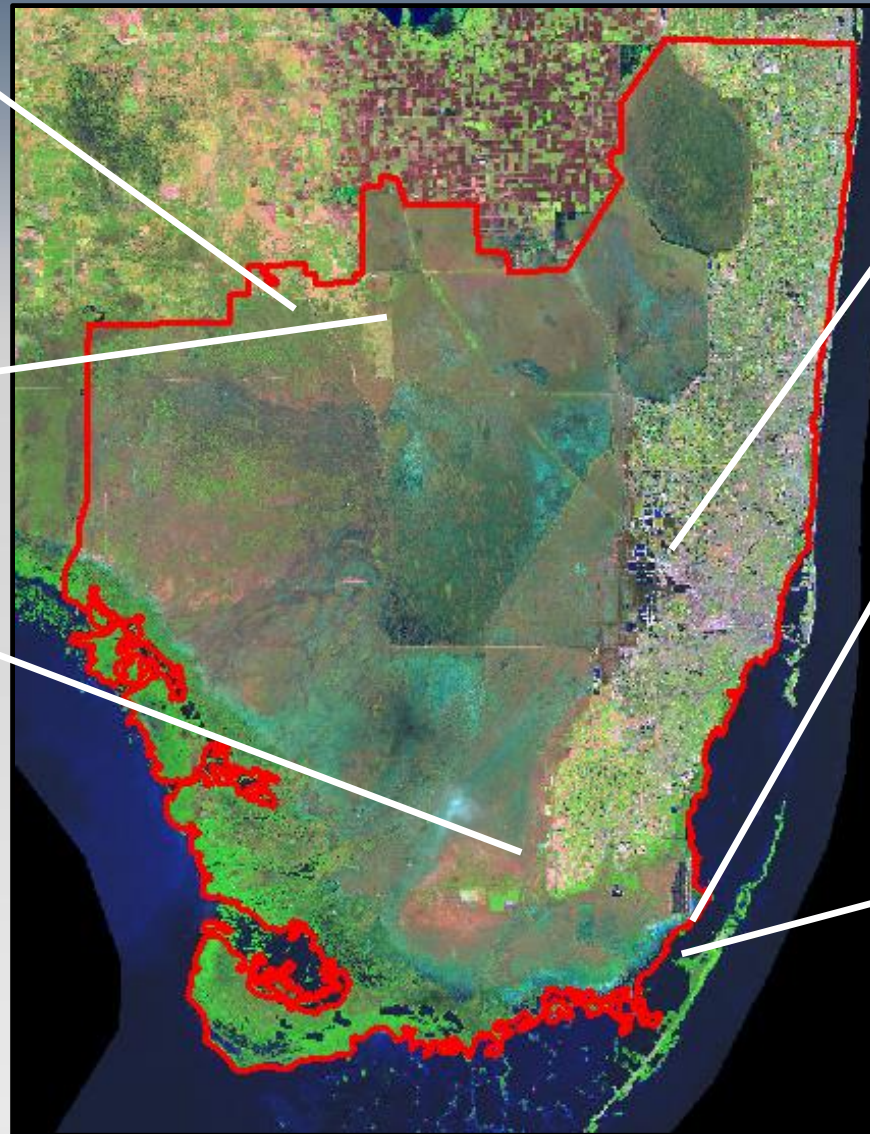
Lygodium

Other Managed Invasive Plant Species

Air Potato
(*Dioscorea bulbifera*)

Arrowhead Vine
(*Syngonium podophyllum*)

Shoebutt
Ardisia
(*Ardisia elliptica*)



Skunk Vine
(*Paederia foetida*)

Latherleaf
(*Colubrina asiatica*)

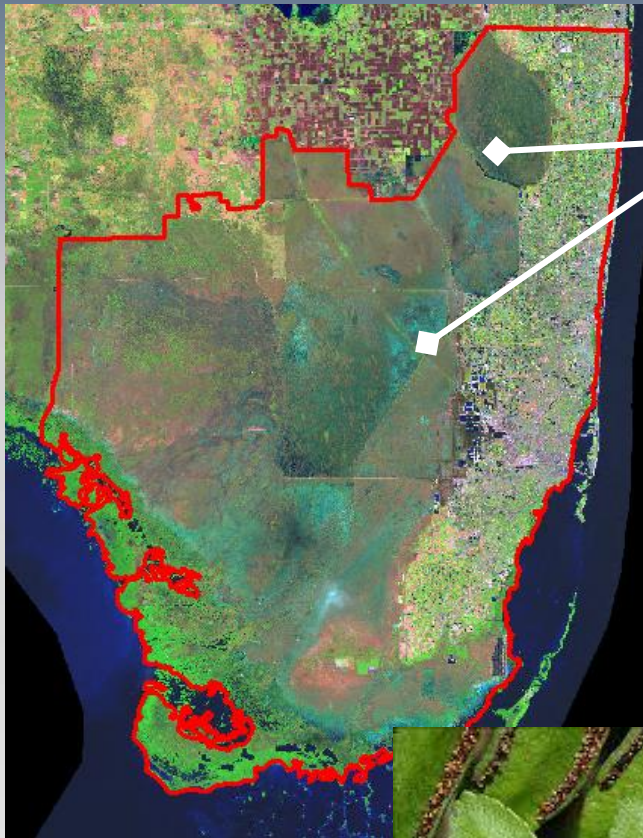
Portia Tree
(*Thespesia populnea*)

Cost Summary*

Habitat	Habitat Cost/ac	Species	Species Cost/ac
Tree Island	\$382	Old World Climbing Fern	\$280
		Brazilian Pepper	\$712
Cypress Swamp	\$55	Old World Climbing Fern	\$255
		Melaleuca/ Brazilian Pepper	\$289
Marsh	\$398	Melaleuca	\$415
		Australian Pine	\$351
Forested	\$391	Old World Climbing Fern	\$392
		Brazilian Pepper	\$227

*Mean cost per acre from a selection of local, state, and federal projects during the reporting period. Costs include contractor services and materials only- contractor oversight not included.

2014 Newly Detected Plant Species

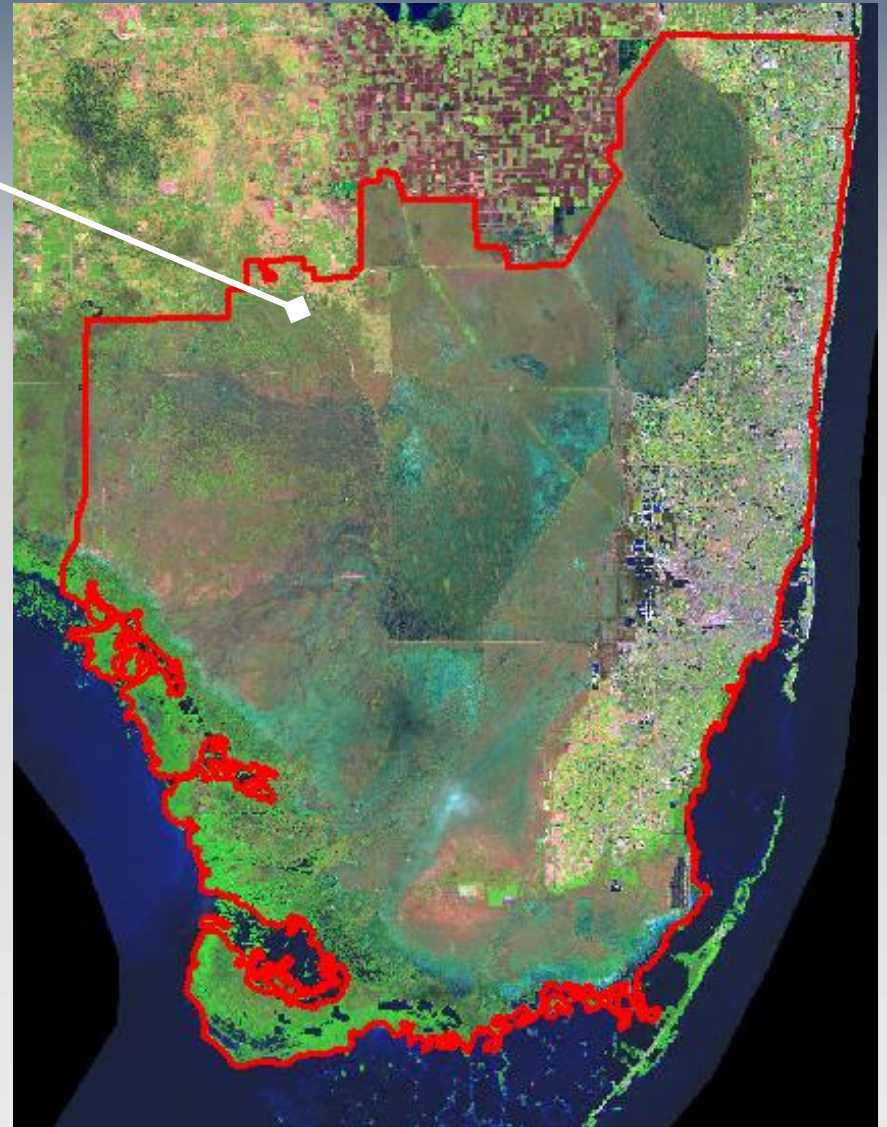


Giant Brake Fern
(*Pteris tripartita*)



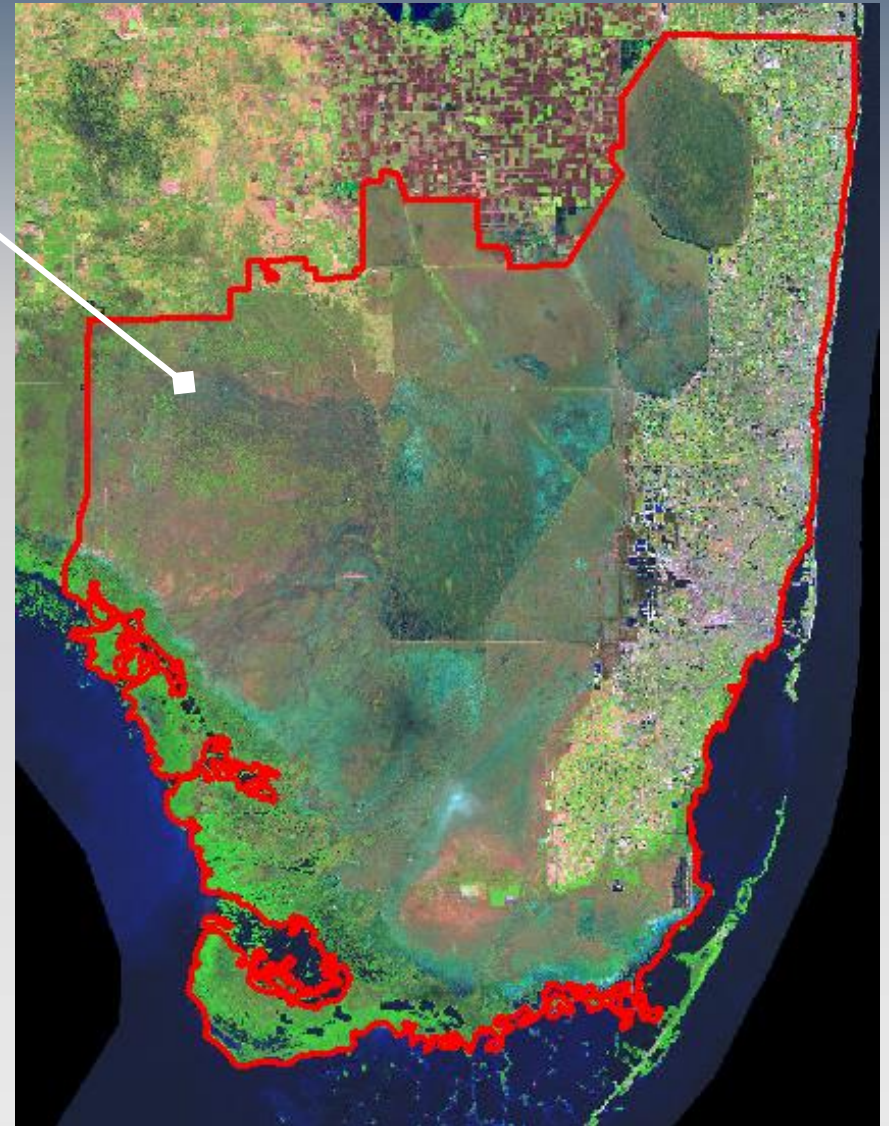
Invaders on the Move?

Arrowhead Vine
(*Syngonium podophyllum*)



Invaders on the Move?

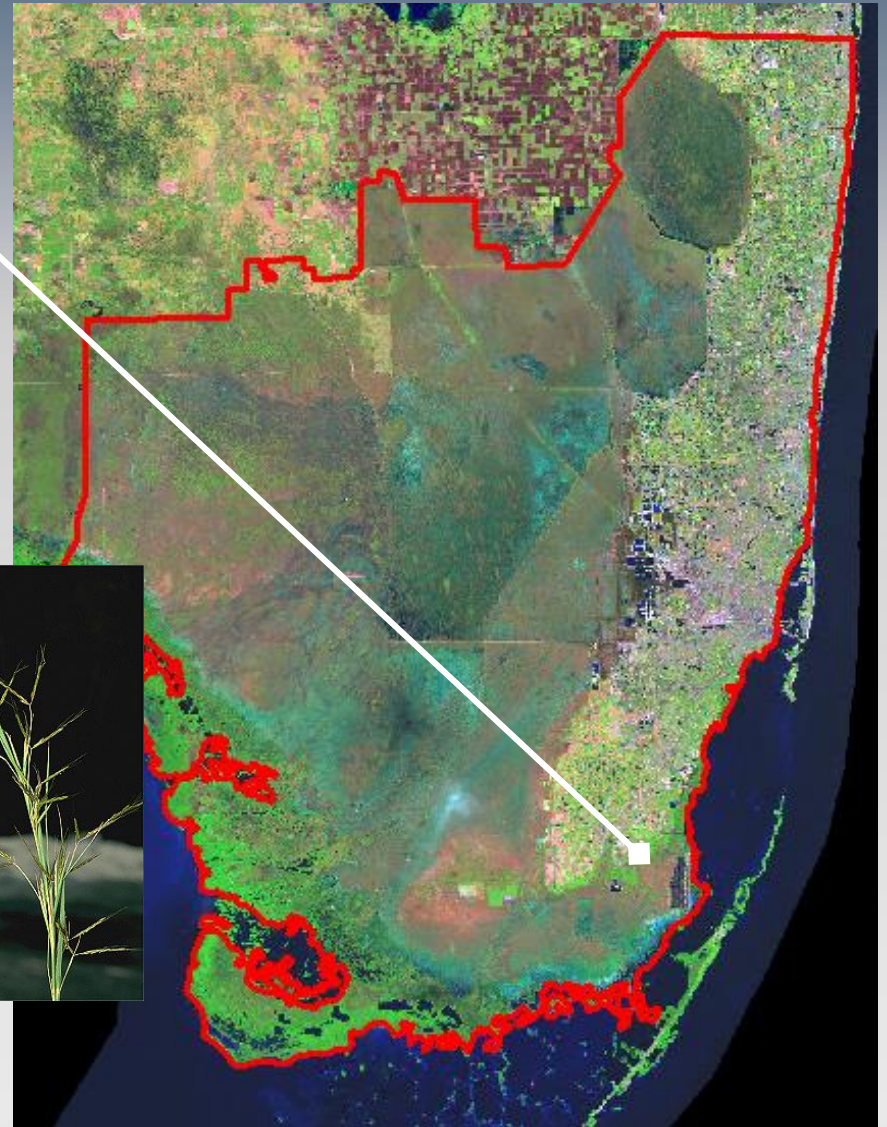
Cogongrass
(*Imperata cylindrica*)



EVERGLADES CISMA

Invaders on the Move?

Jaragua
(*Hyparrhenia rufa*)



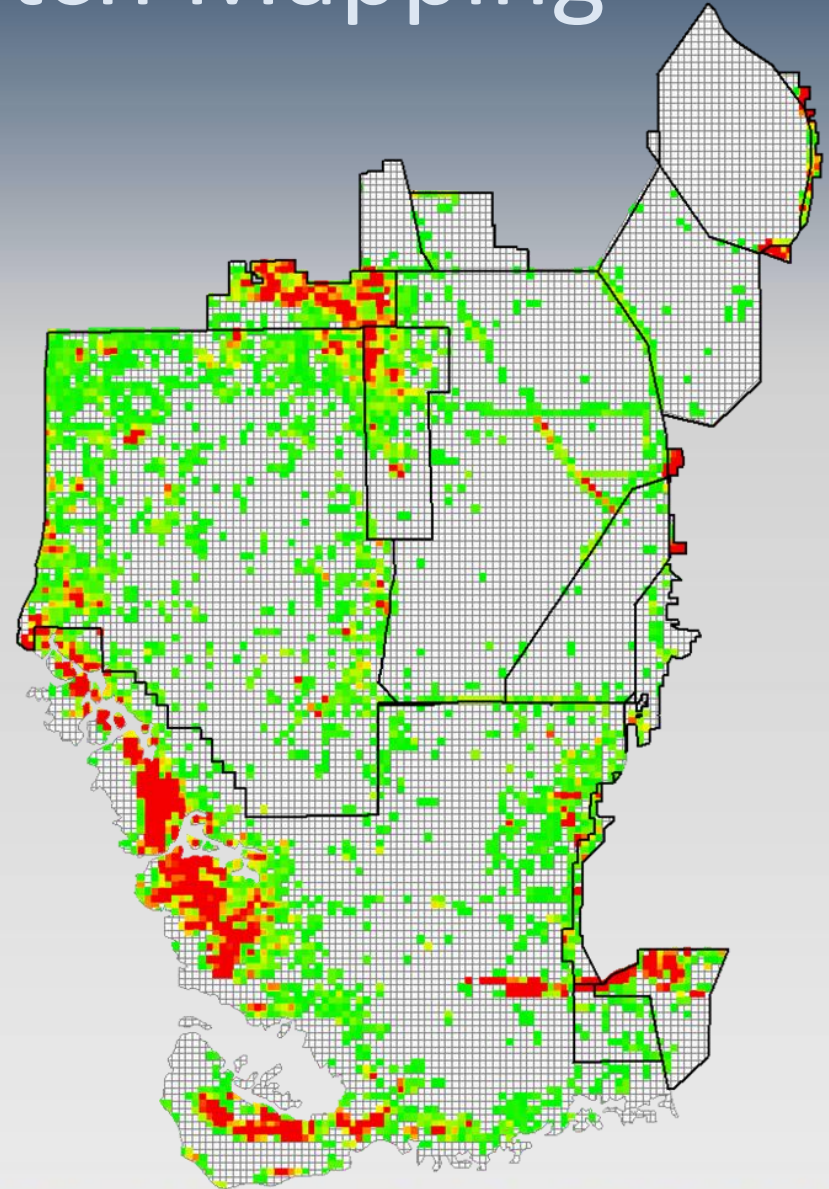
ECISMA Plant Monitoring



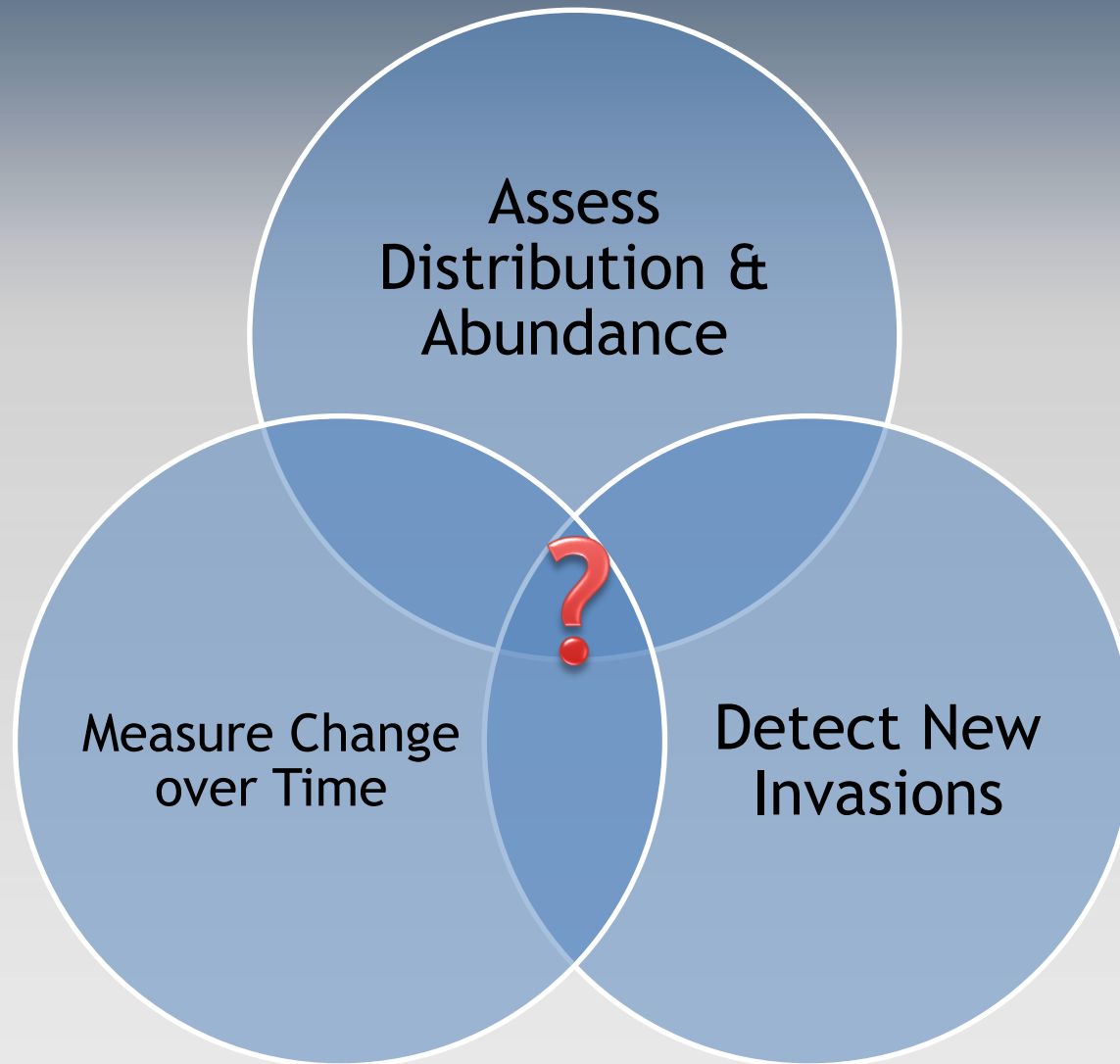
- 1993-2005 : Systematic Reconnaissance Flights
 - Point data collected on fixed transects
- 2008 –Present: Digital Aerial Sketch Mapping
 - Aerial mapping “on-the-fly”
- Other monitoring activities
 - EddMaps
 - Invasion corridor monitoring
 - Ground-based monitoring by many partners

Digital Aerial Sketch Mapping

- 2012/2013
 - Landscape scale inventory of four detectable species
 - LeRoy Rodgers, Tony Pernas, and Steven D. Hill (2014) *Invasive Plant Science and Management* 7(2):360-374.

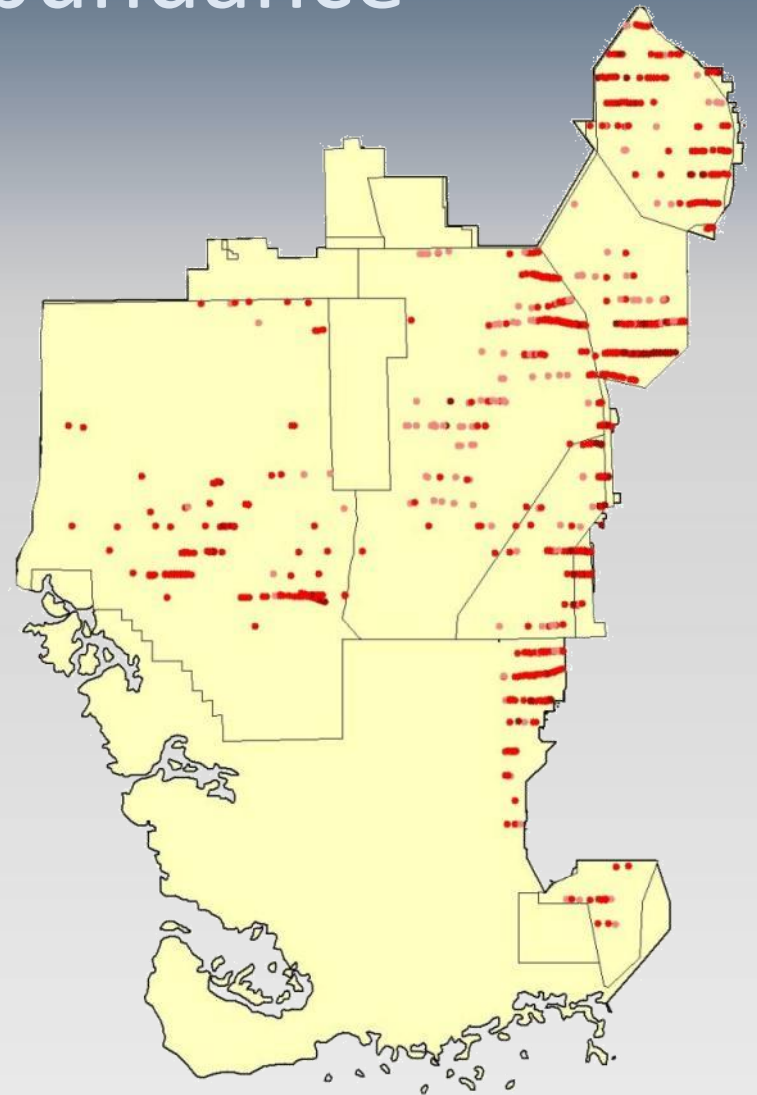


ECISMA Exotic Plant Monitoring Objectives



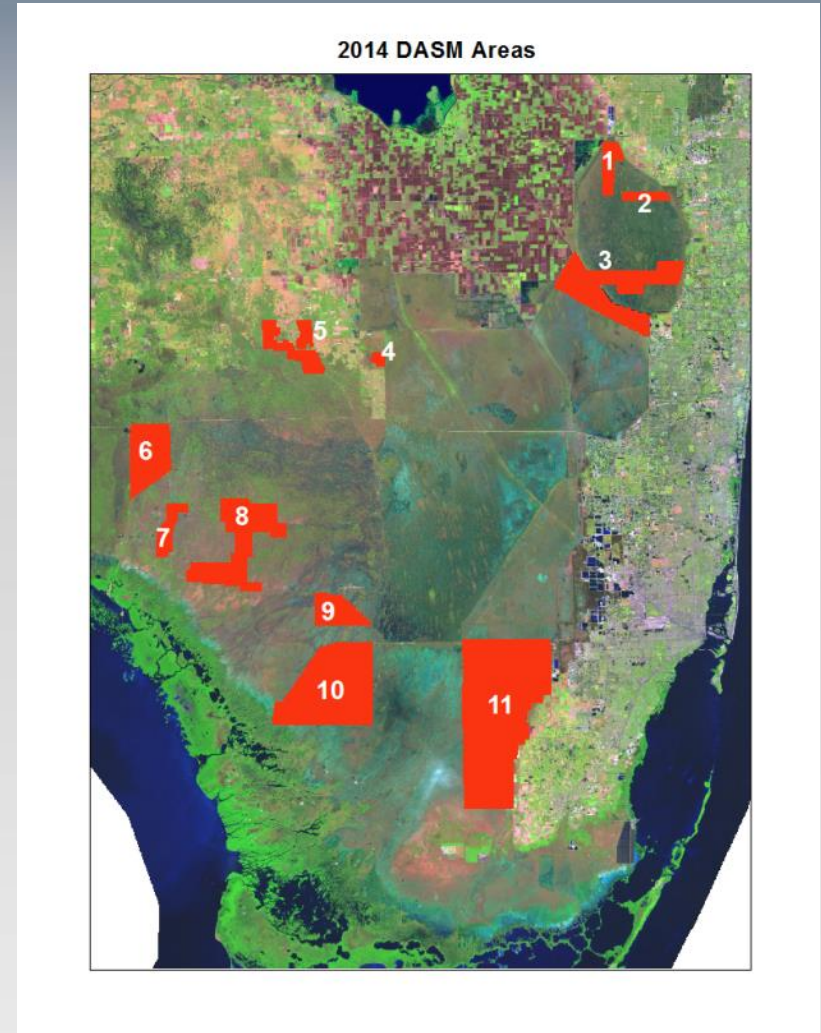
Landscape Assessments of Distribution & Abundance

- Systematic
Reconnaissance Flights
 - Landscape level
assessment
 - Fixed transects (4 km
interval)
 - Provides sample-based
abundance estimates

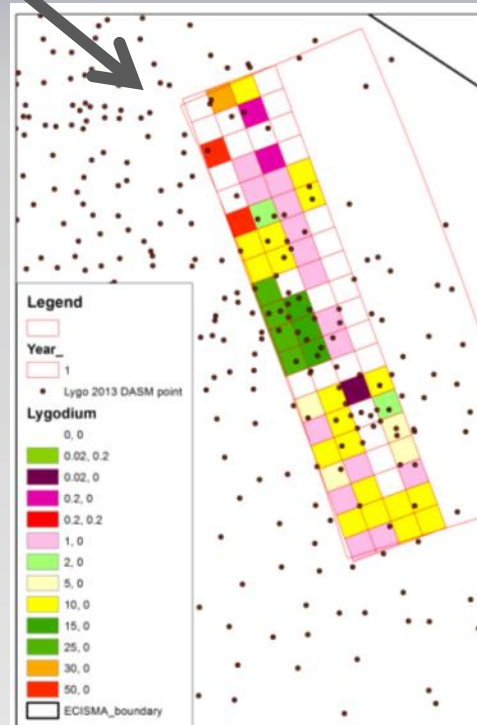
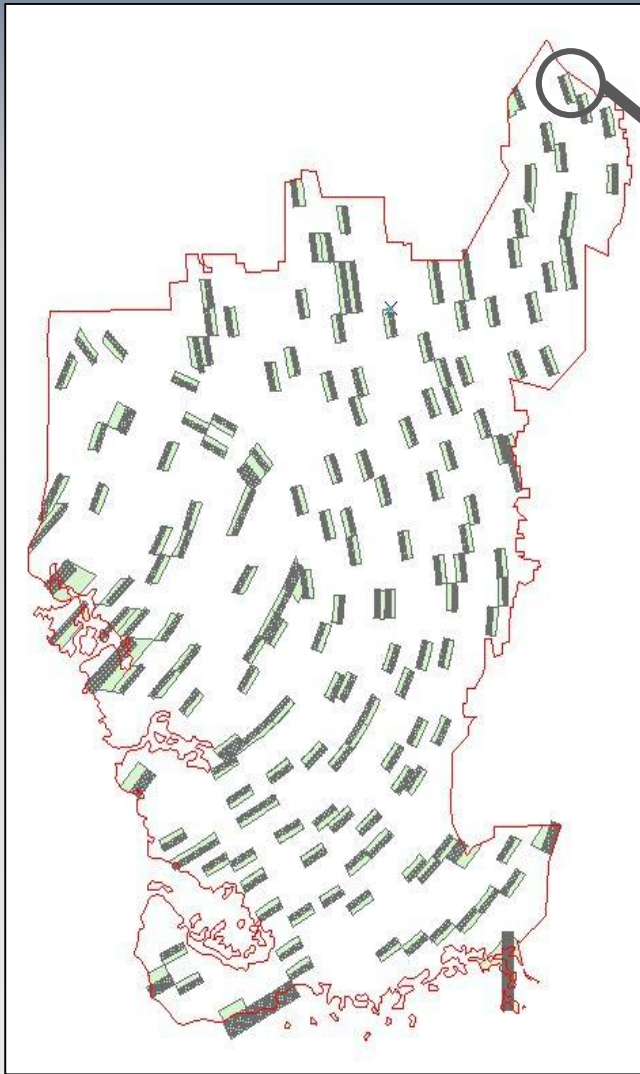


Detailed Mapping to Direct Planned Control Efforts

- Utilizes sketch mapping and 250 m grid system.
- Provides resource managers with more precise and up-to-date maps in planned work areas.



Measure Change Over Time



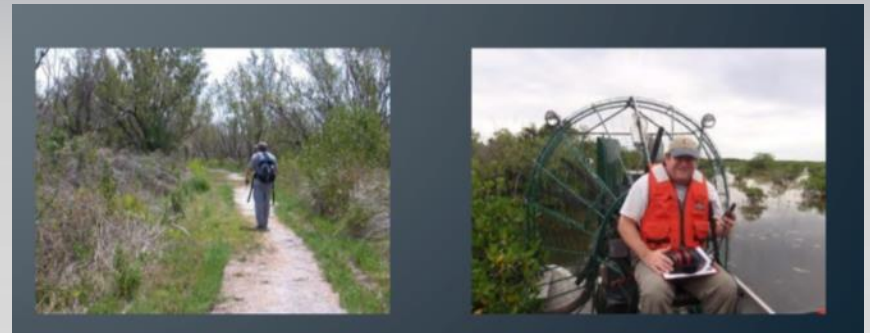
CERP Monitoring Design

- Incorporating invasive plants
- Expand to entire ECISMA
- Enhance ability to detect change over time and make inferences at multiple scales

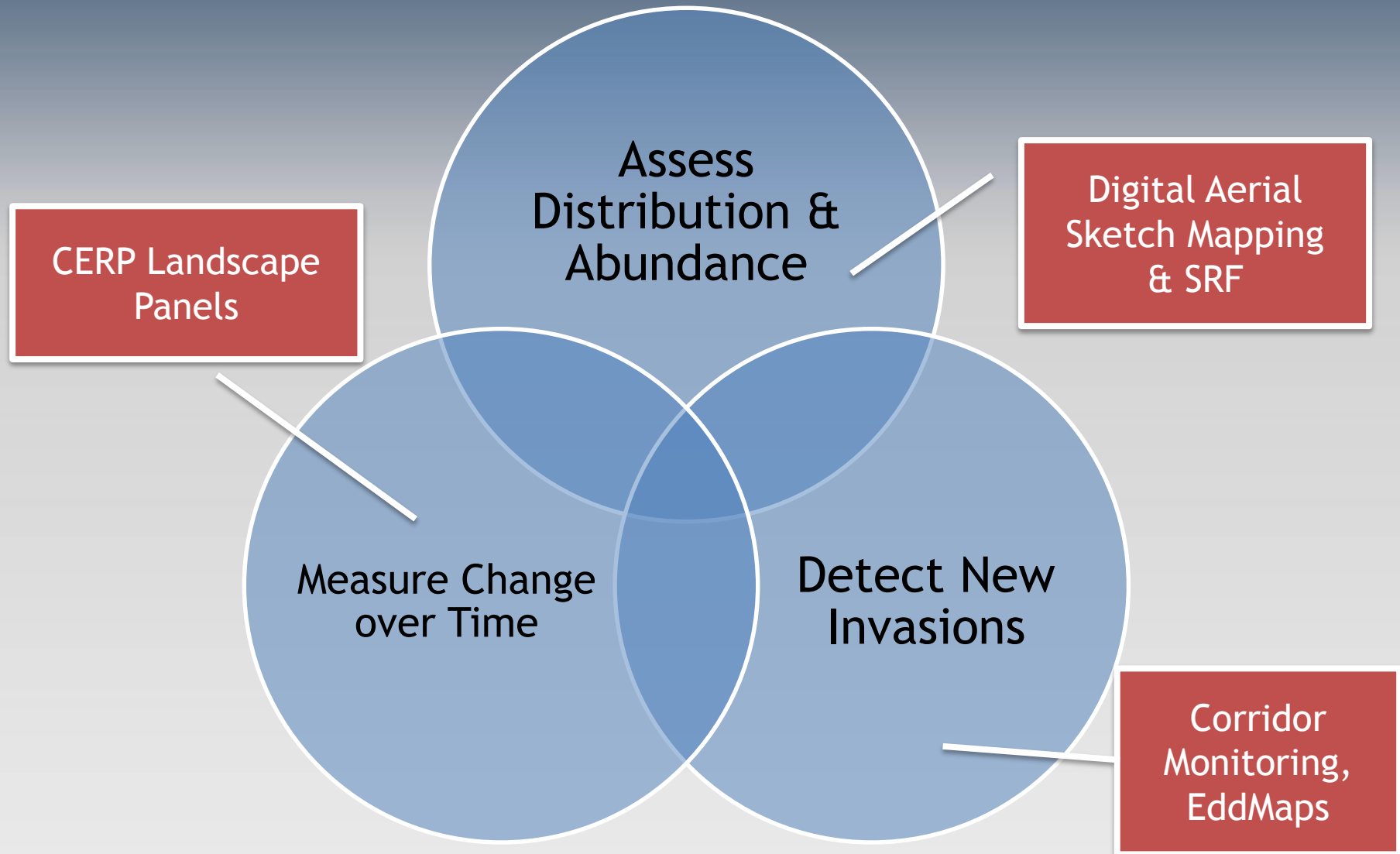
Detect New Invasions

- Promote expansion of early detection monitoring programs and reporting networks.

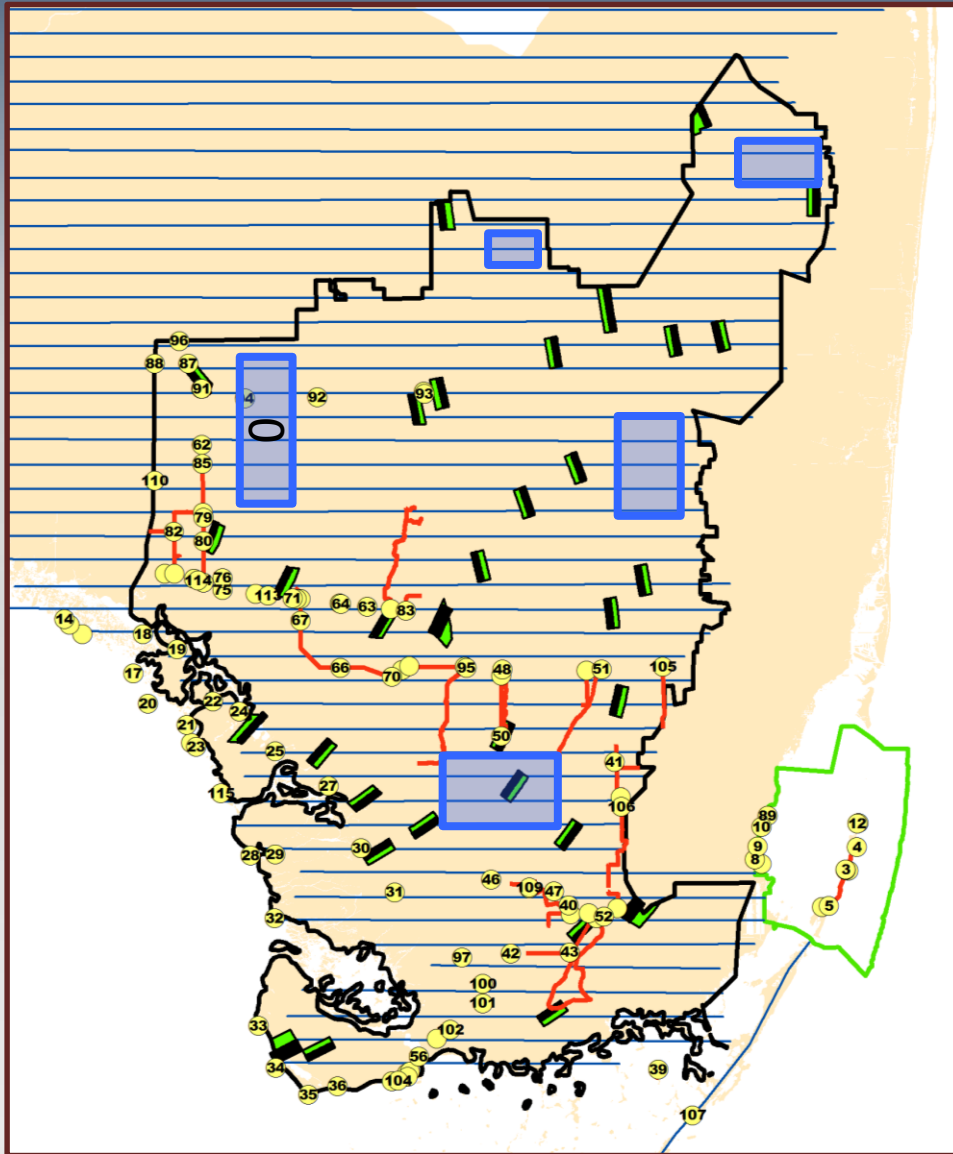
NPS COORIDORS OF INVASIVENESS PROGRAM



ECISMA Exotic Plant Monitoring Objectives

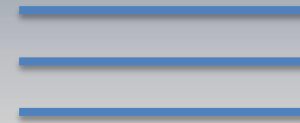


Multi-scale Approach for Multiple Objectives



Measure landscape
distribution and
abundance

5-yr
Interval



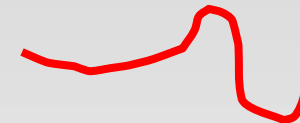
Direct contractors

Annual



Detect new invasions

Annual



Detect change and
Assess impacts

Annual

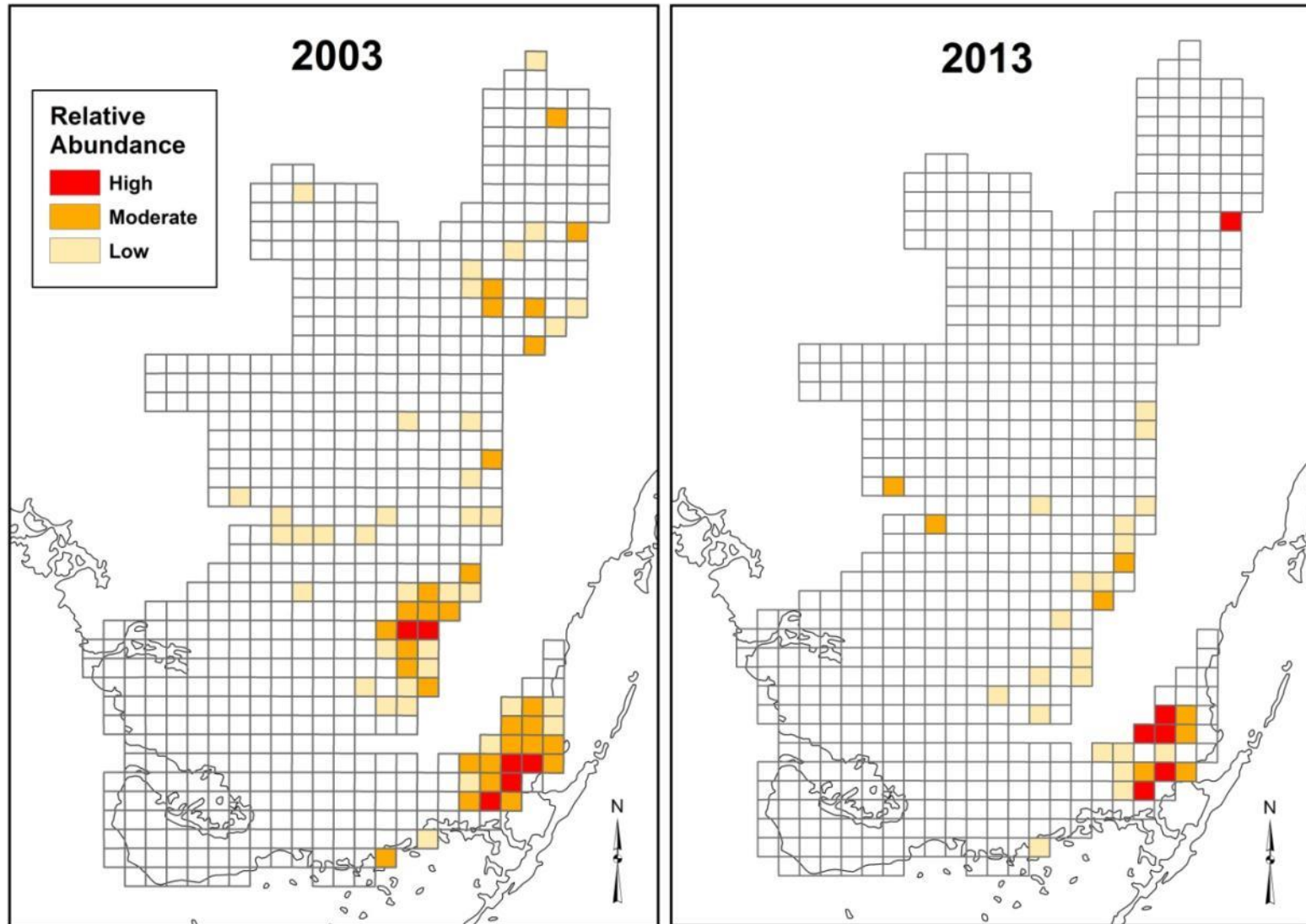


Landscape Level Change in Distribution and Abundance

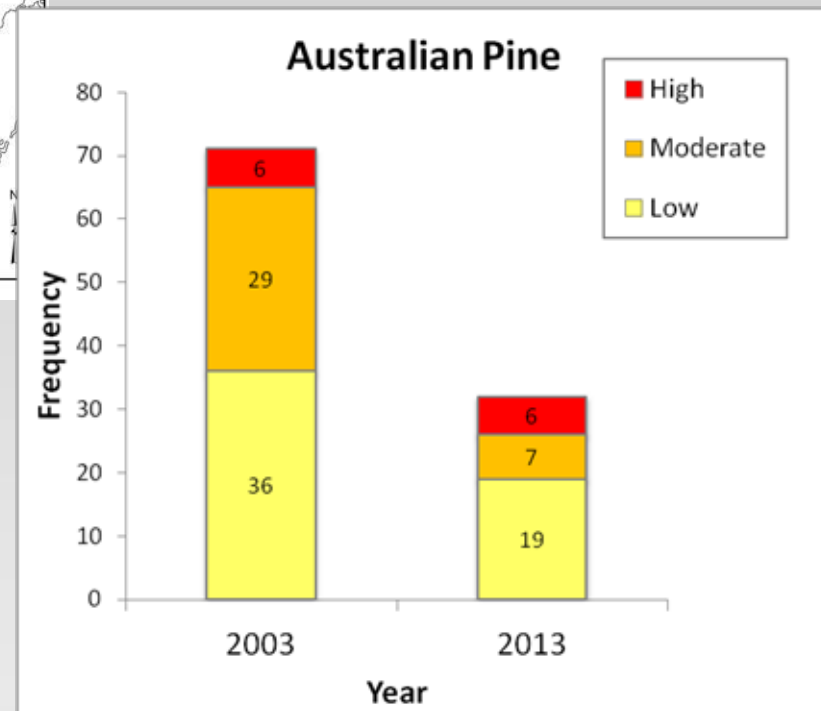
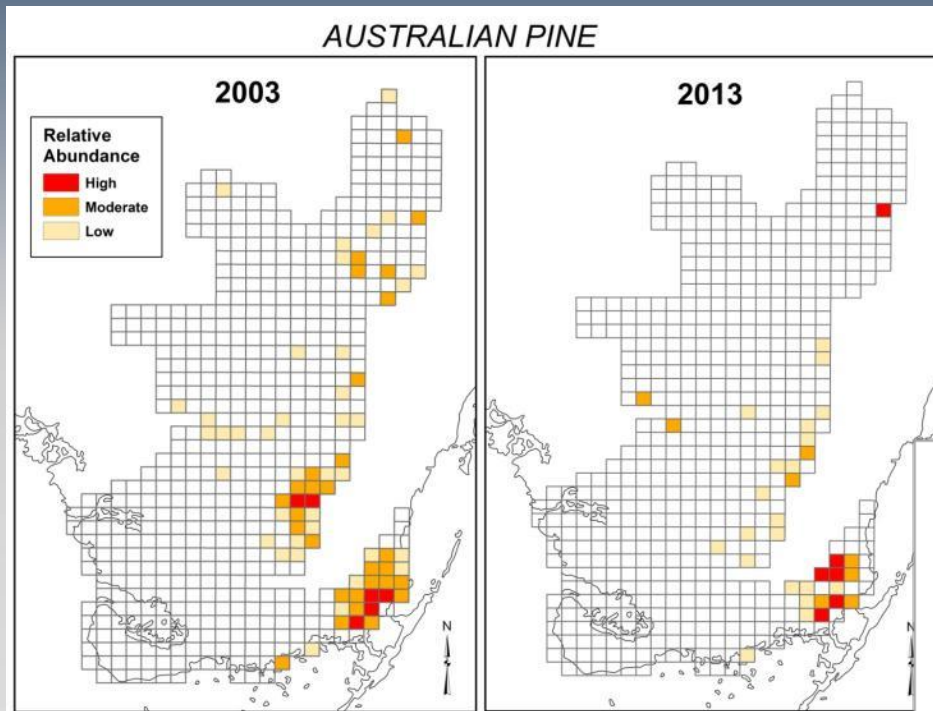
Greater Everglades Module 2003 - 2013

Australian Pine 2003-2013

AUSTRALIAN PINE

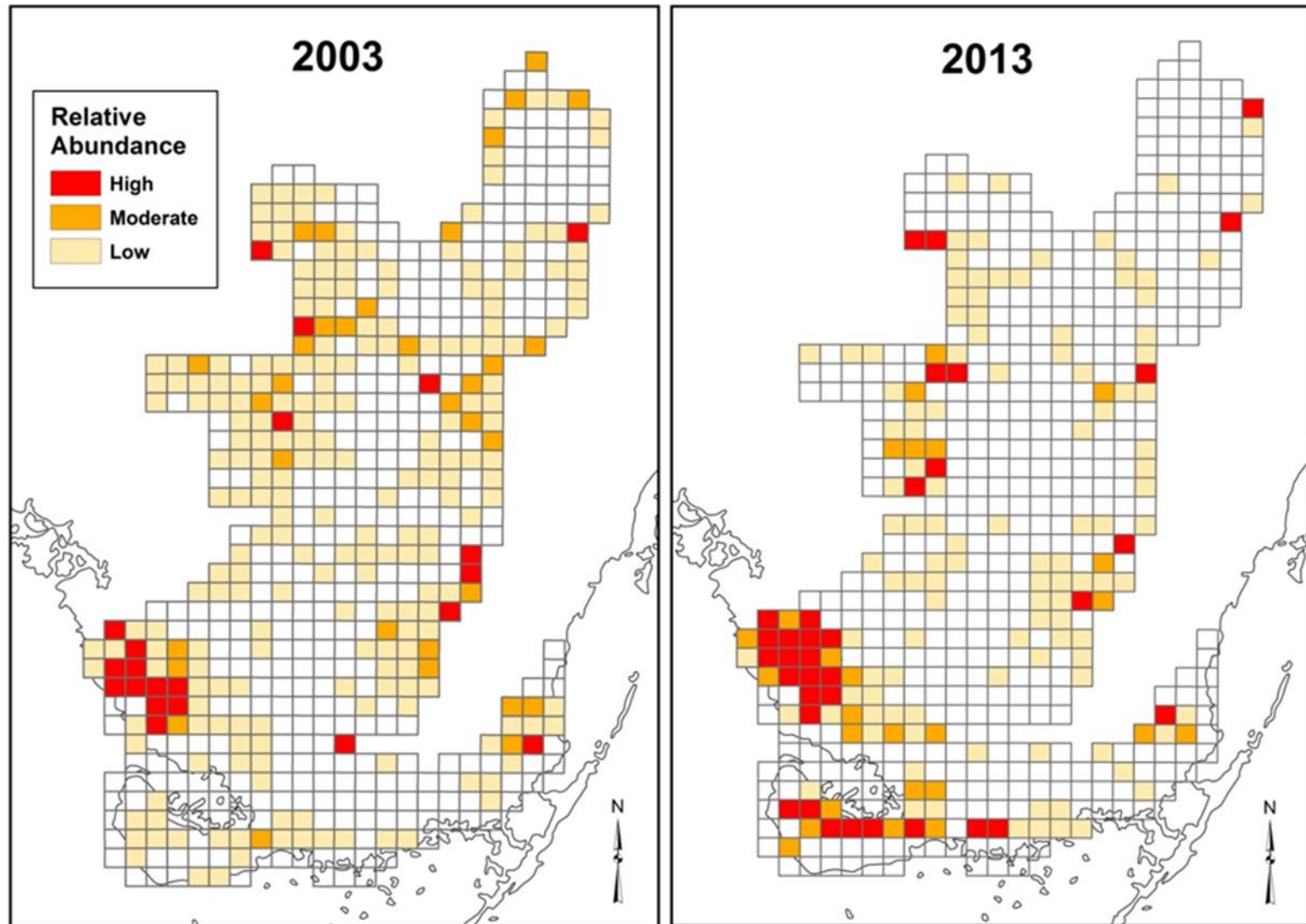


Australian Pine 2003-2013

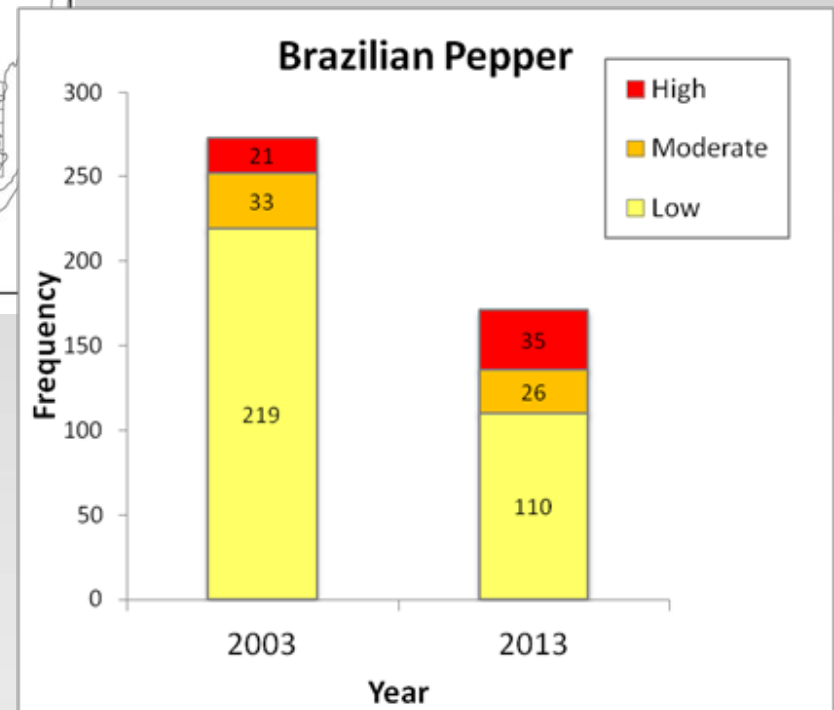
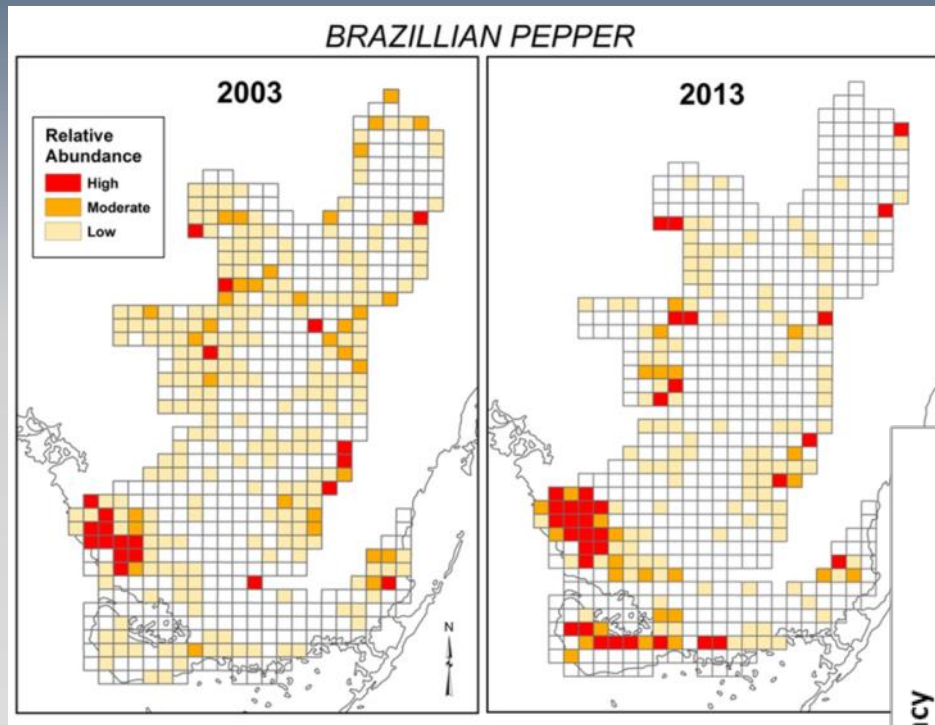


Brazilian Pepper 2003 - 2013

BRAZILLIAN PEPPER

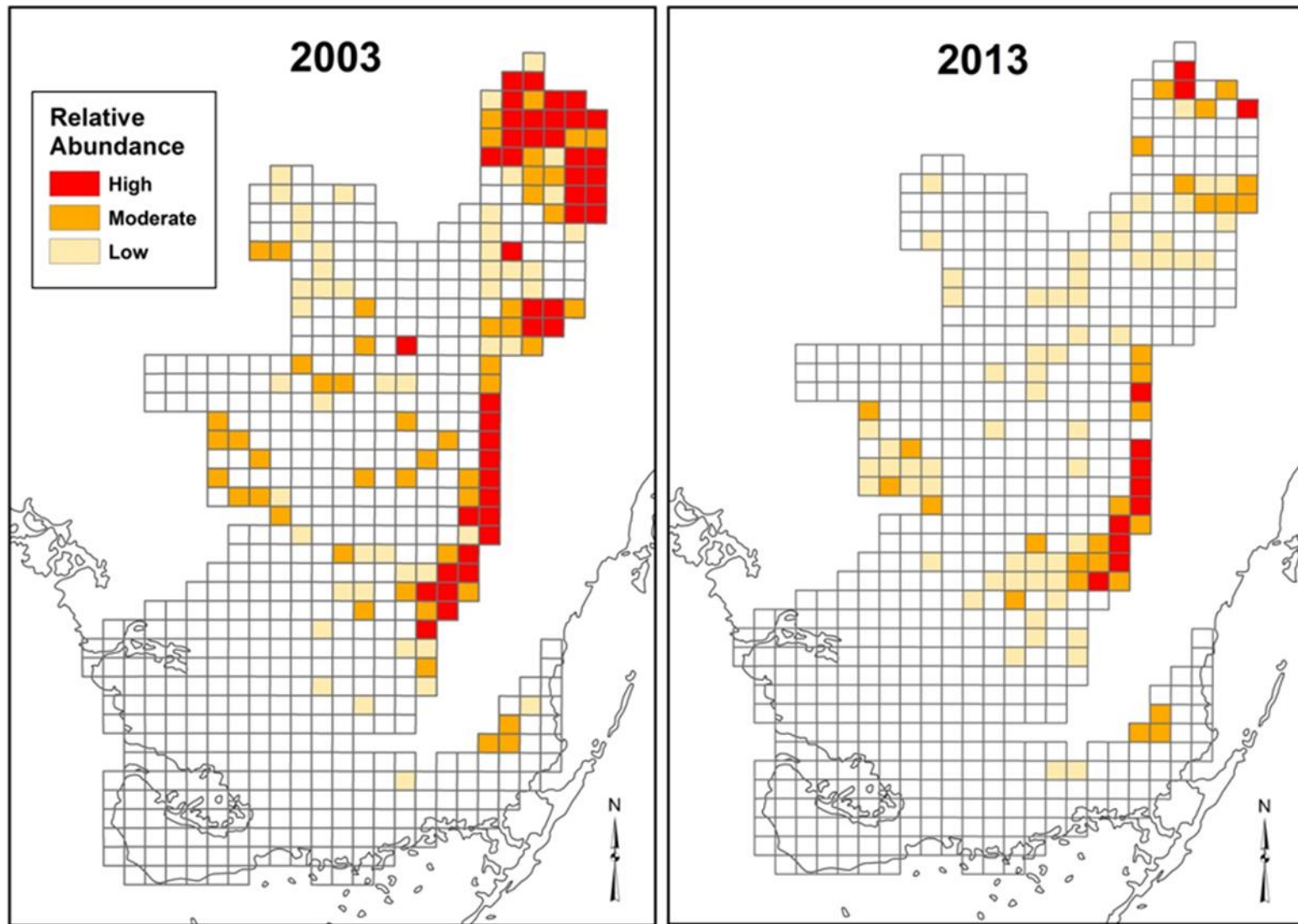


Brazilian Pepper 2003 - 2013

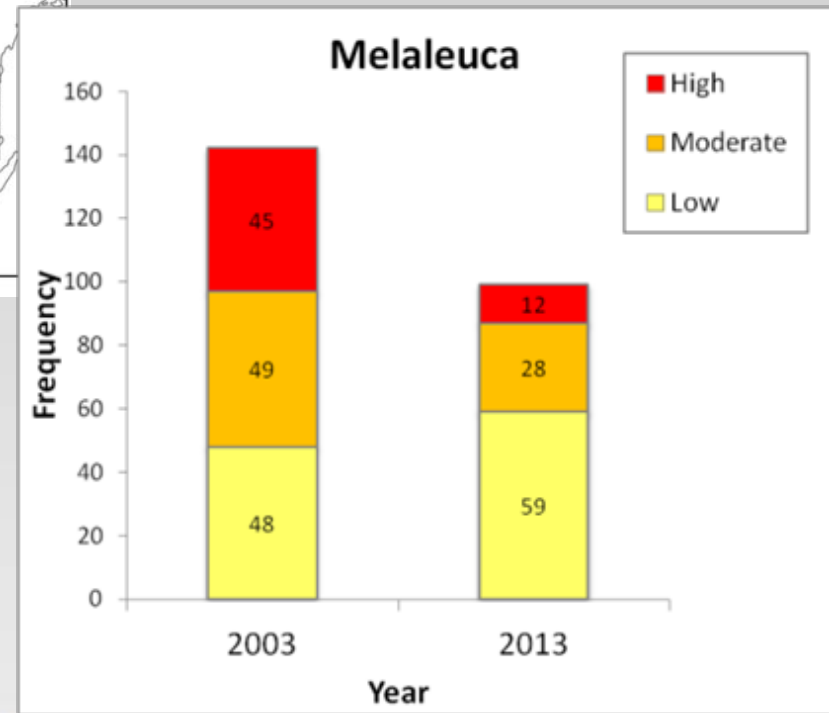
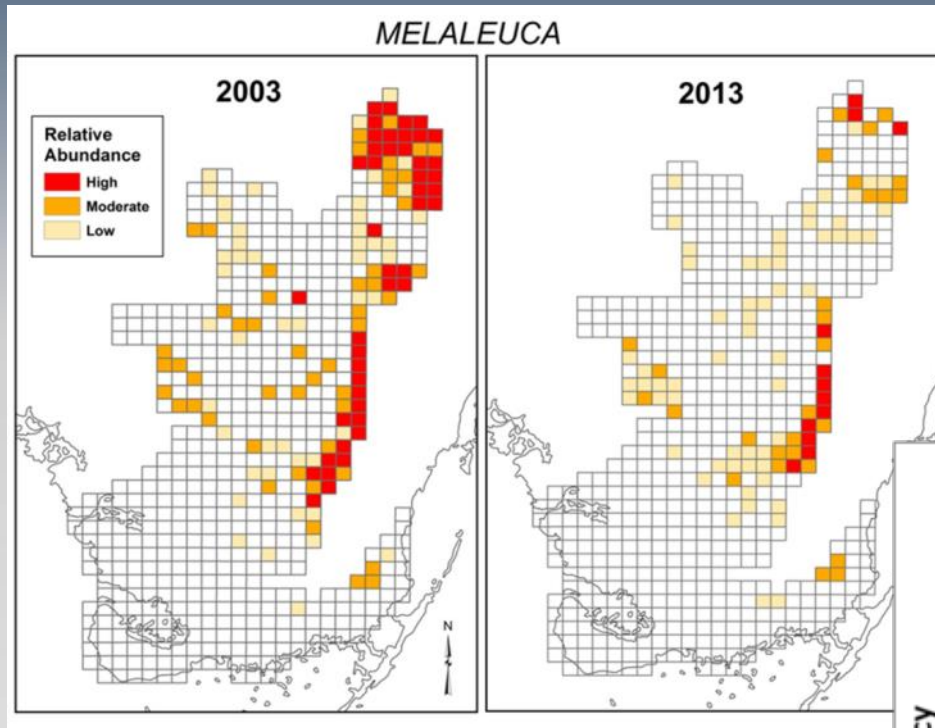


Melaleuca 2003 - 2013

MELALEUCA

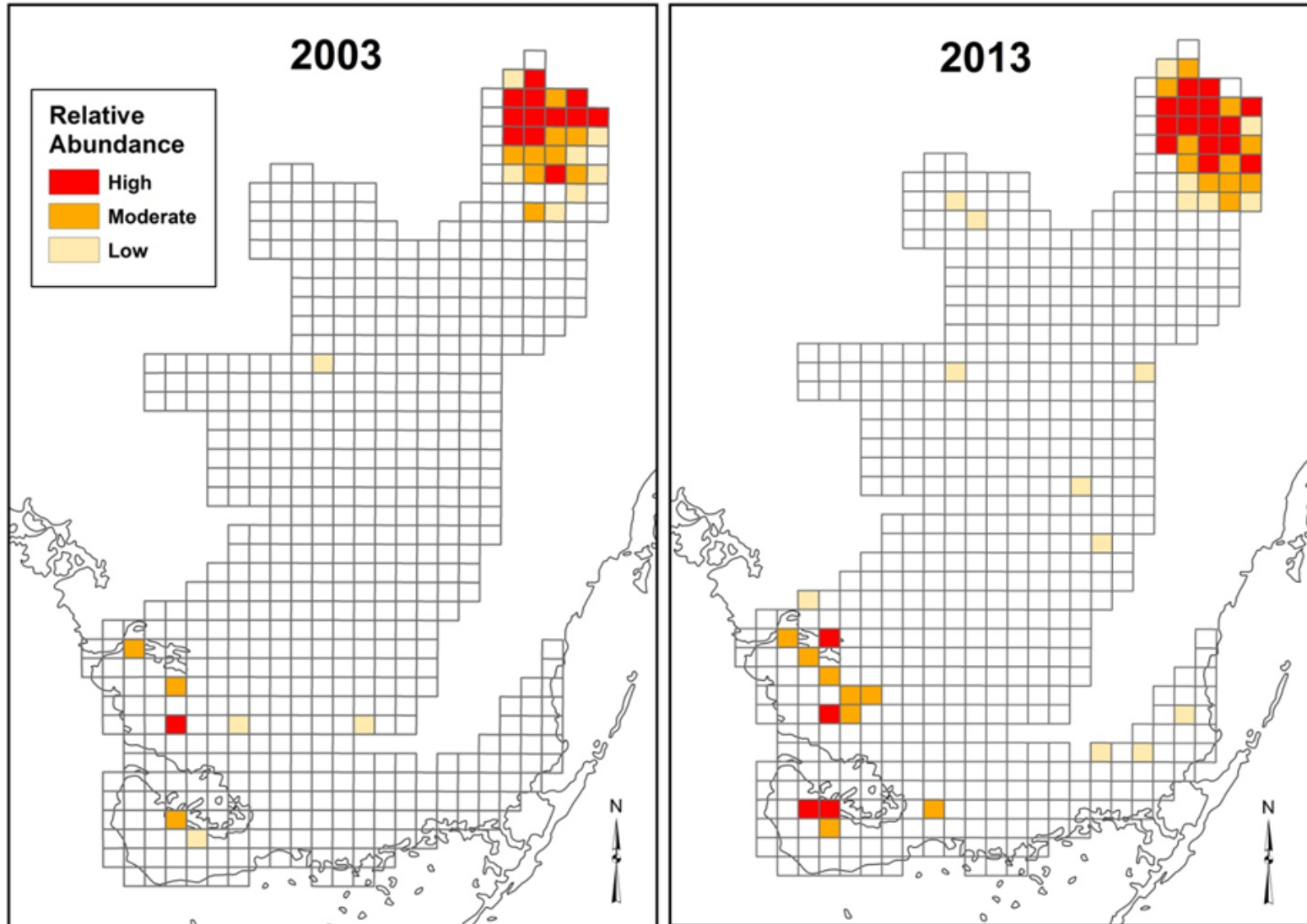


Melaleuca 2003 - 2013

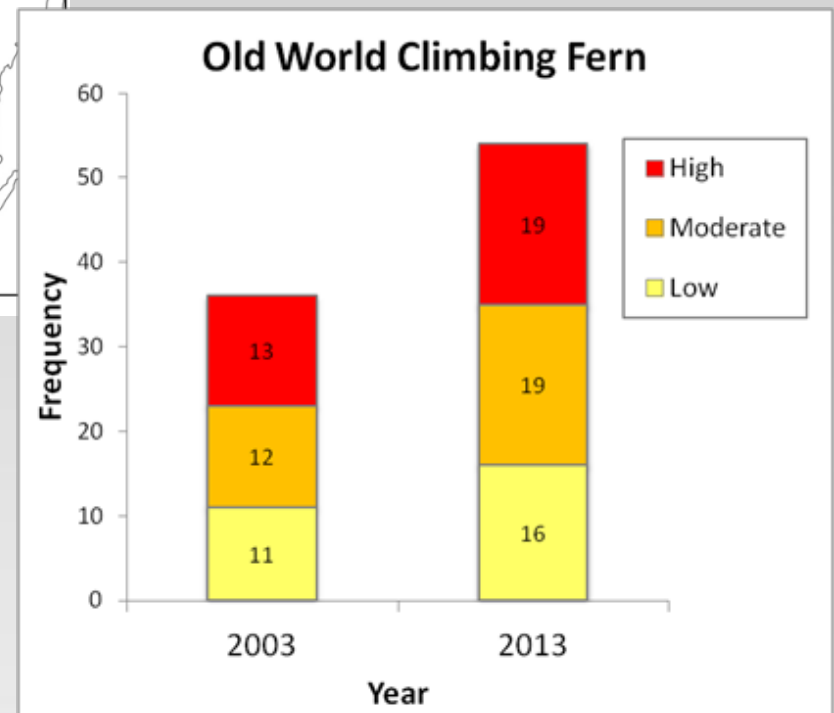
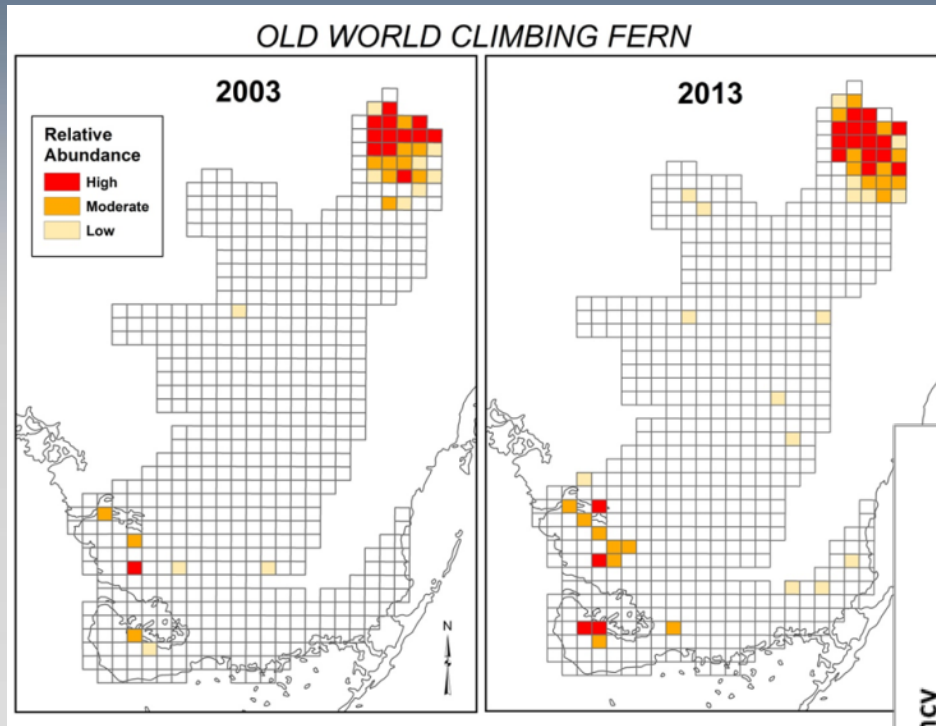


Old World Climbing Fern 2003-2013

OLD WORLD CLIMBING FERN



Old World Climbing Fern 2003-2013



It Takes A Village

- **Presentation support from:**

- **Ellen Allen** (SFWMD)
- **Terri Bennett** (SFWMD)
- **Shea Bruscia** (NPS)
- **Gwen Burzycki** (Miami-Dade Co.)
- **Hillary Cooley** (Everglades NP)
- **Jane Dozier** (Miami-Dade Co.)
- **Pat Howell** (Broward Co.)
- **Elizabeth Letts** (Seminole Tribe of Indians)
- **Christen Mason** (USFWS, Loxahatchee NWR)
- **Vanessa McDonough** (Biscayne Bay NP)
- **Shelby Moneysmith** (Biscayne Bay NP)
- **Tony Pernas** (NPS)
- **Jed Redwine** (NPS)
- **Billy Snyder** (Big Cypress NP)