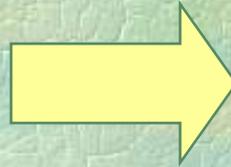


The Power of Partnerships



Landscape Scale Efforts in the Florida Keys

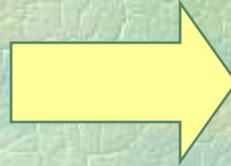
Alison Higgins

Land Conservation Program Manager

**The Nature
Conservancy**



Small Scale Projects



Large Scale Implications

Alison Higgins

Land Conservation Program Manager

**The Nature
Conservancy**



The Fabulous Florida Keys



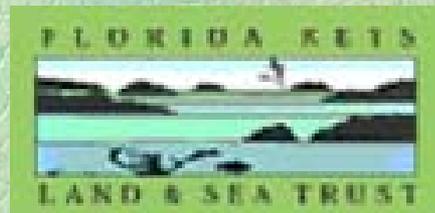
60% Publicly
Owned



Interagency Coordination: The Florida Keys Invasive Exotic Task Force

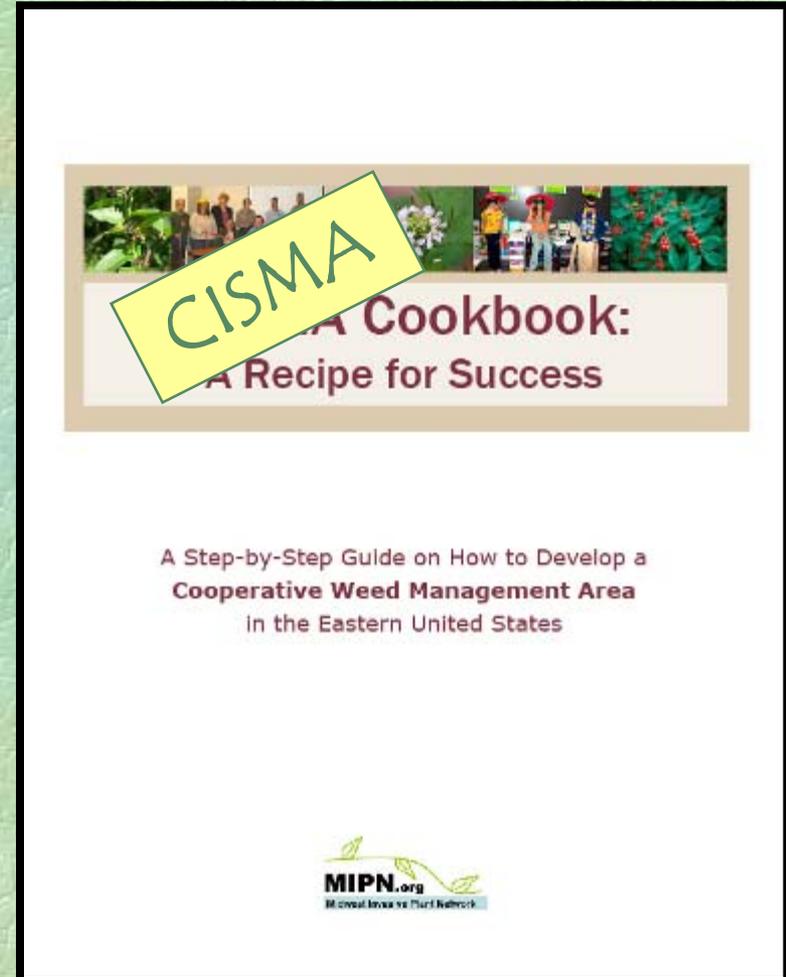


FDOT



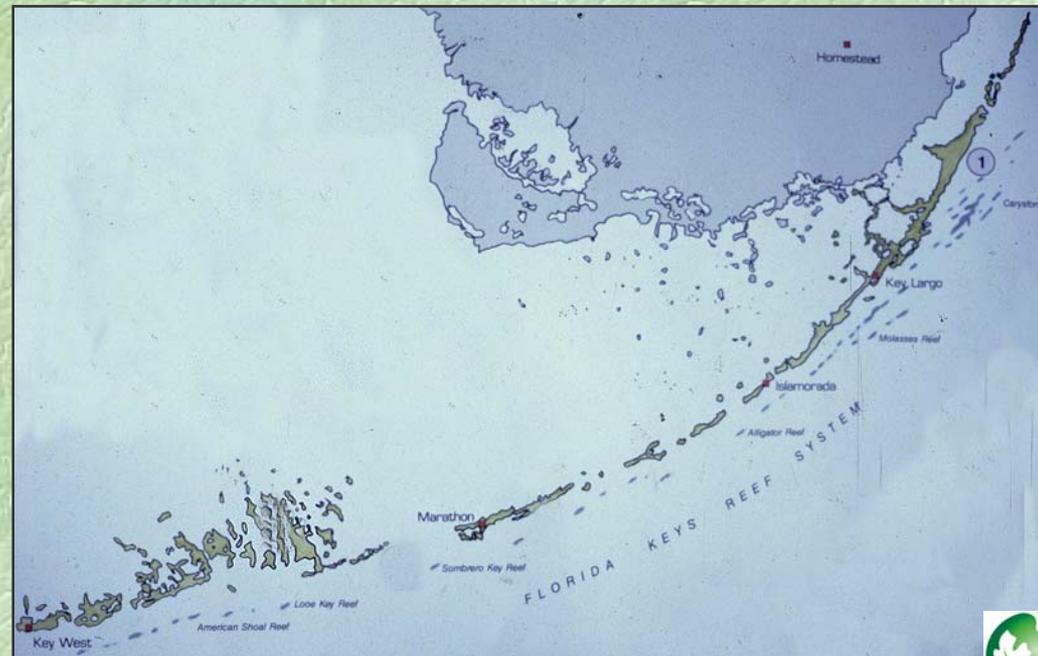
Cooperative Invasive Species Mgmt Area

1. **Defined Geographic area**
2. **Majority of landowners**
3. **Steering committee**
4. **Commitment to cooperation**
5. **Plan**



CISMA Planning

- Prioritization
- Monitoring
- Prevention
- Early Detection/Rapid Response
- Control
- Outreach
- Landscape Scale



CISMA's Prioritize

FLORIDA KEYS INVASIVE EXOTICS TASK FORCE LIST OF INVASIVE PLANTS OF THE FLORIDA KEYS - 2007-2008

FLEPPC = CATEGORY CLASSIFICATION ON FLORIDA EXOTIC PEST PLAN COUNCIL'S 2007 LIST OF FLORIDA'S MOST INVASIVE SPECIES. (N=north, C=central, S=south, All: Florida wide)

SCIENTIFIC NAME	COMMON NAME	FLEPPC	KEY'S INVASION PATTERN AND COMMENTS	SEEDING DISPERSAL & SEASON	ERADICATION RECOMMENDATION
FKIETF CATEGORY I: INVASIVE EXOTICS THAT ARE ALTERING FLORIDA KEYS NATIVE PLANT COMMUNITIES BY DISPLACING NATIVE SPECIES, CHANGING COMMUNITY STRUCTURES OR ECOLOGICAL FUNCTIONS, OR HYBRIDIZING WITH NATIVES					
Casuarina spp.	Australian pine	1: All	Highly invasive in wetlands and uplands. Sale banned.	wind blown, year round	Basal or stump with 10%-30% Garlon 4
Colubrina asiatica	Asiatic colubrina	1: S	Highly invasive, especially on beaches and coastlines	floating, year round	Foliar with 3% G4 in cut grid pattern, stump with G3A 50% or Basal with G4 10%
Leucaena leucocephala	Lead tree	2: All	Thickly invasive on roads & edges - Long lived seedbank	nearly year round	Basal/stump with 40% G4, 50-100% G3A or 1.5% Redeem
Manilkara zapota	Sapodilla	1: S	Pervasive in homesteaded hammocks, Key Deer eat seedlings	heavy fruit, year round	Basal with 10%-25% Garlon 4
Panicum maximum	Guinea grass	2: All	Spreading quickly along US1 and areas of Big Pine.	rhizomes/seeds	Foliar with 2% Roundup Pro
Sansevieria hyacinthoides	Bowstring hemp	2: C,S	Dumpings known to take over huge acreages in hammocks	seeds/rhizomes	Foliar with 5% Garlon 4. Can cut at base & apply directly.
Scaevola sericea	Beach naupaka	1: C,S	Floating seeds spread to backcountry, Florida Bay and Bahamas. Banned from sale/propagation in Florida in July 07	tides/birds/animals, nearly year round	Basal with 10% Garlon 4 or stump with 50% Garlon 3A
Schinus terebinthifolius	Brazilian pepper	1: All	Highly invasive in wetlands and uplands	animals, Oct - Mar	Basal with 10%-15% G4, Stump with 50% G3A
Thespesia populnea	Seaside mahoe	1: C,S	Floating seeds invade pristine coastal transition areas. Still sold in Florida stores.	floating, year round	Stump with 50% G3A. Apply immediately. Girdle Large trees. Don't leave cut branches on ground.
FKIETF CATEGORY II: INVASIVE EXOTICS THAT HAVE INCREASED IN ABUNDANCE OR FREQUENCY BUT HAVE NOT YET ALTERED FLORIDA KEYS PLANT COMMUNITIES TO THE EXTENT SHOWN BY CATEGORY I SPECIES (CONTINUED)					
Adenanthera pavonina	Red sandalwood	2: S	Fast growing & seeding from where planted, esp hammocks	wind blown	Basal or Stump with G4 30%
Agave sisalana	Sisal hemp	2: C,S	Establishes where dumped and spreads from landscapes	tall seed stalks, Jun-Aug	Spray with 3% Garlon 4 on center bud
Albizia lebbek	Woman's tongue	1: C,S	Heavy seeder, hard to kill with traditional he	wind blown	Basal or stump with 30% Garlon 4
Asparagus aethiopicus	Asparagus fern	1: All	Spreads from landscapes and establishes where dumped	dumping/birds/animals	Foliar with 2% Roundup Pro
Carica papaya	Papaya	T/B/W	Found in hammocks and along coastal berms		
Catharanthus roseus	Madagascar periwinkle	n/a	disturbed sites, beaches		
Cryptostegia madagascariensis	Madagascar rubber vine	2: C,S	Occurs in transitional wetlands, old homesteads in Upper Keys	summer, wind blown	Basal with 10% Garlon 4
Dactyloctenium aegyptium	Crow foot grass	n/a	So far seems to be limited to disturbed sites or as an early colonizer only at natural sites		Foliar with 2% Roundup Pro
Dioscorea bulbifera	Air Potato	1: All	Invasives variety of habitats: 23 FL counties, Big Pine & Cudjoe	wine, tubers, floats	Manual removal
Epipremnum pinnatum cv. Aureum	Golden Pothos	2: C,S	Has spread from landscapes, dump sites to hammock		Foliar with 2% Roundup Pro
Ficus microcarpa	Laurel fig	1: C,S	Highly invasive in uplands in Upper Keys, epi- and litho-phytic	birds	Basal with 5% Garlon 4
Furcraea cabuya	Central American sisal	n/a	Spreads from landscapes and dump sites; localized	Jun - Aug	Spray with 3% Garlon 4 on center bud
Hibiscus tiliaceus	Sea hibiscus	2: C,S	So far largely limited to disturbed sites	drift seed/wrack lines	Stump with 50% G3A immediately. Girdle Large trees.
Hylocereus undatus	Night-blooming cereus	n/a	Spreads from landscapes and dump sites; localized	animals, suckering	Manual removal
Kalanchoe spp.	Life plant, Chandelier plant	2: C,S	Spreads from landscapes and dump sites; localized		Foliar with 2% Roundup Pro
Lantana camara	Lantana, shrub verbena	1: All	Spreads from landscapes to hammock, pineland margins	bird dispersed, yr round	Basal with 5% Garlon 4, Stump with G3A 50%
Macroptilium atropurpureum	Jumbie bean, siratro	n/a	edge pieces, moving into coastal berms and dunes	Wind blown	
Macroptilium lathyroides	Phasey bean	n/a	edge pieces, moving into coastal berms and dunes	Wind blown	
Melaleuca quinquenervia	Melaleuca	1: C, S	Localized invasion in N. Key Largo, Stock I. and Boca Chica	wind blown, Aug - Dec	Hack and squirt with 50% Garlon 3A and 1% Arsenal
Neyraudia reynaudiana	Burma reed	1: S	Prefers disturbed sites but moves into undisturbed hammocks; occurs on all roadsides in Upper Keys; one fairly large patch located on Big Pine Key		Foliar with 2% Roundup Pro



Non Traditional Partner #1

- **Fire Managers**

Do They Know Your Regions Invasive Priorities?

Do you have a prevention plan?



Non Traditional Partner #1

■ Fire Managers Solutions

Equipment and Personnel Hygiene

Herbicide before prescribed fire

Herbicide after prescribed fire

Readiness for wildfire opportunities

“Fire Effects” description in plant ID



CISMA's Prioritize

- Commitment of Land Manager
- Matching Funds/Effort
- Target Species
- T&E Species
- Restoration Potential
- Proximity of Healthy Natural Areas
- Fosters Cooperation with Private Landowners
- Public Education



CISMA's Prevent

ida Keys

Don't Plant A Weed!

AlterNatives for landscaping in the Florida Keys

Shoebuttan Ardisia (*Ardisia elliptica*)

Type/Size-Shrub or small tree up to 15 ft tall.

Salt/Sun-Moderate drought and salt tolerance. Very shade tolerant and can grow in poor soil.

Evil Factor-Category 3

Is fast growing and shade tolerant. Forms dense monotypic stands that prevent the establishment of native species.



Courtesy of Identification & Biology of Non-Native Plants in Florida's Natural Areas by K.A. Longland, K. Craddock Burks (5)

Courtesy of Miami-Dade County (2)

Shoebuttan Ardisia has escaped cultivation in South Florida and is disturbing natural areas.

Marlberry (*Ardisia escallonioides*)

Type/Size-Large accent or specimen shrub or small tree 8-15 ft tall with a narrow canopy. Great for buffer or mass plantings.

Salt/Sun-Moderate drought and salt tolerance. Grows in full sun to light shade in poor soil.

Nature Factor-Flowers year round and provides a significant amount of food and cover for birds and wildlife.



Courtesy of George D. Gann



Courtesy of Shirley Denton

Marlberry is very adaptable and is one of the best shrubs for the garden.

Blacktorch (*Erithalis fruticosa*)

Type/Size-Medium to large accent shrub 4-8 ft tall. Great for buffer plantings.

Salt/Sun-Moderate drought and salt tolerance. Grows in full sun and poor soil.

Nature Factor-Flowers year round and provides food and cover for wildlife.



Courtesy of Shirley Denton



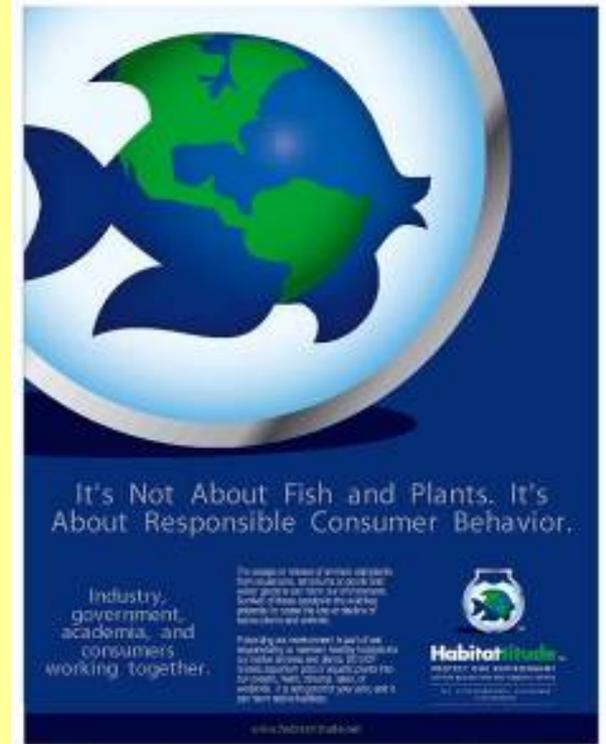
Courtesy of FIU Biology Dept

Blacktorch is listed as a threatened species by the State of Florida.

Non Traditional Partner #2

- Industry

Not all sellers of invasives are bad



CISMA's Prevent

Nurseries You Can Trust



Techniques That Work

How does your garden grow?

KeysGreenThumb.net



GreenThumb Certified Nurseries Florida Keys - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Mail Print Wordpad Address Bar

Address <http://www.keysgreenthumb.net/>



GreenThumb Certified Nurseries Florida Keys

Start Your Plant on the Right Foot!

Welcome!

Almost Paradise?

Although the keys are known as a tropical paradise to many people, it's a pretty harsh climate for plants.

Coral rock soils, seasonal rains, salt water intrusion and hot summers can spell disaster for many ornamental plants.

That's why you can count on **GreenThumb** to start you out on the right foot!

What is a "GreenThumb Certified" Nursery

"GreenThumb Certified" Nurseries educate their clientele about the "Keys Friendly" landscaping principles that will help you create a Keys landscape that will bloom and grow

[Home](#) | [Site Map](#)

UPCOMING EVENT

Saturday April 29th
Keys Energy Service
Tree Giveaway, 8:30-11 am.
[Read more...](#)

DOWNLOADS

- [Certification Checklist](#)
- [Invasive Exotics List](#)
- [GreenThumb Brochure](#)

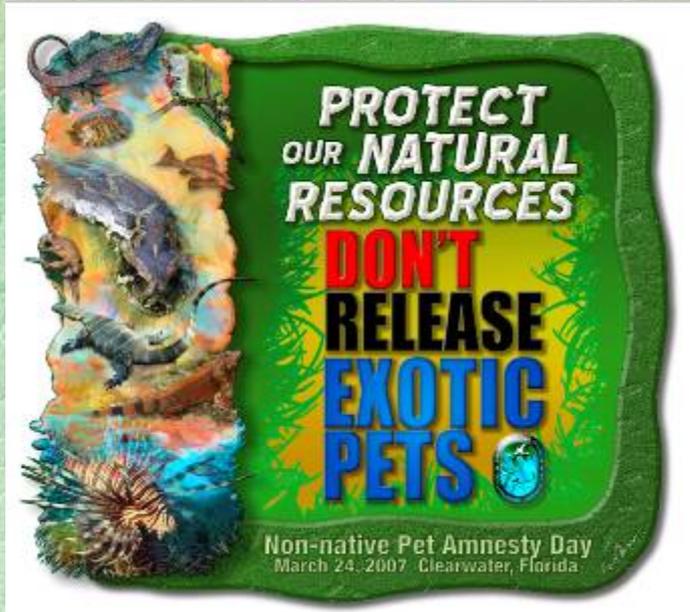
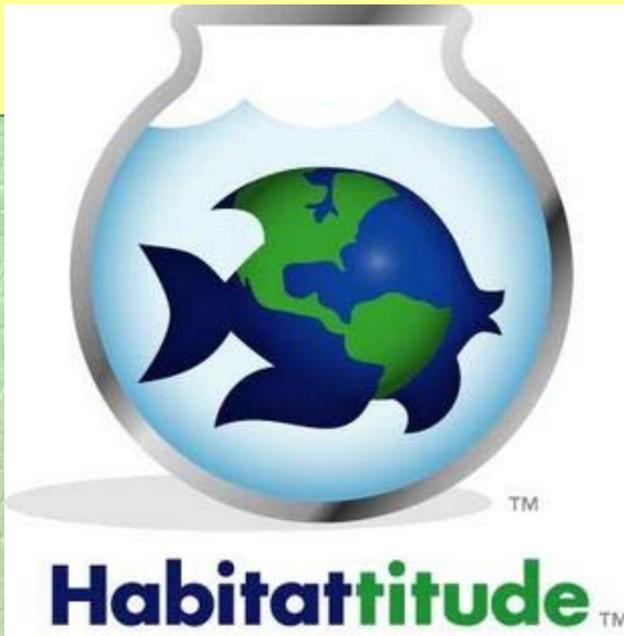
NEWEST MEMBER

Three GreenThumb Nurseries will be announced in time for Earth Day, April 22nd.



start JUVENILE (F:) Microsoft PowerPoint ... GreenThumb Certifie...

CISMA's Prevent



**ANIMAL RELEASE PROHIBITED
PROHIBIDO LIBERAR ANIMALES**



PLEASE REPORT UNLAWFUL ANIMAL RELEASES



FLORIDA FISH & WILDLIFE
888-404-3922
WILDLIFE ALERT REWARD PROGRAM



EVERGLADES NATIONAL PARK
305-242-7740



WHEN CALLING FROM CELL PHONE DIAL:

***FWC OR #FWC**



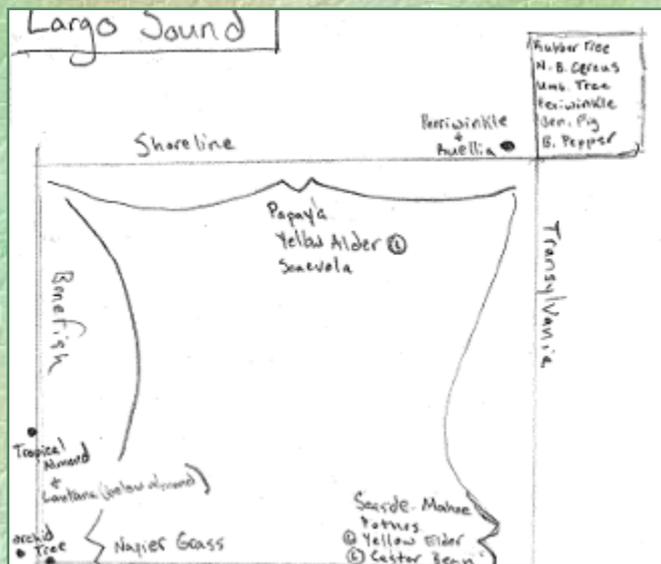
CISMA's Detect Early, Respond Rapidly

1998: Invasive Plant List

2001: Identification Guide

2005: ID Field Trips

2007: Invasive Animal List



Identification Guide For Invasive Exotic Plants of the Florida Keys



Prepared by
Kate Hadden, Kaita Frank & Chuck Byrd
The Nature Conservancy
Revised January 2005

for the
Florida Keys Invasive Exotics Task Force



CISMA's Detect Early, Respond Rapidly



Non Traditional Partner #3

■ Road Warriors

Who are the people in your neighborhood?



The Birth of Python Patrol



SOUTH FLORIDA WATER MANAGEMENT DISTRICT



PYTHONS

threaten the

Everglades and Florida Keys

If you see a heavy-bodied snake longer than 7 feet, it is most likely an exotic python. Please report the snake's location immediately.

PYTHON HOTLINE:
888-IVE-GOT1

888-483-4681



Non Traditional Partner #3



**No Pets
Left Behind**

**A Partnership for
the Betterment of
all our Animals –
Domestic and Wild**

Road Warriors:

“No Pets Left Behind” Mission:
To decrease the number of
homeless pets in our important
conservation areas.



CISMA's Control

FLORIDA KEYS INVASIVE EXOTICS TASK FORCE LIST OF INVASIVE PLANTS OF THE FLORIDA KEYS - 2007-2008

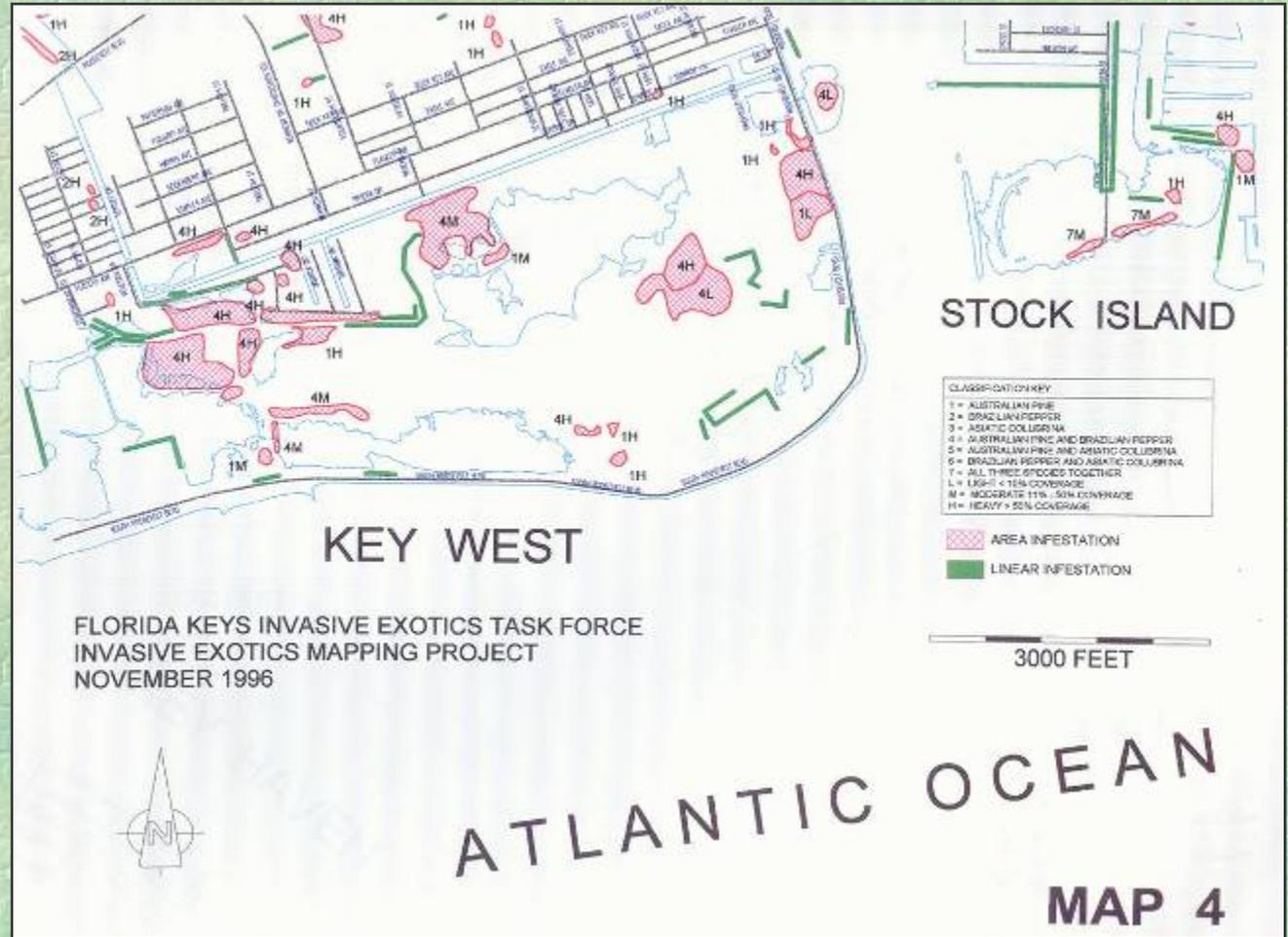
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Casuarina spp.	Australian pine	1: All	Highly invasive in wetlands and uplands. Sale banned.	wind blown, year round	Basal or stump with 10%-30% Garlon 4
Colubrina asiatica	Asiatic colubrina	1: S	Highly invasive, especially on beaches and coastlines	floating, year round	Foliar with 3% G4 in cut grid pattern, stump with G3A 50% or Basal with G4 10%
Leucaena leucocephala	Lead tree	2: All	Thickly invasive on roads & edges - Long lived seedbank	nearly year round	Basal/stump with 40% G4, 50-100% G3A or 1.5% Redeem
Manilkara zapota	Sapodilla	1: S	Pervasive in homesteaded hammocks, Key Deer eat seedlings	heavy fruit, year round	Basal with 10%-25% Garlon 4
Panicum maximum	Guinea grass	2: All	Spreading quickly along US1 and areas of Big Pine.	rhizomes/seeds	Foliar with 2% Roundup Pro
Sansevieria hyacinthoides	Bowstring hemp	2: C, S	Dumpings known to take over huge acreages in hammocks	seeds/rhizomes	Foliar with 5% Garlon 4. Can cut at base & apply directly.
Scaevola sericea	Beach naupaka	1: C, S	Floating seeds spread to backcountry, Florida Bay and Bahamas. Banned from sale/propagation in Florida in July 07	tides/birds/animals, nearly year round	Basal with 10% Garlon 4 or stump with 50% Garlon 3A
Schinus terebinthifolius	Brazilian pepper	1: All	Highly invasive in wetlands and uplands	animals, Oct - Mar	Basal with 10%-15% G4, Stump with 50% G3A
Thespesia populnea	Seaside mahoe	1: C, S	Floating seeds invade pristine coastal transition areas. Still sold in Florida stores.	floating, year round	Stump with 50% G3A. Apply immediately. Girdle Large trees. Don't leave cut branches on ground.
FKIETF CATEGORY II: INVASIVE EXOTICS THAT HAVE INCREASED IN ABUNDANCE OR FREQUENCY BUT HAVE NOT YET ALTERED FLORIDA KEYS PLANT COMMUNITIES TO THE EXTENT SHOWN BY CATEGORY I SPECIES (CONTINUED)					
Adenantha pavonina	Red sandalwood	2: S	Fast growing & seeding from where planted, esp hammocks	wind blown	Basal or Stump with G4 30%
Agave sisalana	Sisal hemp	2: C, S	Establishes where dumped and spreads from landscapes	tall seed stalks, Jun-Aug	Spray with 3% Garlon 4 on center bud
Albizia lebeck	Woman's tongue	1: C, S	Heavy seeder, hard to kill with traditional he	wind blown	Basal or stump with 30% Garlon 4
Asparagus aethiopicus	Asparagus fern	1: All	Spreads from landscapes and establishes where dumped	dumping/birds/animals	Foliar with 2% Roundup Pro
Carica papaya	Papaya	T B/W	Found in hammocks and along coastal berms		
Catharanthus roseus	Madagascar periwinkle	n/a	disturbed sites, beaches		
Cryptostegia madagascariensis	Madagascar rubber vine	2: C, S	Occurs in transitional wetlands, old homesteads in Upper Keys	summer	
Dactyloctenium aegyptium	Crow foot grass	n/a	So far seems to be limited to disturbed sites or as an early colonizer only at natural sites		
Dioscorea bulbifera	Air Potato	1: All	Invasives variety of habitats: 23 FL counties, Big Pine & Crojoe	wine, tub	
Epipremnum pinnatum cv. Aureum	Golden Pothos	2: C, S	Has spread from landscapes, dump sites to hammock		
Ficus microcarpa	Laurel fig	1: C, S	Highly invasive in uplands in Upper Keys, epi- and litho-phytic	birds	
Furcraea cabuya	Central American sisal	n/a	Spreads from landscapes and dump sites; localized	Jun - Au	
Hibiscus tiliaceus	Sea hibiscus	2: C, S	So far largely limited to disturbed sites	drift see	
Hylocereus undatus	Night-blooming cereus	n/a	Spreads from landscapes and dump sites; localized	animals	
Kalanchoe spp.	Life plant, Chandelier plant	2: C, S	Spreads from landscapes and dump sites; localized		
Lantana camara	Lantana, shrub verbena	1: All	Spreads from landscapes to hammock, pineland margins	bird disp	
Macroptilium antipurpureum	Jumbie bean, siratro	n/a	edge species, moving into coastal berms and dunes	Wind bl	
Macroptilium lathyroides	Phasey bean	n/a	edge species, moving into coastal berms and dunes	Wind bl	
Melaleuca quinquenervia	Melaleuca	1: C, S	Localized invasion in N. Key Largo, Stock I. and Boca Chica	wind bl	
Neyraudia reynaudiana	Burma reed	1: S	Prefers disturbed sites but moves into undisturbed hammocks; occurs on all roadsides in Upper Keys; one fairly large patch located on Big Pine Key	roadside	



CISMA's Monitor

1996 & 2006: Keys-wide exotics mapping



Report a Sighting of an Invasive Reptile or Amphibian

Pest:

To report a pest not listed, e-mail bugwood@uga.edu.

Observation Date: (?)

County:

Habitat: (?)

Location:

Latitude:
Must be expressed in Decimal Degrees.

Longitude:
Must be expressed in Decimal Degrees.

Datum: (?)

Ownership: (?)

* If reporting infestation on private land, be sure to have landowner's permission.

Local Ownership:



Adult(s)

Photo by: Whitney Cranshaw, Colorado State University

[Additional Information and Resolutions](#)



Adult(s)

Photo by: Whitney Cranshaw, Colorado State University

[Additional Information and Resolutions](#)



Adult(s)

Photo by: Whitney Cranshaw, Colorado State University

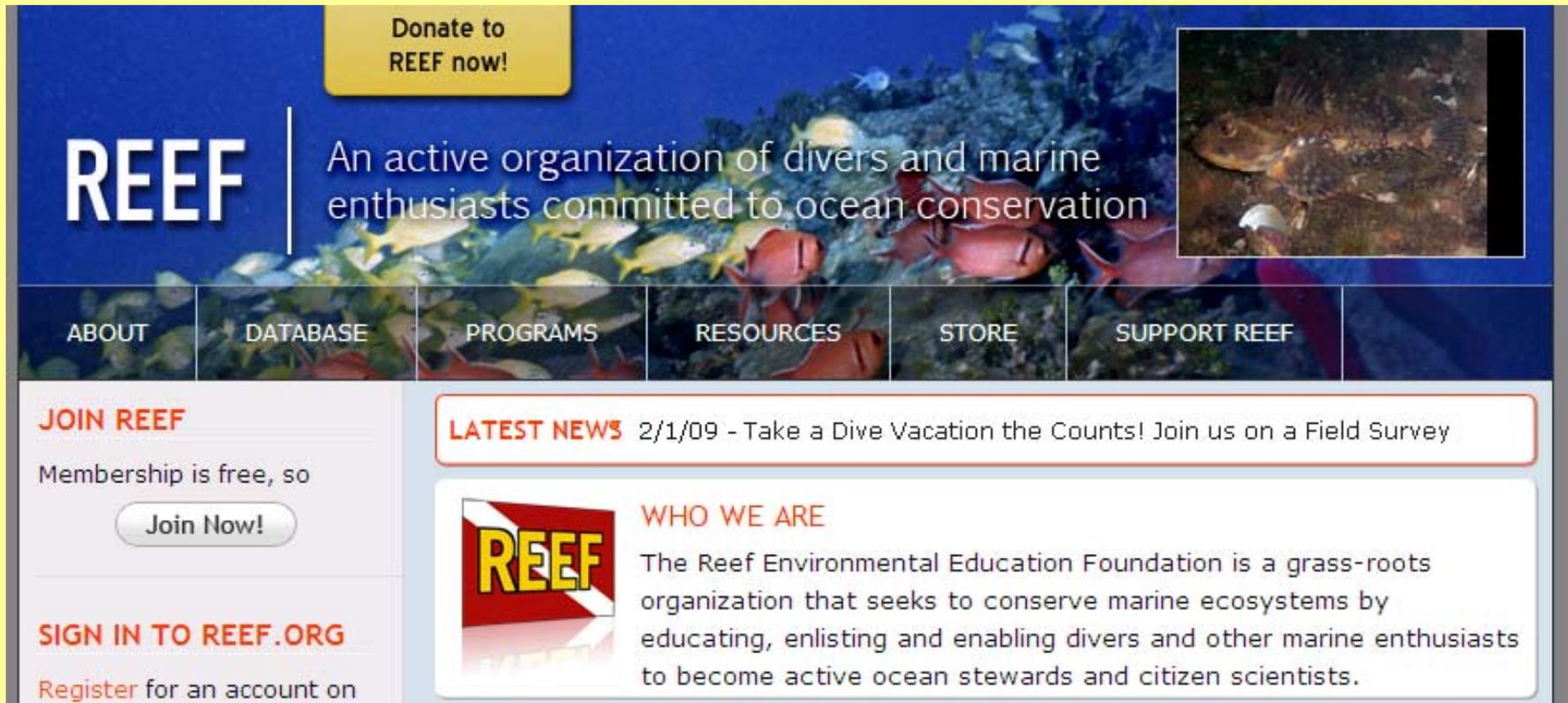
[Additional Information and Resolutions](#)



Non Traditional Partner #4

■ Online Volunteers

Is your community connected to Climate Change?



The image shows a screenshot of the REEF website homepage. The background is a vibrant underwater scene with various colorful fish swimming over a coral reef. In the top right corner, there is a yellow button that says "Donate to REEF now!". On the left side, the word "REEF" is written in large, white, bold letters. To its right, a white text box contains the description: "An active organization of divers and marine enthusiasts committed to ocean conservation". Below this, a horizontal navigation bar features several menu items: "ABOUT", "DATABASE", "PROGRAMS", "RESOURCES", "STORE", and "SUPPORT REEF". The main content area is divided into two columns. The left column has a "JOIN REEF" section with the text "Membership is free, so" and a "Join Now!" button, followed by a "SIGN IN TO REEF.ORG" section with the text "Register for an account on". The right column features a "LATEST NEWS" section with a headline dated "2/1/09" about a field survey, and a "WHO WE ARE" section with a small REEF logo and a paragraph describing the organization as a grass-roots foundation for marine conservation.

Donate to REEF now!

REEF

An active organization of divers and marine enthusiasts committed to ocean conservation

ABOUT DATABASE PROGRAMS RESOURCES STORE SUPPORT REEF

JOIN REEF

Membership is free, so

Join Now!

SIGN IN TO REEF.ORG

Register for an account on

LATEST NEWS

2/1/09 - Take a Dive Vacation the Counts! Join us on a Field Survey

WHO WE ARE

The Reef Environmental Education Foundation is a grass-roots organization that seeks to conserve marine ecosystems by educating, enlisting and enabling divers and other marine enthusiasts to become active ocean stewards and citizen scientists.

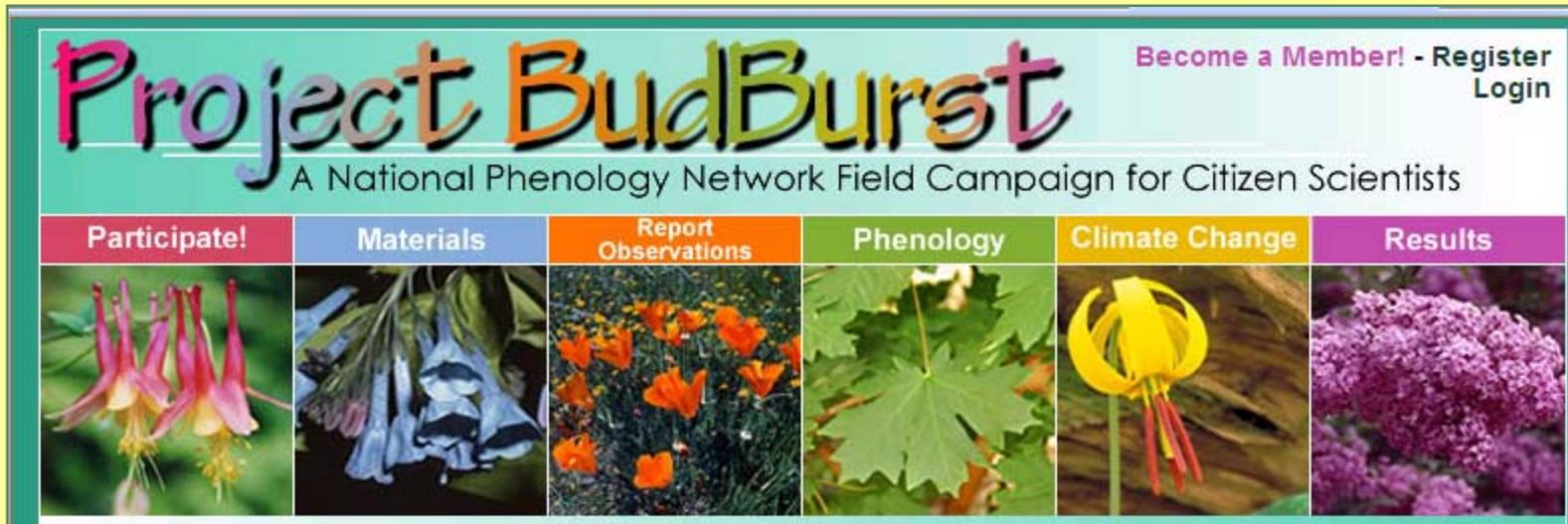
Lionfish Progression



Non Traditional Partner #4

- Online Volunteers

Is your community connected to Climate Change?



Project BudBurst Become a Member! - Register
Login

A National Phenology Network Field Campaign for Citizen Scientists

Participate!	Materials	Report Observations	Phenology	Climate Change	Results
					



CORNELL LAB of ORNITHOLOGY

Citizen Science

CISMA's Think Landscape Scale



60% Publicly
Owned

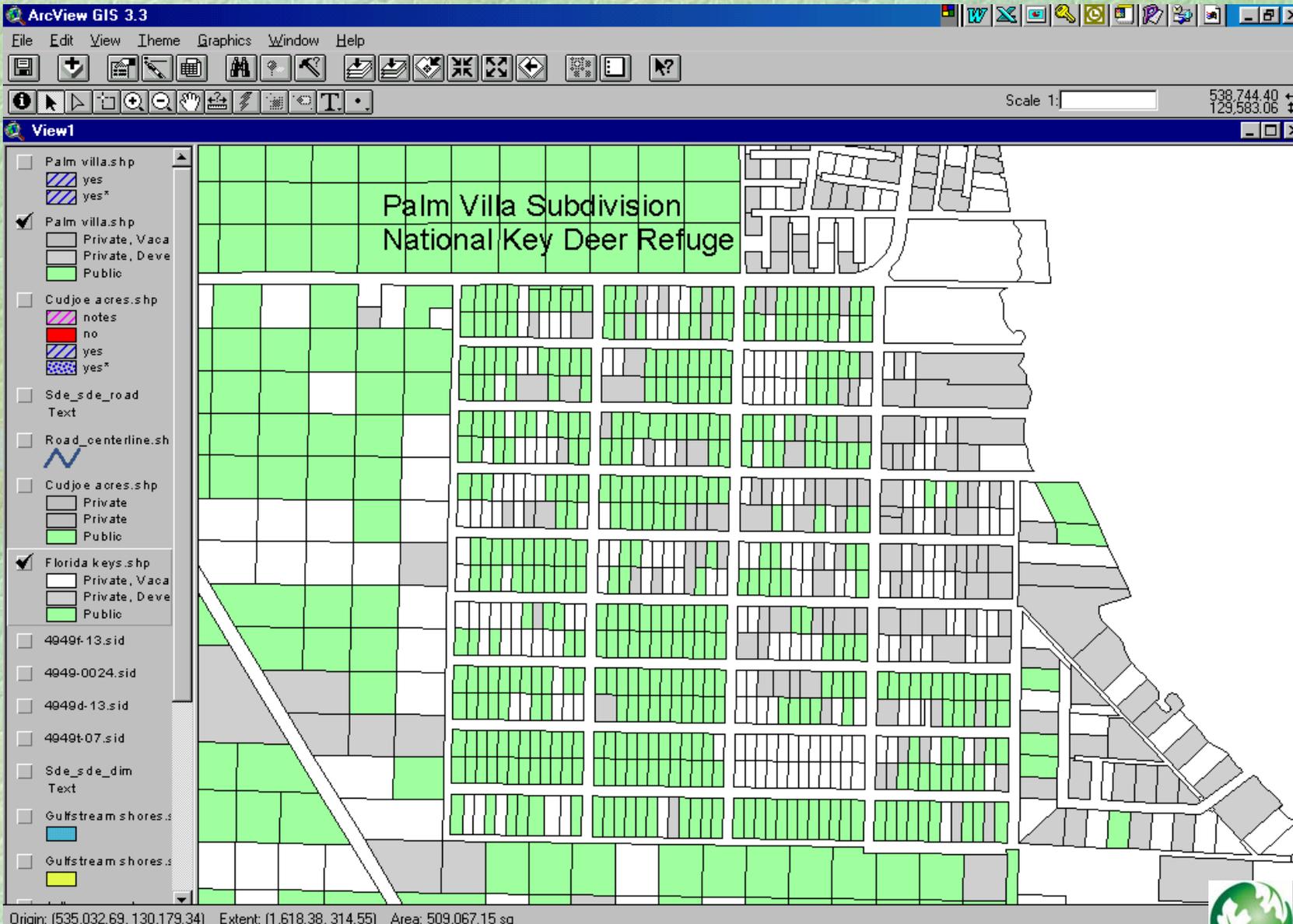


CISMA's Think Landscape Scale





CISMA's Landscape Scale Fund!



Outreach



Nurseries You Can Trust



**Green Thumb
Certified**
Florida Keys

Techniques That Work

How does your garden grow?

KeysGreenThumb.net



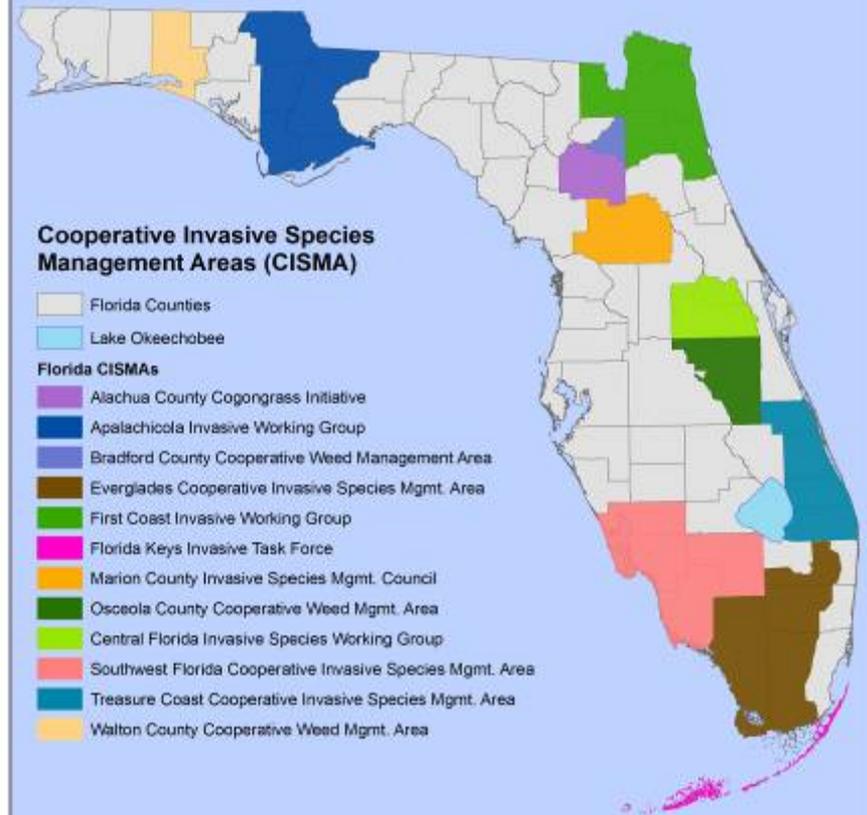
Outreach on a Landscape Scale

Florida Invasive Species Partnership

Monthly Webinar:

- Prioritization
- Monitoring
- Prevention
- Early Detection,
Rapid Response
- Control
- Outreach
- Landscape Scale

CISMA's in Florida



Non Traditional Partner #6

- **Advocacy Partners**

Have you used your local non-profit lately?

Have you cultivated other friends?



Non Traditional Partner #6

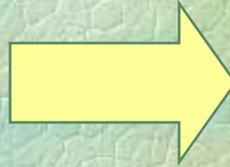
■ Advocacy Partners

Q39: USDA Plant Protection Quarantine 37 Regulations

HR 669: Nonnative Wildlife Invasion Prevention Act



Small Scale Projects



Large Scale Implications

Alison Higgins

Land Conservation Program Mgr

ahiggins@tnc.org

**The Nature
Conservancy**

