



Department of Defense Legacy Resource Management Program

09-437

Creating Cooperative Invasive Species Management Areas (CISMAs) to Effectively Reduce Re-infestation on Four (4) Military Bases and Surrounding Lands in Florida

Keys ISTF/ Naval Air Station Key West
Documents created for this Project

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- Florida Keys Invasive Exotics Task Force List of Invasive Plants of the Florida Keys 2010-2011.

Creating the Florida Keys Invasive Species Task Force (ISTF) – Summary

Invasive non-native species have been identified by all of the DoD installations as both ecological and economic threats to the natural communities and native species that they manage. The Florida Keys Invasive Exotics Task Force (ISTF) was organized in early 1996 to address the proliferation of invasive exotic plants in the Florida Keys. Invasive animals were added to the group's mission in 2005. The Task Force is composed of biologists, planners and natural resource managers from local, state and federal agencies, non-profits and public utilities, as well as concerned citizens.

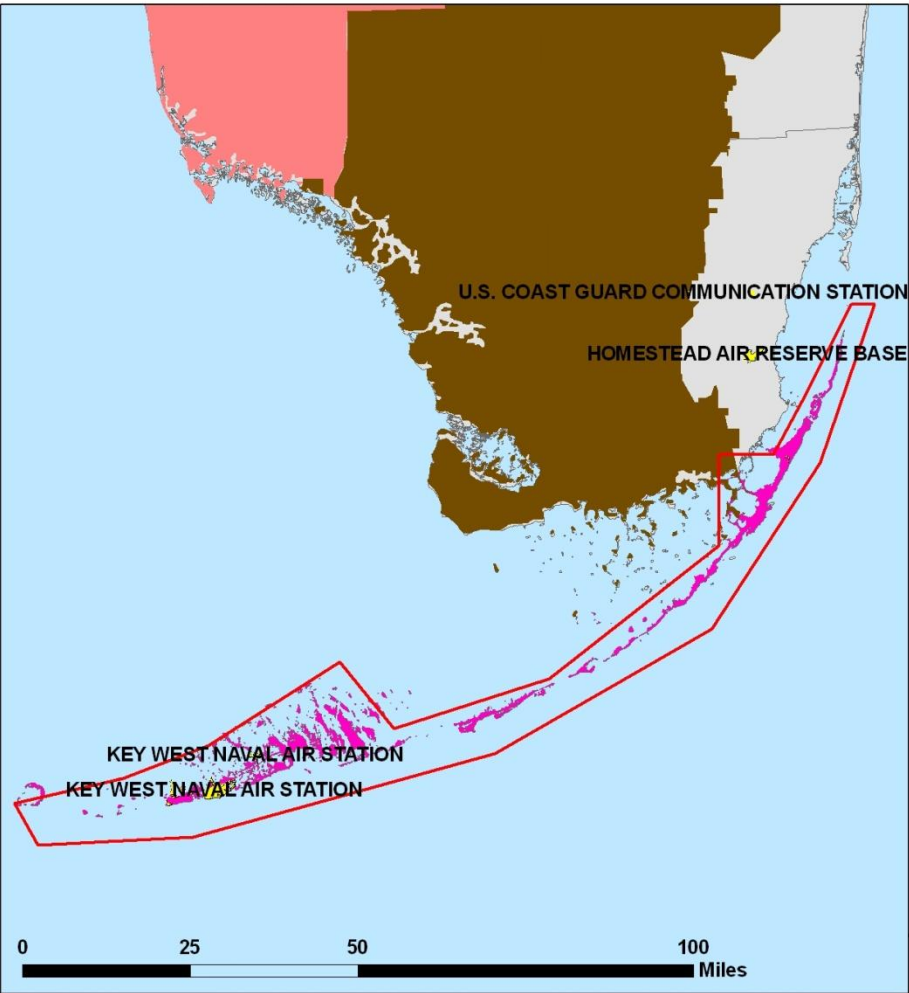
By working through this DoD Legacy project, this task force completed their five-year strategic plan. The plan gave them a launching off point to move into creating a 2010 annual workplan. Also during this year, the Keys ISTF formally created a steering committee initially including staff from the following agencies: TNC, Monroe County, Florida Parks and Recreations, USFWS, FFWCC and the Navy. DoD staff from NAS Key West sits on the steering committee, as well as actively attends task force meetings and helps staff task force outreach events. Lastly, they completed the revision of the “Florida Keys Invasive Exotics Task Force List of Invasive Plants of the Florida Keys – 2010-2012”, which was a requirement for their strategic plan/workplan.

Introduction to the Florida Keys ISTF Strategic Plan

This Strategic Plan, which is a deliverable of Phase I of this DoD Legacy Program project, along with its goals and objectives was designed to guide the interactions of all agencies and landowners within the CISMA boundaries. None of the strategies included are specific to any one agency or particular piece of property. Specific actions involving specific properties or agencies/organizations will appear in the details of the annual workplan.

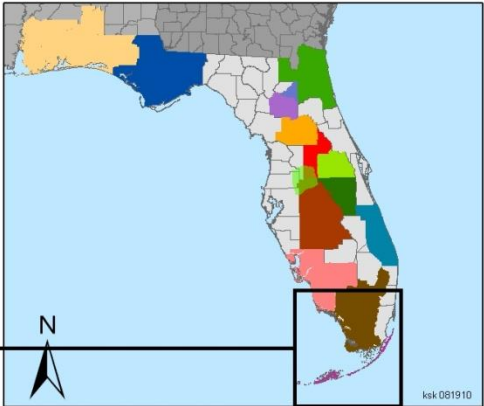
Phase II of this project, which has been awarded, is designed to keep the process moving forward and continue building the structure of the CISMA. During this phase, the CISMA will create an annual report (year 2010) in order to document accomplishments and discuss efforts. The CISMA will also create an annual workplan for the next calendar year (year 2011) based on the strategic plan. The annual workplan will be more detailed about specific actions to be accomplished, specifying locations and partners as well as a timeline for completion.

Florida Keys Invasive Task Force



Legend

- █ Florida Keys Invasive Task Force
- █ DoD Lands
- █ Lake Okeechobee
- Florida Cooperative Invasive Species Management Areas
- █ Alachua County CISMA
- █ Apalachicola Invasive Working Group
- █ Bradford County Cooperative Weed Mgmt. Area
- █ Central Florida CISMA
- █ Everglades Cooperative Invasive Species Mgmt. Area
- █ First Coast Invasive Working Group
- █ Florida Keys Invasive Task Force
- █ Green Swamp CISMA
- █ Heartland CISMA
- █ Lake County CISMA
- █ Marion County Invasive Species Mgmt. Council
- █ Osceola County Cooperative Weed Mgmt. Area
- █ Six Rivers CISMA
- █ Southwest FL CISMA
- █ Treasure Coast CISMA



Florida Keys Invasives Exotics Task Force (Or Keys CISMA) 5 Year Plan

General Goals: Prevention of new invasions, Early Detection/Rapid Response of new invaders and Control/Management of established priority invaders at priority sites.

Steering Committee:

Alison Higgins, The Nature Conservancy
Beth Bergh, Monroe County
Janice Duquesnel, FDEP Parks

Anne Morkill, Florida Keys NWR's
Randy Grau, FFWCC
Carrie Backlund, NAS-KW

Objectives & Tasks

1. **Invasives Management**

A) Prevention

1. Plants

- a) Research incorporation of Florida's predictive screening tools to Task Force invasives ranking and planning process. (2011)
- b) Expand Green Thumb Nurseries program by 1 nursery per region per year (Q3 - 2010)
 - i. Increase partner weblinks by 10 links (Q1 – 2010)
 - Task 1: Send out GreenThumb logo and web address (Alison)
 - Task 2: Get on pledged websites by April meeting (Q1 – 2010 - ALL)
 - a. Marathon – Patti Childress
 - b. Crane Point Hammock – Patti Childress
 - c. Marathon Garden Club – Patti Childress
 - d. FAVOR – Alison Higgins
 - e. GLEE – Alison Higgins
 - f. CISMA – Alison Higgins
 - g. IRC website – Alison Higgins
 - h. Monroe County – Beth Bergh
 - i. State Parks – Janice Duquesnel
 - j. KW Botanical Garden – Phillip Hughes
 - k. Layton Garden Club – Cathy Close
 - ii. Expand program to botanical gardens or garden clubs that sell plants (2011)
 - iii. Visit Nurseries as Summer Workday (Q3 – 2010)
 - iv. Create a Code of Conduct pledge for landscapers (2011)
 - v. Adopt procurement statements (2011)
- c) Create Vehicle Disinfection Program/Protocol
 - i. Create SOP language for contracts (2009 – Janice and Beth)
 - ii. Get Vehicle Disinfection program/protocol adopted by key user groups (Public works, DOT, FDOF, exotics contractors & Task Force partners) (Q4 - 2010)

- iii. Create designated wash down areas (Q3 – 2010)
 - a. Transfer Stations – Beth (Long Key, Cudjoe and Key Largo)
 - b. FDOF – Big Pine
- iv. Add program/protocol into evaluation system for contractors (Q2 – 2010).
 - a. Alison will turn into a pdf form by April Meeting.
 - b. Beth will take over database and reporting.
- d) Utilize EDDMapS alert system to ID new invasions in South Florida
 - i. Hold training to populate and use database at June meeting (Q2 – 2010 - Alison)
 - ii. Incorporate into annual herbicide/field ID trainings (Q4 – 2010)

2. Animals

- a) Create fact sheet / poster to increase knowledge of current laws (Q3 2010 - Randy)
- b) Create Code of Conduct pledge for local pet stores, wildlife rehabbers, animal control, etc. (Q2 – 2010) – Alison
- c) Coordinate with FFWCC for Amnesty days. (Q1 - Annually)
 - i. Can the local shelters give to KW to fly out?
 - ii. What to do day to day. Will other shelters take them? Will they let us know?
- d) Help Advertise “No Pets Left Behind” Message (Q1 – 2010)
 - i. Woofstock on March 6th (Carrie, Cathy & Alison)
- e) Utilize EDDMapS alert system to ID new invasions in South Florida (Q2 – 2010)
- f) Complete Invasive Animals list (Q3 - 2010)
- g) Explore feasibility of banning worst risk species through local ordinances (2011)

B) Early Detection, Rapid Response (EDRR)

1. Plants

- a) Create protocols for picking high EDRR species (Q3 - 2010)
 - i. Create SOP language for contractors to alert managers to EDRR species. (3 months)
 - ii. Commit to working together on high EDRR spp through mapping, documenting and eradicating. (Guinea Grass, Burma Reed, Air potato, Lygodium)
 - Set Dates for best control / follow up per species (Q1 - 2010)
 - a. Air Potato (Spring & Summer)
 - b. Guinea grass (Summer & Early Fall)
 - c. Burma Reed (Summer & Early Fall)
 - d. Coral Vine?

2. Animals

- a) Create protocols for picking high EDRR species (2011)
- b) Identify procedures for private properties (Law Enforcement, Animal Control, etc) (2011)
- c) Commit to working together on high EDRR spp mapping, documenting and eradicating.
 - i. Python Patrol
 - Create training SOP for Python Patrol responders (2009)
 - Establish “holding areas” for captured pythons (Q1 - 2010)
 - a. Provide List of Acceptable Holding Options for people - Alison
 - b. Steve Berger – Big Pine
 - c. Patti Childress – Marathon
 - d. Cathy Close – Layton (Skip Haring)
 - e. Key West/Stock Island -
 - Hold trainings for all Python Patrol responders (2009, Refreshers Annually Q4)
 - ii. Monitor Lizards
 - Create SOP for Monitor Lizard responders (2011)
 - Incorporate Monitor capture training into Python training (2011)
 - iii. Lionfish
 - Collaborate with REEF on Lionfish EDRR project (Q2 – 2010)
 - a. Janice – Currently not allowed to collect exotic fish in Pennekamp.

C) Control (Prioritized Management)

1. Plants

- a) Remove priority control plants (Annually)
 - i. Maintain prioritized list of invasive plants and control techniques (Odd Years)
 - ii. Increase exotics-free areas on public lands
 - Increase partner lands treated by BIPM funds.(Annually)
 - Increase maintenance on previously treated areas (Annually)
 - iii. Increase exotics free buffer areas to public conservation lands.
 - iv. Increase exotics free public non-conservation lands.
- b) Create regional prioritized plant management maps. (Q3 - 2010)
- c) Cease planting of species we're paying to control. (illegal and non-illegal) (Scaevola)
 - i. Adopt proactive education of general public and violators
 - ii. Identify and engage appropriate regulatory & enforcement agencies

2. Animals

- a) Remove priority control animals
 - i. Maintain prioritized list of invasive animals and control techniques (2011)
 - ii. Increase exotic animal free areas on public lands
 - iii. Increase exotic animal free buffer areas to public conservation lands.
 - iv. Increase exotics free public non-conservation lands.
- b) Create regional prioritized animal management maps. (Q3 – 2010)
- c) Cease sale/importation of species we're paying to control. (Iguanas?)
 - i. Adopt proactive education of general public and violators
 - ii. Identify and engage appropriate regulatory & enforcement agencies

D) Monitoring and Mapping

- 1. Plants
 - a) Analyze and Report on Findings from 10 year exotics mapping project (Q1 - 2010)
 - b) Complete systematic change over to all digital reporting of treatment efforts (2012)
 - i. Pilot 2 partners (2010?)
 - ii. Put in contract language?
 - 1. Ask BIPM?
 - c) Create template and protocol for annual weeds work reporting. (Q3 - 2010)
(See EDDMapS Training)
- 2. Animals
 - a) Begin digital reporting of sightings and treatment efforts (See EDDMapS Training) (Q2 - 2010)
 - b) Create template and protocol for annual animal work reporting. (Q3 - 2010)

2. Partnership, Outreach and Collaboration

A) Increase Educational Efforts on Priority Species

- 1. Increase Educational Efforts to Individuals
 - a. Increase use of photo releases on weeds efforts
 - b. Create educational campaign against Scaevola (Q3 – 2010)
 - c. Publicize signees of all Code of Conducts lists (Q3-2010)
 - d. Work with GLEE to coordinate activities and choose dates for “Land Conservation” Month (Q3)
- 2. Increase Educational Efforts to Nurseries/Botanical Gardens/Landscapers
 - a. Create Code of Conduct pledge for landscapers (Q2 – 2010)
 - b. Create communications network contact list for nurseries, botanical gardens and landscapers.
 - c. Utilize Extension Service newsletter for BMPs
- 3. Increase Educational Efforts to Policy Makers
 - a. Publicize and get proclamations regarding 10 year mapping report. (Q3 – 2010)
 - b. Share Annual Weed/Animal Reports with elected officials during NIWAW (Q1 - 2011)
 - c. Visit with newly elected local government officials
- 4. Increase Educational Efforts to Land Managers
 - a. Post all materials to Keys CISMA website (Ongoing)
 - b. Continue to re-rank invasives every other year, updating control methods. (Odd Years)
 - c. Continue to hold one Herbicide Course and one Exotics ID course per year (Annually)
 - d. Continue to hold one grass class every other year (Even Years)

- e. Maintain evaluation database of contractors. (Q2 – Annually)

B) Increase Landscape Scale Effectiveness

1. Seek to Increase Active Partnerships with and within the Task Force
 - a. Schedule meetings on a regular monthly basis
 - b. Establish a Steering Committee, standing subcommittees and ad hoc committees to assist with CISMA efforts.
 - c. Annually develop a workplan based on 5 Year Plan Goals
 - d. Annually create a short, annual report
 - a. Seek liaison to Task Force from nurseries, pet trade, etc.
2. Seek to Increase Funding for Priority Public Lands
3. Seek to Increase Ability to Remove Invasives from Private Undeveloped Lands
 - a. Research existing local state and federal legislation.
 - b. Increase referrals of priority private buffer lands
 - c. Increase funding for priority private buffer lands for appropriate partner.
4. Support FDACS listing of priority invasives
5. Support Local, State and Federal Initiatives/Legislature to strengthen invasives efforts.

**Florida Keys Invasives Exotics Task Force
(Or Keys CISMA)
5 Year Plan
- 2010 Work Plan -**

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Beth Bergh, Monroe County
Janice Duquesnel, FDEP Parks

Anne Morkill, Florida Keys NWR's
Randy Grau, FFWCC
Carrie Backlund, NAS-KW

2010 Objectives & Tasks

Quarter 1 (Jan-March)

- Coordinate with FFWCC for Amnesty days. (Q1 - Annually)
- Help Advertise "No Pets Left Behind" Message (Q1 - 2010)
 - Woofstock on March 6th (Carrie, Cathy & Alison)
- Increase GreenThumb partner weblinks by 10 links (Q1 - 2010)
 - Task 1: Send out GreenThumb logo and web address (Alison)
 - Task 2: Get on pledged websites by April meeting (Q1 - 2010 - ALL)
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 - Set Dates for best control / follow up per species (Q1 - 2010)
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 - Guinea grass (Summer & Early Fall)
 - Burma Reed (Summer & Early Fall)
 - Coral Vine?
- Establish "holding areas" for captured pythons (Q1 - 2010)
 - Provide List of Acceptable Holding Options for people - Alison
 - Steve Berger - Big Pine
 - Patti Childress - Marathon
 - Cathy Close - Layton (Skip Haring)
 - Key West/Stock Island -
- Analyze and Report on Findings from 10 year exotics mapping project (Q1 - 2010)

Quarter 2 (April-June)

- Create SOP language for contractors to alert managers to EDRR species. (3 months)
- Add Disinfection Program/protocol into evaluation system for contractors (Q2 – 2010).
 - Alison will turn into a pdf form by April Meeting.
 - Beth will take over database and reporting.
- Hold EDMapS training to populate and use database at June meeting (Q2 – 2010 - Alison)
- Utilize EDDMapS alert system to ID new invasions in South Florida (Q2 – 2010)
- Create Code of Conduct pledge for local pet stores, wildlife rehabbers, animal control, etc. (Q2 – 2010) – Alison
- EDRR Workday: May 13th 9-Noon: Air Potato (Q2)
- Collaborate with REEF on Lionfish EDRR project (Q2 – 2010)
 - Janice – Currently not allowed to collect exotic fish in Pennekamp.
- Begin digital reporting of sightings and treatment efforts (See EDDMapS Training) (Q2 - 2010)
- Create Code of Conduct pledge for landscapers (Q2 – 2010)
- Maintain evaluation database of contractors. (Q2 – Annually)

Quarter 3 (July-Sept)

- Expand Green Thumb Nurseries program by 1 nursery per region per year (Q3 - 2010)
 - Visit Nurseries as Summer Workday (Q3 – 2010)
- Create Vehicle Disinfection program/protocol
 - Create designated wash down areas (Q3 – 2010)
 - Transfer Stations – Beth (Long Key, Cudjoe and Key Largo)
 - FDOF – Big Pine
- Create animals fact sheet / poster to increase knowledge of current laws (Q3 2010 - Randy)
- Complete Invasive Animals list (Q3 - 2010)
- Create protocols for picking high EDRR species (Q3 - 2010)
- EDRR Workdays: July 8th : Guinea Grass Keyswide & Sept 9th Visit Nurseries & Pet stores (Q3),
- Create regional prioritized plant management maps. (Q3 - 2010)
- Create regional prioritized animal management maps. (Q3 – 2010)
- Create template and protocol for annual weeds work reporting. (Q3 - 2010)
- Create template and protocol for annual animal work reporting. (Q3 - 2010)
- Create educational campaign against Scaevola (Q3 – 2010)
- Publicize signees of all Code of Conducts lists (Q3-2010)
- Work with GLEE to coordinate activities and choose dates for “Land Conservation” Month (Q3)
- Publicize and get proclamations regarding 10 year mapping report. (Q3 – 2010)

Quarter 4 (Oct-Dec)

- Get Vehicle Disinfection program/protocol adopted by key user groups (Public works, DOT, FDOF, exotics contractors & Task Force partners) (Q4 - 2010)
- Incorporate EDDMapS into annual herbicide/field ID trainings (Q4 – 2010)
- EDRR Workday: November 11th: ?
- Hold refresher trainings for all Python Patrol responders (Annually Q4)
- Continue to hold one Herbicide Course and one Exotics ID course per year (Annually)
- Continue to hold one grass class every other year (Even Years)

FLORIDA KEYS INVASIVE EXOTICS TASK FORCE LIST OF INVASIVE PLANTS OF THE FLORIDA KEYS - 2010-2012

FLEPPC = CATEGORY CLASSIFICATION ON FLORIDA EXOTIC PEST PLAN COUNCIL'S 2009 LIST OF FLORIDA'S MOST INVASIVE SPECIES. (N:north, C:central, S:south, All: Florida wide)

SCIENTIFIC NAME	COMMON NAME	FLEPPC	KEYS 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
Sesuvium portulacastrum	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%
Aegle marmelos	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
Aurora isthmica	Woman's tongue	1: C,S	Heavy seeder, hard to kill with traditional he	wind blown	Basal or stump with 30% Garlon 4
Asparagus acutirostris	Asparagus fern	1: All	Spreads from landscapes and establishes where dumped	dumping/birds/animals	Foliar with 2% Roundup Pro
Catharanthus roseus	Madagascar periwinkle	n/a	disturbed sites, beaches	wind blown	Pull
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	Crowfoot grass	2: All	So far seems to be limited to disturbed sites or as an early colonizer only at natural sites	wind blown, mowing	Foliar with 2% Roundup Pro
Dioscorea bulbifera	Air Potato	1: All	Invades variety of habitats: 23 FL counties, Big Pine & Cudjoe	vine, tubers, floats	Manual removal
Epipremnum pinnatum v. aureum	Golden Pothos	2: C,S	Has spread from landscapes, dump sites to hammock	vining, dumping	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
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	dumped, pieces	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 spp	Jumbie bean, siratro	n/a	edge species, moving into coastal berms and dunes	Wind blown	
Melinis repens	Natal grass	1: All	Occurs roadside over the entire Keys; potential problem	year round	Foliar with 2% Roundup Pro
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 treated on Big Pine Key	seed/rhizome	Foliar with 2% Roundup Pro
Pennisetum purpureum	Napier grass	1: All	So far limited to roadsides	mowing, yr round	Foliar with 2% Roundup Pro
Pennisetum setaceum	Fountain grass	2: S	Planted for landscaping and is currently spreading on roadsides, Hammock and mangrove margins, disturbed sites and spoil islands in the Upper Keys	mowing, yr round	Foliar with 2% Roundup Pro
Schefflera actinophylla	Queensland umbrella tree	1: C,S		birds, summer	Basal with 10% Garlon 4 or stump with 50% Garlon 3A
Sesbania herbacea	Danglepod, Sesbania	n/a	Mainland native. Prolific annual seeder in disturbed areas		
Sophora tomentosa var. occidentalis	Texas Necklace pod	n/a	Hybridizes with Native: Sophora tomentosa var. truncata	Necklace pod	Native does not have silvery fuzzy leaves.
Sphagnetocola trilobata	Wedelia	2: All	disturbed sites, beaches	year round	Foliar with 2% Roundup Pro, foliar with 1% G3A
Stachytarpheta cayennensis	Nettle-leaf Porterweed	n/a	Non-native porterweed that hybridizes with native		
Stenotaphrum secundatum	St. Augustine grass	n/a	Planted, beginning to invade hammocks from roadsides.	rhizomes, Sep-Nov	
Syngonium podophyllum	Am. evergreen, Arrowhead	1: All			
Tabebuia heterophylla	Pink shower tree	n/a	Newer invader, with many large local infestations keyswide	wind blown, Mar - Aug	
Talipariti tiliaceum	Sea hibiscus	2: C,S	So far largely limited to disturbed sites	drift seed/wrack lines	Stump with 50% G3A immediately. Girdle Large trees.
Tecoma stans	Yellow elder	n/a	moving into hammocks from disturbed edges		Basal with 20% Garlon 4
Terminalia catappa	Tropical almond	2: C,S	occasional problem on Keys coastlines and near plantings	drift seed	Basal with 10% Garlon 4 or stump with 50% Garlon 3A
Tradescantia spathacea	Oyster plant	2: S	Spreads from landscaping and establishes where dumped		Foliar with 3% Garlon 4 in water or oil
Tribulus cistoides	Puncture weed	2: All	Moving down the roadside; also on beaches	animals, year round	Foliar with 2% Roundup Pro, basal with 5% G4
Zoysia japonica	Zoysia grass	n/a	Escaping from park residence at N end of Bahia Honda	rhizomes	Foliar with 2% Roundup Pro
SCIENTIFIC NAME	COMMON NAME	FLEPPC	KEYS INVASION PATTERN AND COMMENTS	SEEDING DISPERSAL & SEASON	ERADICATION RECOMMENDATION
FKIETF CATEGORY III: INVASIVE EXOTICS THAT HAVE NOT YET BECOME A SERIOUS PROBLEM IN THE FLORIDA KEYS BUT ARE TO BE WATCHED (TBW).					
Acacia auriculiformis	Earleaf acacia	1: C,S	Local problem in Upper Keys; has appeared in Lower Keys	wind blown	Stump with 50% Garlon 3A
Antigonon leptopus	Coral Vine	2: All			

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SCIENTIFIC NAME	COMMON NAME	FLEPPC	KEYS INVASION PATTERN AND COMMENTS	SEEDING DISPERSAL & SEASON	ERADICATION RECOMMENDATION
<i>Ardisia elliptica</i>	Shoebuttan ardisia	1: All	Moving south on Card Sound Road; not yet over bridge	birds, year round	Basal with 10% Garlon 4 or stump with 50% Garlon 3A
<i>Arundo donax</i>					
<i>Asystasia gangetica</i>	Ganges primrose	2: C, S	Spreads from disturbed sites and climbs forest edges	Mar - Aug	Foliar with 2% Roundup Pro
<i>Bauhinia variegata</i>	Orchid tree	1: C, S	Planted here but no escape observed yet		Basal with 10% Garlon 4 or stump with 50% Garlon 3A
<i>Broussonetia papyrifera</i>	Paper mulberry	2: All	One escape in Key Largo, serious problem in Dade		Basal with 10% - 30% Garlon 4
<i>Bucida buccera</i>	Black Olive	n/a	Copious seeder, invades canopy gaps near parent		
<i>Bucida spinosa</i>	Ming Tree	n/a	One escape in North Key Largo. Population in Homestead.		
<i>Carica papaya</i>	Papaya	n/a	Aggressively dominates hammocks & beaches after hurricanes.		Do not treat - just monitor - may be native
<i>Clusia rosea</i>	Pitch apple/autograph tree	n/a	spreading in Key Largo/Dade/Broward, epiphytic, lithophytic. Considered an extirpated/reestablished plant for lower keys.	birds, spring-summer	Basal with 10% Garlon 4
<i>Cupaniopsis anacardioides</i>	Carrotwood	1: C, S	Recent introduction; has spread from planting in Key West; invades uplands to buttonwood zone	birds/small mammals	Basal with 10% Garlon 4 or stump with 50% Garlon 3A
<i>Delonix regia</i>	Royal Poinciana	n/a			
<i>Dichrostachys cinera</i>	Sickle bush, Marabu	n/a	Dense thickets in Cuba, Pacific Islands.	mowing, rhizomes	Unknown at this time.
<i>Euphorbia tirucalli</i>	Pencil cactus, Pencil tree	n/a	Occasionally found surviving along woods edge.	dumped	
<i>Ficus altissima</i>	False banyan	2: S	Planted here but no escape observed yet	birds	Basal with 10% Garlon 4
<i>Flacourtia indica</i>	Governor's plum	2: S	Planted here but no escape observed yet	animals	
<i>Furcraea cabuya</i>	Central American sisal	n/a	Spreads from landscapes and dump sites; localized	Jun - Aug	Spray with 3% Garlon 4 on center bud
<i>Hamelia patens var. glabra</i>	African Fire Bush	?	<i>Hamelia patens var. patens</i>	Fire Bush	Exotic has yellow flowers and mostly smooth leaves.
<i>Indigofera spicata</i>	Indigofera	n/a	Found along roadsides keyswide.		
<i>Jacquinia arborea</i>	Bracelet Wood	n/a	disturbed sites, Key Largo Geiger Key areas		
<i>Jasminum fluminense</i>	Brazilian jasmine	1: C, S	Single, large infestation found at MM 102		
<i>Melaleuca quinquenervia</i>	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
<i>Melia azedarach</i>	Chinaberry	2: All	Planted as ornamental and has potential to spread	animals	Basal with 10% Garlon 4 or stump with 50% Garlon 3A
<i>Merremia tuberosa</i>	Wood rose	2: S	It's planted in Keys; is a problem in Dade	year round	Basal with 10% Garlon 4 or treat cut stems with 50% G3A
<i>Murraya paniculata</i>	Orange-jessamine	2: S	Planted here but no escape observed yet	animals	Basal with 10% Garlon 4, hand pull seedlings
<i>Nephrolepis brownii</i>	Asian sword fern	1: C, S	Invades hammocks	seeds spores/rhizome	Foliar with 2% Roundup Pro
<i>Ochrosia parviflora</i>	Kopsia	n/a	Planted here but no escape observed yet		
<i>Panicum repens</i>	Torpedograss	1: All	Present in Keys, but extent of invasion unknown	rhizomes/seeds	Foliar with high concentration of Rodeo
<i>Phoenix dactylifera</i>	Senegal Date Palm	2: C, S	Localized problem at Marquesas Keys and Cape Florida	rhizomes/seeds	Manual removal
<i>Phoenix reclinata</i>	Date palm	n/a	Found in many homestead areas, can move into coastal	rhizomes/seeds	Manual removal
<i>Pongamia pinata</i>	pongamia	n/a	Aggressive in Dade. 100's of seedlings near Big Pine adult		18%G4
<i>Psidium guajava</i>	Guava	1: C, S	Spreads from mainland fruit trees into uplands	mammals/humans	Basal with 10% Garlon 4
<i>Psidium cattleianum</i>	Strawberry guava	1: C, S	Spreads from mainland fruit trees into uplands	mammals/humans	Basal with 10% Garlon 4
<i>Ricinus communis</i>	castor bean	2: All			
<i>Selenicereus pteranthus</i>	Snake Cactus	n/a			
<i>Senna pendula</i>	Christmas senna	1: C, S	Crocodile Lake, and private property on ramrod		
<i>Solanum viarum</i>	Tropical soda apple	1: All	Invades pastures and upland pines	livestock/mamals/ hay	Glyphosate at a 3% solution
<i>Syzygium cumini</i>	Java Plum	1: C, S	One site on Ramrod key, waiting to see	birds/small mammals	Glyphosate at a 3% solution
<i>Tamarindus indicus</i>	Tamarind	n/a	Naturalizing in Key Largo hammock		
<i>Triadica sebifera</i>	Chinese Tallow				
<i>Turnera ulmifolia</i>	Yellow alder, RamGoat	n/a	Disturbed areas may invade beach dunes		Manual or basal with 5% G4
<i>Vitex trifolia</i>	Chastetree	n/a	Key Largo Hammocks & Long Key as a landscape tree	Landscapers	
<i>Washingtonia robusta</i>	Washingtonia Palm				
The FKIETF has kept a formal list of exotic species that its members find to be invasive since 1999.					
Listings are based primarily from on-the-ground, local knowledge of individual species and their behavior in natural areas.					
The list is updated every two years.					
For more info, please visit: http://www.dep.state.fl.us/lands/invaspec/4thlevpgs/WGFloridakeys.htm					