



SOUTH FLORIDA ECOSYSTEM RESTORATION TASK FORCE



LEADERSHIP • PARTNERSHIP • RESULTS

Implementing WRDA 2020:

Prevention Priority List and Next Steps

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WRDA 2020 Direction

Part 1: Develop a **priority list** of invasive species.



Part 2: Focus on **cooperative and collaborative efforts** to:

- Guide applied research
- Develop innovative strategies and tools
- Implement specific management, control, and eradication activities, including prevention

Prioritizing along the Curve

- TF Strategic Action Framework has 4 goals situated along the curve
- Prioritization efforts started at Prevention
- Working up the curve

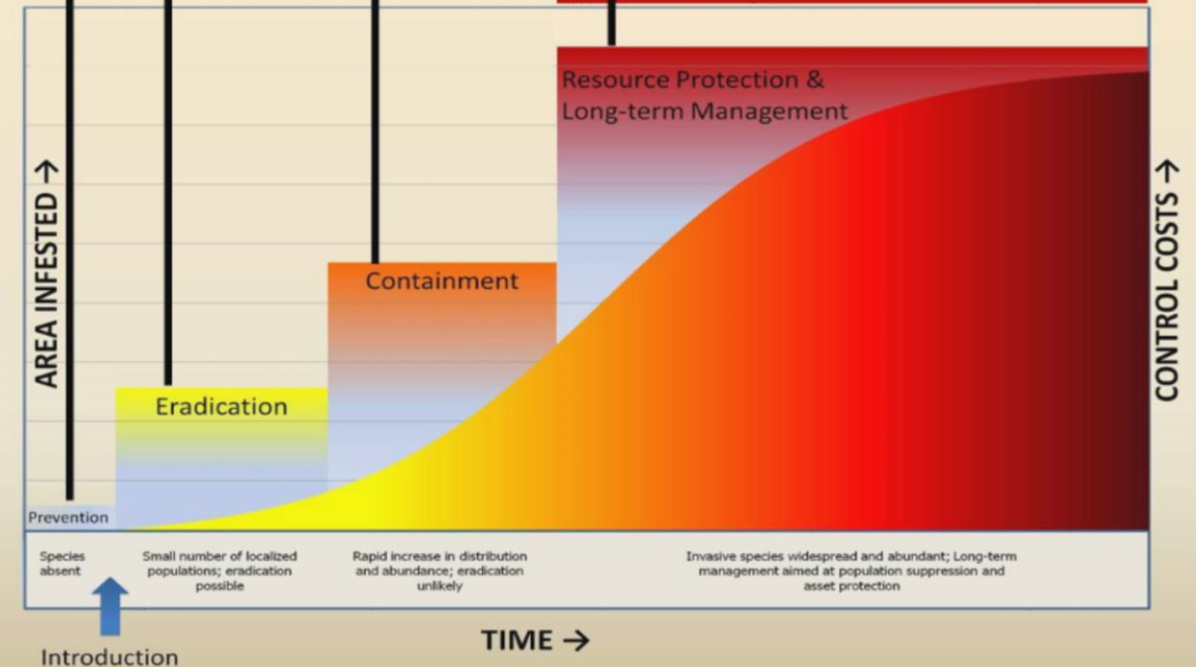
THE INVASION CURVE AND STRATEGIC GOALS

Goal 1: Prevent the introduction of invasive exotic species.

Goal 2: Eradicate invasive exotic species by implementing Early Detection and Rapid Response (EDRR).

Goal 3: Contain the spread of invasive exotic species.

Goal 4: Reduce the populations of widely established invasive exotic species and maintain at lowest feasible levels.



Part 1: Progress Update

- Convene a group of experts ✓
- Identify existing priority lists ✓
- Identified and refined a prioritization tool ✓
- Develop a Priority List for **Prevention** ✓
 - Begin WRDA Part 2 for **Prevention**
- Develop Task Force priority lists for:
 - Eradication through **EDRR** (Early Detection & Rapid Response)
 - **Established Species** (Containment and Long-term Management)

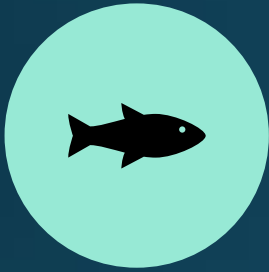
State-wide Prevention

- Horizon scan to identify invasive species threats to Florida
- Rated by likelihood of:
 - Arrival
 - Establishment
 - Impact
- Color saturation indicates certainty
- 40 Priority species for all of Florida



Note:
THESE DATA ARE unpublished

Developing the South Florida Ecosystem Restoration Priority List: Prevention



40 SPECIES
REFINED TO 16



MANGROVES
EVALUATED WITH
THE HORIZON
SCAN TOOL



3 MANGROVES
ADDED TO THE
LIST, 2 WERE
COMPLETE
GENUS



TOTAL OF 19
SPECIES SPLIT
BETWEEN 5 TAXA

Inaugural Product!

South Florida Ecosystem
Restoration Task Force
Priority Nonnative Species:
Prevention

Fresh Water Invertebrates (2)

- *Procambarus clarkia* (red swamp crayfish)
- *Limnoperna fortunei* (golden mussel)



GUSTAVO A. DARRIGRAN



Elise Thompson, LA Beat

Fresh Water Vertebrates (4)

- *Tilapia zillii* (Redbelly tilapia)
- *Xenopus laevis* (African Clawed Frog)
- *Rana ridibunda* (Marsh frog)
- *Pseudorasbora parva* (Stone moroko)



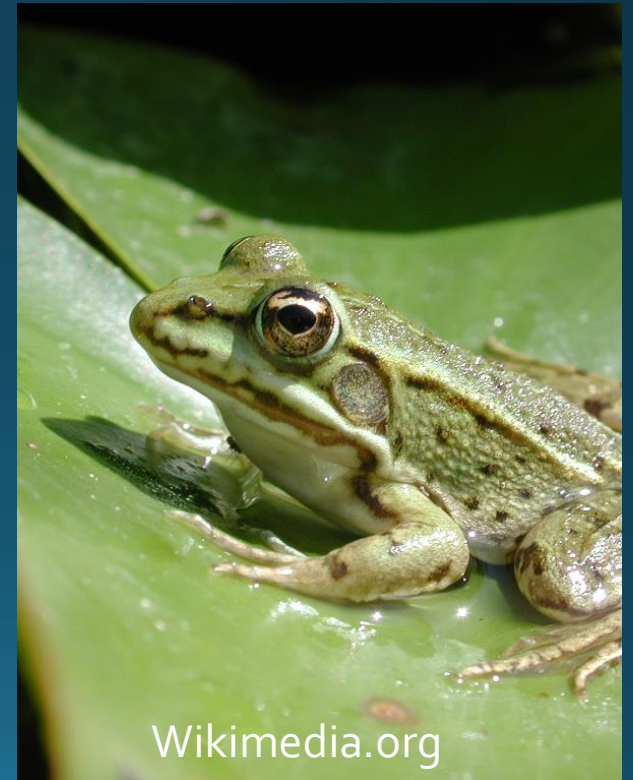
Ulm Zoological Garden, Germany. December, 2011.



CABI website



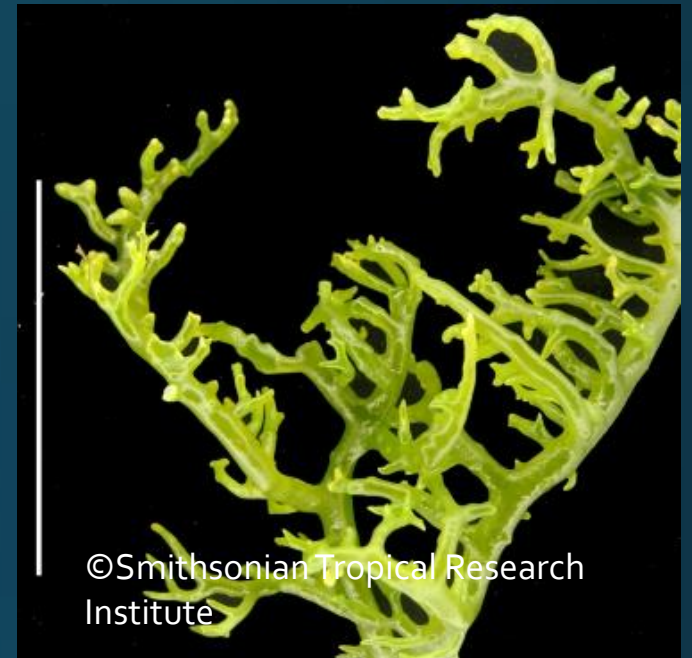
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Wikimedia.org

Marine (3)

- *Kappaphycus alvarezii*, *Kappaphycus striatum* (Agar-agar)
- *Halophila stipulacea* (Halophila seagrass)
- *Mycale (Mycale) grandis* (orange keyhole sponge)



Terrestrial Plants (5)

- *Phalaris arundinacea* (reed canary grass)
- *Persicaria hydropiper* , *Polygonum hydropiper* (Marsh pepper knotweed)
- *Nypa fruticans* (nipa palm, mangrove palm)
- *Bruguiera* spp.* (Asian mangrove in the family Rhizophoraceae)
- *Lumnitzera* spp.* (Indo-West Pacific mangrove)

* Includes all genus



Terrestrial Vertebrates (5)

- *Macaca fascicularis* (crab-eating macaque, long-tailed macaque)
- *Rattus tanezumi* (Tanezumi Rat, Asian House Rat, Asian Rat)
- *Varanus indicus* (Mangrove Monitor, Western Pacific Monitor Lizard)
- *Ploceus cucullatus* (Village Weaver Bird)
- *Pycnonotus cafer* (red-vented bulbul)



From Wikimedia Commons, the free media repository - Pycnonotus cafer (red-vented bulbul)



ID 58720861 © Boule13 | Dreamstime.com

Priority List – Prevention

Next Steps

- Developing summary documentation on each species:
 - Means of arrival/Pathways
 - Current/historic establishment in Florida
 - Potential Impacts
- Developing Task Force recommendations (WRDA 2020 Part 2)

Procambarus clarkia (Red Swamp Crayfish)



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©ANDREW C/ACRYPTOZOO/VIA WIKIPEDIA - CC BY 2.0

Arrival: Often shipped live for food

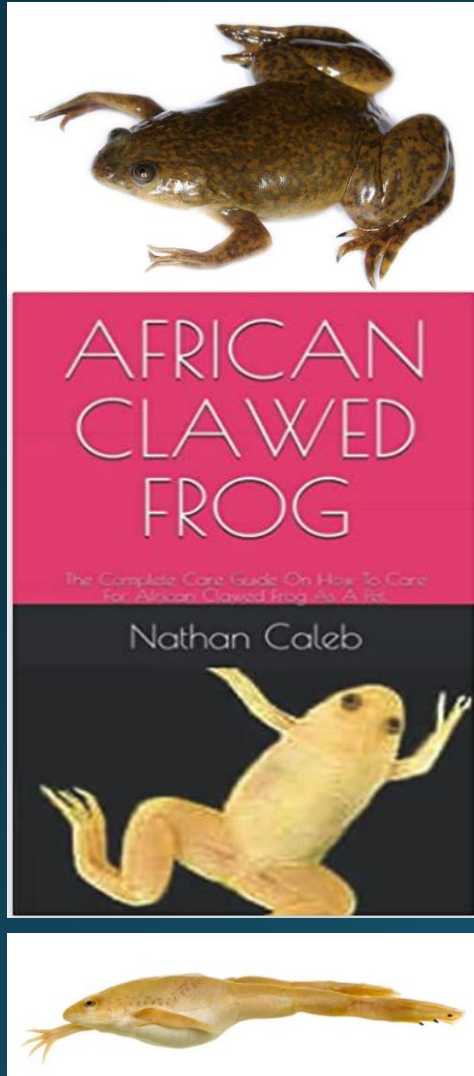
Establishing: A population established in N. Florida and was eradicated

Impacts: Competition, predation, disease transmission to native populations, and physical changes to ecosystems

Task Force Recommendation: **Coming Soon WRDA part 2!**

DRAFT EXAMPLE

Xenopus laevis (African Clawed Frog)



Arrival: Release in nature; escape from confinement; aquarium trade species

Establishing: A population of similar species established near Tampa, and continuing to test control, eradicated, Impacts: Predation, competition, and transmission of disease to native species (known vector of chytrid fungus)

Task Force Recommendation: **Coming Soon WRDA part 2!**

DRAFT EXAMPLE

Photo from amazon.com (care book) and from underground reptiles sales pages

Halophila stipulacea (Halophila Seagrass)



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PUBLIC DOMAIN - RELEASED BY NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA)/VIA FLICKR - CC0

Arrival: Angling/fishing equipment; Hitchhikers on ship/boat; Natural dispersal across borders of invasive species that have been introduced through other pathways

Establishing: Found invasive in Caribbean Island of Dominica and in the Mediterranean

Impacts: Competition and physical impact on ecosystems, overgrow Coral Reefs, changes in fish compositions

Task Force Recommendation: **Coming Soon WRDA part 2!**

DRAFT EXAMPLE

Lumnitzera (Indo-West Pacific Mangrove)



Lumnitzera racemosa Public Racemosa



PhytoImages.siu.edu *Lumnitzera littorea*

Arrival: Botanical Gardens and Nurseries

Establishing: A species of this genus has been undergoing EDRR activities for more than a decade

Impacts: Outcompete native plant species, reduced recreational/commercial fishing

Task Force Recommendation: **Coming Soon WRDA part 2!**

DRAFT EXAMPLE

Varanus indicus (Mangrove Monitor, Western Pacific Monitor Lizard)



Arrival: Escape from confinement, Release in nature

Establishing: Native to Palau Islands. A related monitor species (*Varanus niloticus* (Nile)) is established in S. Florida

Impacts: Predation (small mammals, fish and eggs) and damage to agriculture, forestry, and aquaculture

Task Force Recommendation: **Coming Soon WRDA part 2!**



DRAFT EXAMPLE

Next Steps

Begin Implementing WRDA 2020 Part 2:

- **PREVENTION:** Develop recommendations for WG/SCG approval

Continue Implementing WRDA 2020 Part 1:

- **EDRR:** Summer 2023 develop, calibrate, and validate Risk Assessment Tool with a workshop in fall
- **CONTAINMENT/LONG-TERM MANAGEMENT:** Established species refinement process Summer 2023

Appointees and Subject Experts

WG/SCG Agency Appointees

- James Erskine, WG Chair
- Lawrence Glenn, SCG Chair
- Nick Aumen, USGS
- Craig Van Der Heiden, Kevin Donaldson, and Amy Castenada, Miccosukee Tribe
- Bill Thomas, FWS Refuge
- Art Roybal, FWS Ecological Services
- Jessica Spencer, USACE
- Kelli O'Donnell, NOAA
- Bryan Falk, NPS
- Kristen Sommers/Sarah Funck & Matt Phillips, FWC
- LeRoy Rodgers, SFWMD
- Brenda Hovde, PBC
- Dr. Eric Rohrig and Dr. Patti Anderson, FDACS
- Nathan Fikkert, USDA
- Janet Gil, Miami-Dade County

Other Experts

- Mitch Barazowski, SW CISMA
- LeRoy Rodgers and Dennis Giardina, ECISMA
- Alexandra Onisko and Michael Yustin, TC CISMA
- Deah Lieurance, UF IFAS (Horizon Scan, Regional status assessment tool)
- Wes Daniel, USGS (NAS screening)
- Christina Romagosa (Animal screening tool)
- John Galvez, USFWS Fisheries/Aquatic Invasive Species Program

OERI

- Carrie Beeler
- Allyn Childress
- Adam Gelber

Subject Matter Experts Available

Via Zoom:

Wes Daniel, USGS - Marine Species

Sarah Funck, FWC - Terrestrial Animals

Deah Lieurance, UF - Rapid Risk Tool Developer

In Person:

John Galvez, USFWS - Freshwater Fisheries,

LeRoy Rodgers, SFWMD - Terrestrial Plants