Developing a management response to invasive tegus

Joint Meeting of Working Group & Science Coordination Group
South Florida Ecosystem Restoration Task Force
23 September 2015

Outline

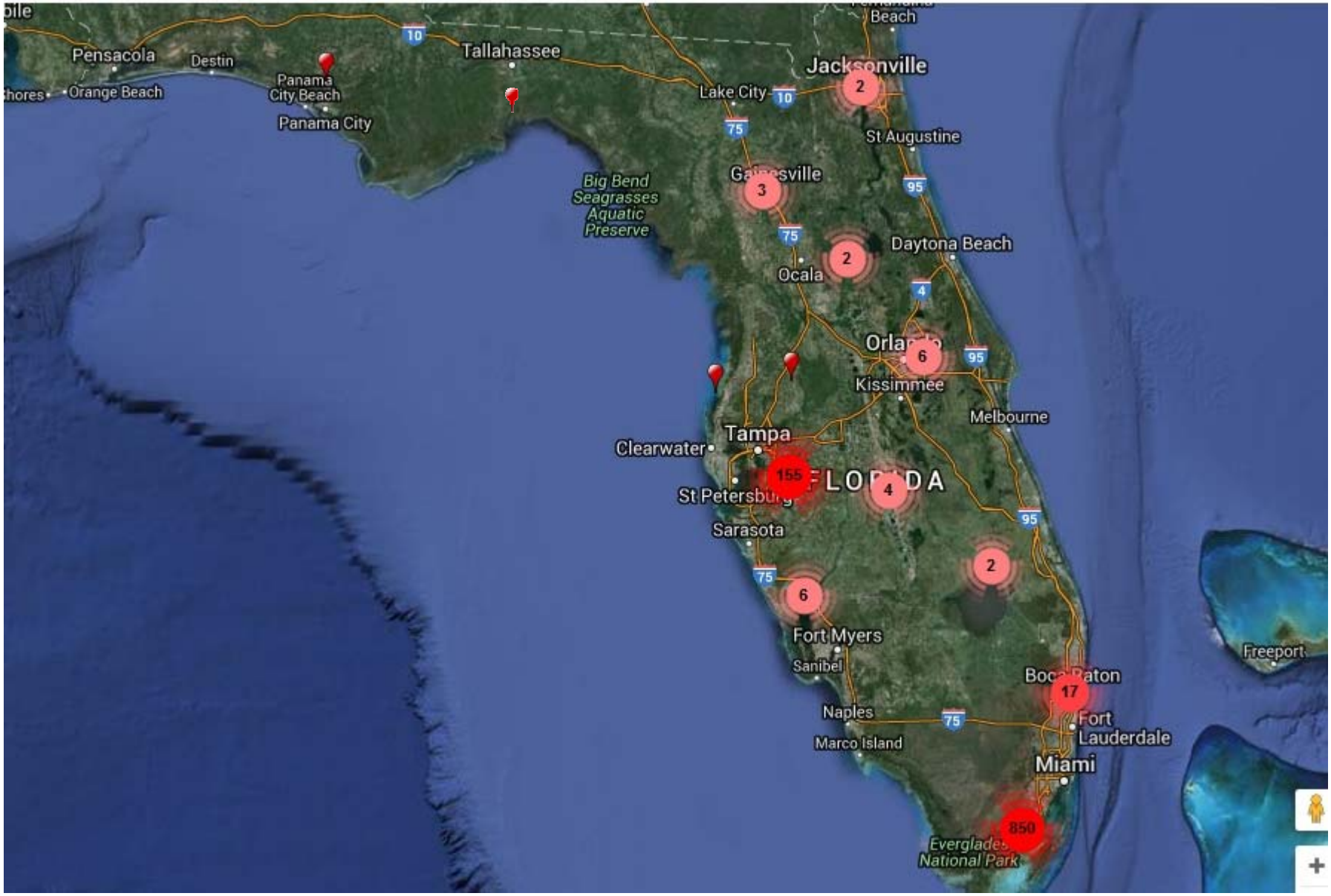
- Background on tegus in Florida
  - Black and white tegu
- Structured Decision Making Workshop (18-20 Aug 2015)
  - Outcomes
- Next steps

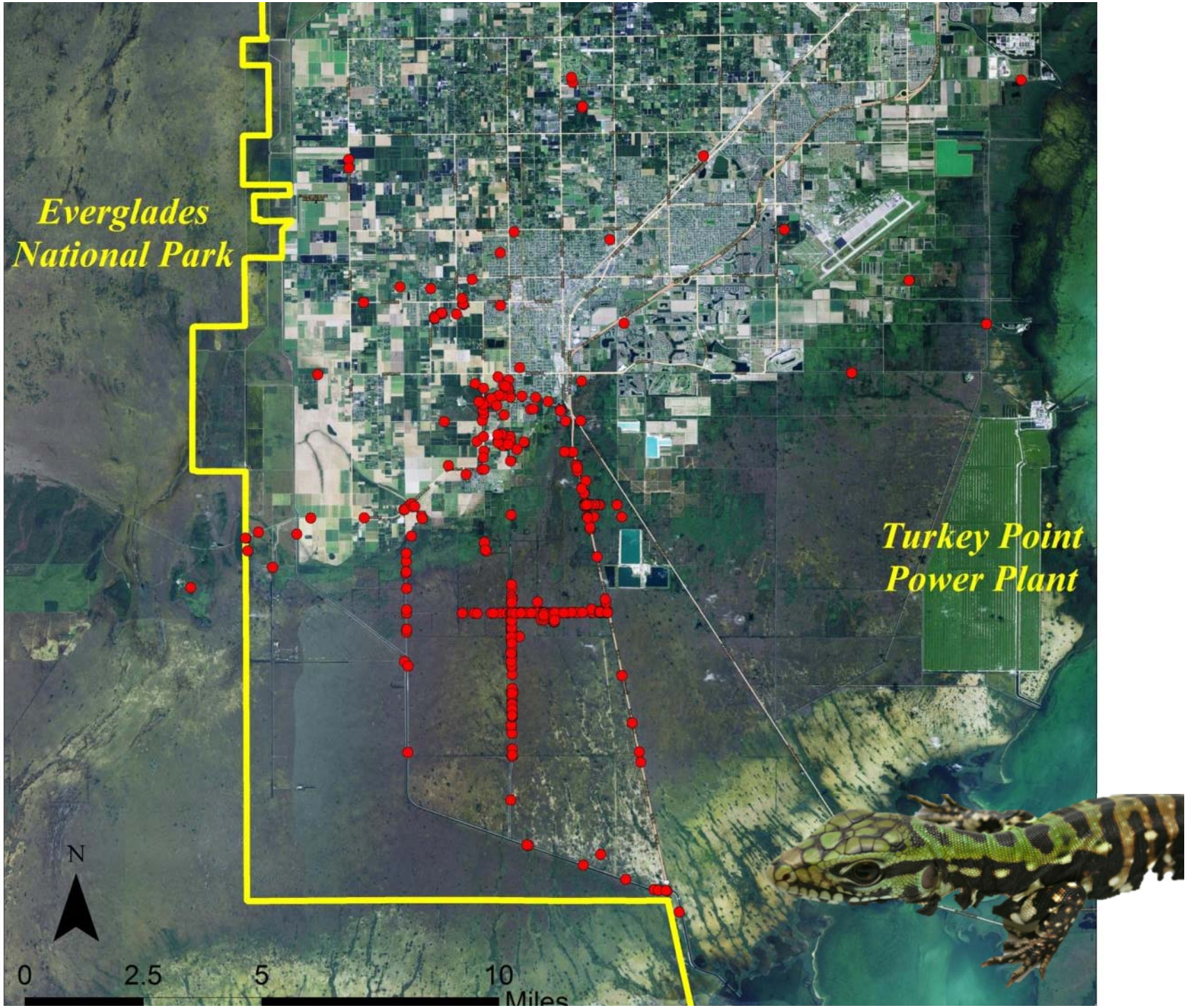
Argentine black and white tegu

Tupinambis merianae/Salvator merianae

- Native to eastern Brazil, Paraguay, Uruguay, and northern Argentina
- Range of habitats and climates (tropical, subtropical, and temperate)
- Burrowing species
  - Can excavate own
  - More commonly use burrows made by other animals, natural/artificial cavities
- Popular in pet trade

Tegu observations in Florida




Everglades
National Park
Turkey Point
Power Plant
N
0
2.5
5
10
Miles

Potential ecological threats

- Habitat generalist
- Could overwinter all over FL
- Omnivorous
  - Fruits
  - Snails
  - Insects
  - Vertebrates
    - Nest predators (reptiles and ground-nesting birds)
- Threatened and endangered spp.
  - Use gopher tortoise burrows
- Can attain locally high densities
- Possible agricultural implications

Past and present efforts

- Removal
  - Trapping
  - Visual surveys
- Detection
  - I've-got-one hotline
  - Camera traps
- Improving knowledge
  - Telemetry
    - Habitat use
    - When/where nest and brumate
    - Movements
  - Diet analyses
  - Developing better traps

How do we create an integrated cooperative plan?

How to allocate resources among:

- Surveillance
- Control
- Research activities

Tegu Structured Decision-Making Workshop

- 3-day workshop, Archbold Biological Station (18-20 Aug 2015)
- Organized by National Park Service and Florida Fish and Wildlife Conservation Commission
- Structured decision-making approach (SDM)
- Resource professionals from federal/state agencies and academic institutions
  - DOI, Office of Everglades Restoration Initiatives
  - USFWS
  - NPS
  - USGS
  - FWC
  - SFWMD
  - University of Florida
  - Sam Noble Museum, University of Oklahoma

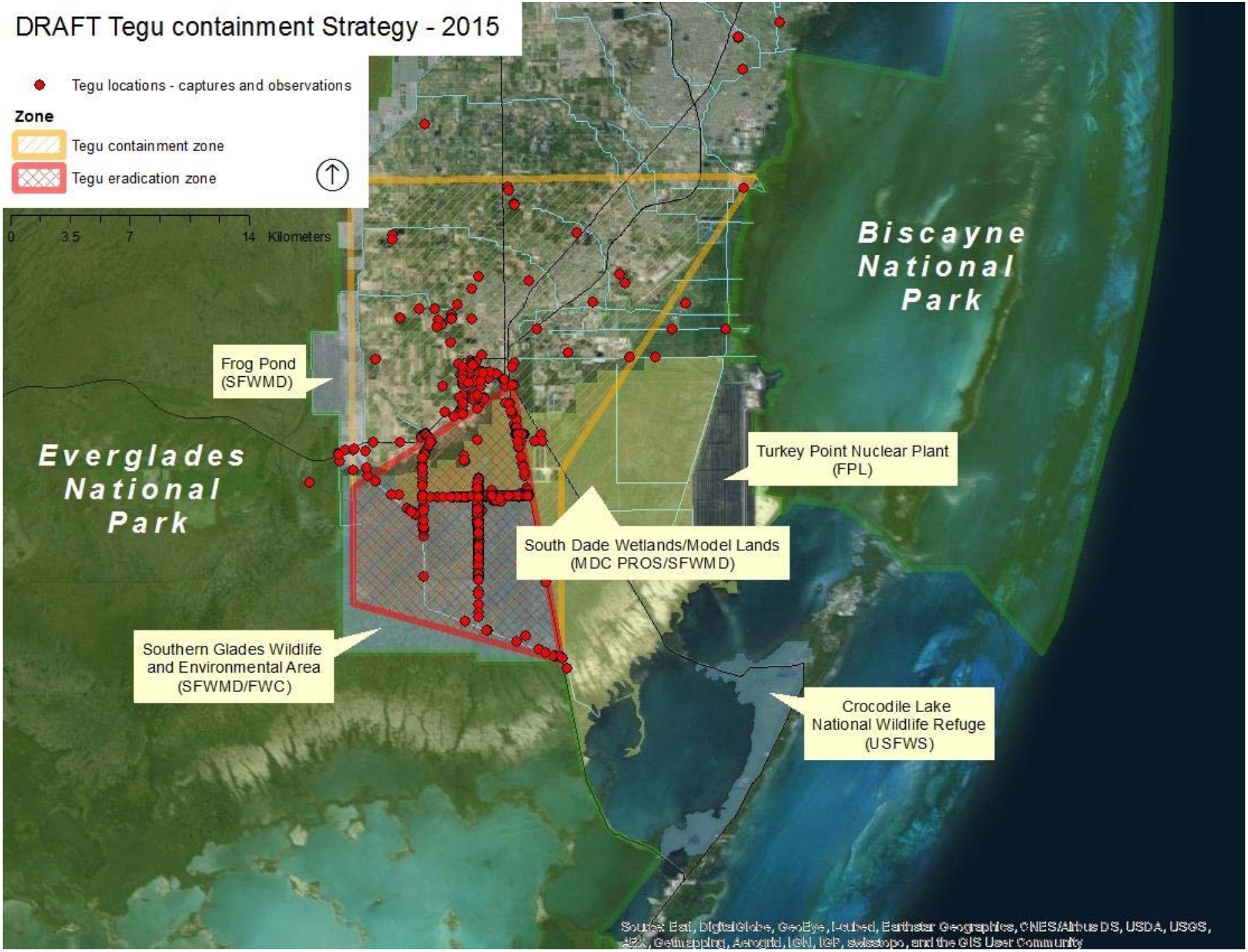
Fundamental objectives: Why?

Minimize ecological damage to valuable resources

Maximize probability of exclusion from greater Everglades and ecologically important areas while minimizing cost

Means objectives: How?

Minimize density and distribution of tegus


DRAFT Tegu containment Strategy - 2015
Tegu locations - captures and observations
Zone
Tegu containment zone
Tegu eradication zone
0
3.5
7
14
Kilometers
Biscayne National Park
Everglades National Park
Frog Pond (SFWMD)
Turkey Point Nuclear Plant (FPL)
South Dade Wetlands/Model Lands (MDC PROS/SFWMD)
Southern Glades Wildlife and Environmental Area (SFWMD/FWC)
Crocodile Lake National Wildlife Refuge (USFWS)
Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

What level of removal is needed for success?

Based on preliminary model **

- Parameters (fecundity, survivorship, pop size) from expert elicitation
- Population growth rate may be 40-60% per year since introduction
- Estimate removal rate in eradication zone necessary to:
  - Stabilize (no net population growth), Rr = 29%
  - Locally extirpate, Rr = 40%, over 20 years (may not be feasible)
- Estimated ** cost effort at 40% *removal* rate could be as much as $1.1 million in first year
  - Cost could ⇧ or ⇩ over time depending on variety of factors

*****Results very preliminary and depend on number of assumptions that currently cannot be verified. And is JUST for removal, not EDRR or research to reduce uncertainty***

What level of removal is needed for success?

- Over time…
  - Will change each year, based on current population
  - Refined with better estimates of pop growth rates

- Must incorporate learning with removal effort
  - What effect is removal having on population?
  - How can we improve our efforts?

Short term: Upcoming season 2016

FWC/UF/NPS/USGS

- Remove
  - Intensified removal - trapping and surveys in eradication zone
  - Potential for new tool - Detection dogs
- Learn
  - Use trap efforts to assess trap efficiency
  - Use radio-tagged or marked individuals to:
    - Understand survivorship
    - Estimate fecundity
    - Estimate dispersal rates
- Enhance and Develop
  - Enhance early detection
    - Detecting those tegus that have moved beyond exclusion zone
  - Enhance rapid response - Once a tegu is detected, what next?
  - Develop monitoring and range delimitation
    - Determining the true extent of the range

Long term

- Coordinated interagency plan
- Keep removing
- Keep refining
  - Removal
  - Early detection/Monitoring system
  - Rapid response
- Keep learning to achieve management goals
  - What is birth/death rate and how does it affect population growth?
  - Are removal efforts having an effect on population?
  - How effective are tools used for removal and detection?
  - What new tools can be developed?

Kimcat's Design Shop