



# Regional Assessment of Priority Animal Management



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# Presentation Outline

- **Prevention and Awareness**
- Early Detection/Rapid Response
- Control and Management





# Nonnative Fish and Wildlife Technical Assistance Group (TAG)

- TAG charged with examining regulatory structure for nonnative fish and wildlife in Florida
  - Provide feedback to FWC
  - No decision-making authority
- Members represent 12 interest groups
- 9 meetings completed



The intent of the Florida Python Challenge® is to raise public awareness about invasive species in Florida, like Burmese pythons, that are a threat to the Everglades ecosystem. The Florida Python Challenge® is an effort to promote protection of native wildlife through removal of Burmese pythons.



**977**

Participants  
-32 states  
-2 countries

**231**

Pythons  
removed

**\$10  
K**

Grand Prize  
Bergeron  
Everglades  
Foundation



- August 4 – 13, 2023
- Updated participant training and education
- \$30,000 total cash prizes available
- Over 400 participants registered as of July 1
- 25 states, 1 international (Belgium)



Everglades Cooperative Invasive Species Management Area



To reduce the number of nonnative species released into the wild, the Exotic Pet Amnesty Program offers a free and legal opportunity for Florida residents to rehome nonnative pets they are no longer able to keep.



## 2022 – 2023 Highlights

- Website makeover, fully automated forms
- Focus on out-of-state adopter recruitment
- iHeart Media campaign 2023
- Record-breaking **550** adopter applications



# Presentation Outline

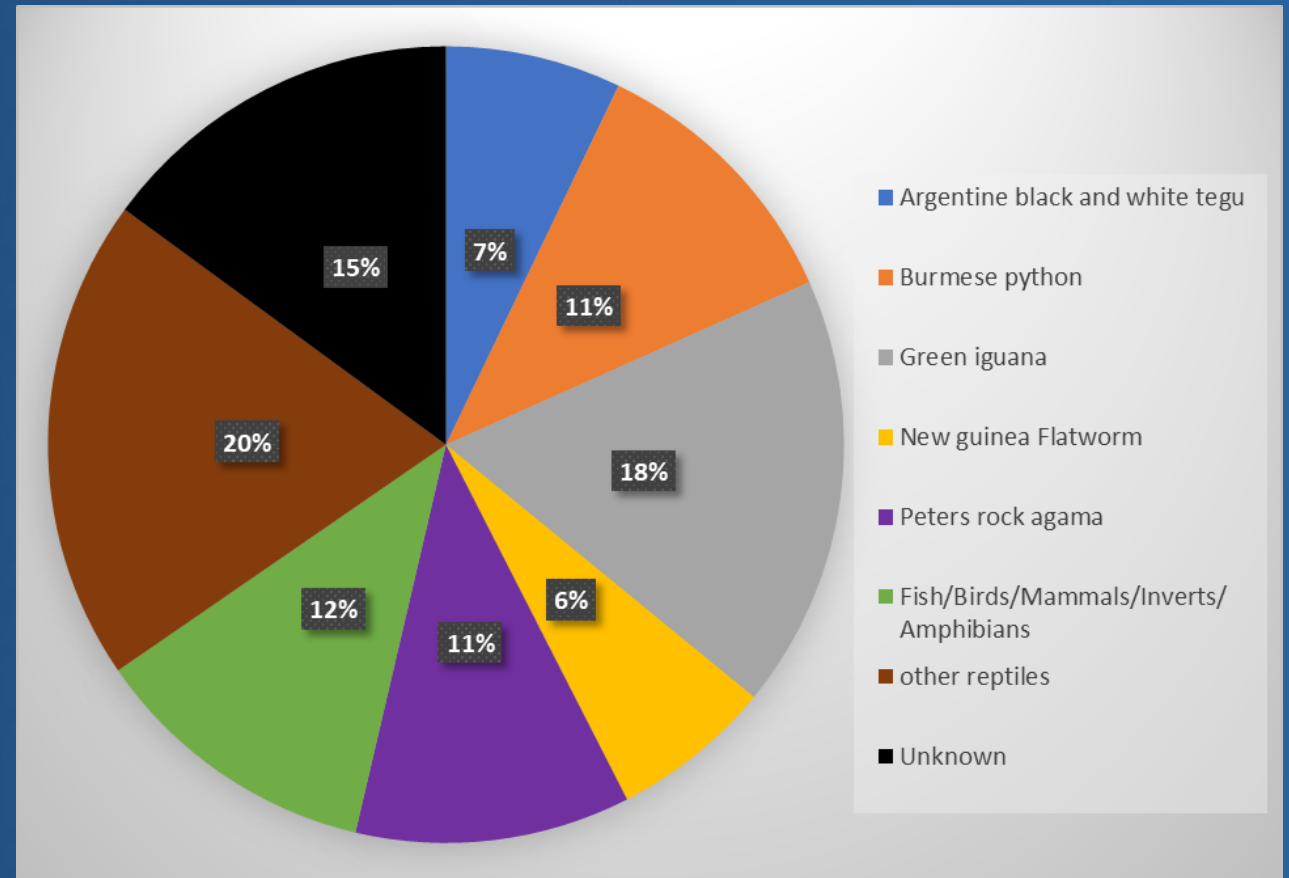
- Prevention and Awareness
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# IVEGOT1 and Public Reporting

- 2,434 hotline calls within past year
  - 60% about observations
  - 18% green iguana technical assistance
  - 11% Burmese pythons related calls
  - Resulted in 317 animal captures





# Caecilians In Miami-Dade County

*Typhlonectes natans*



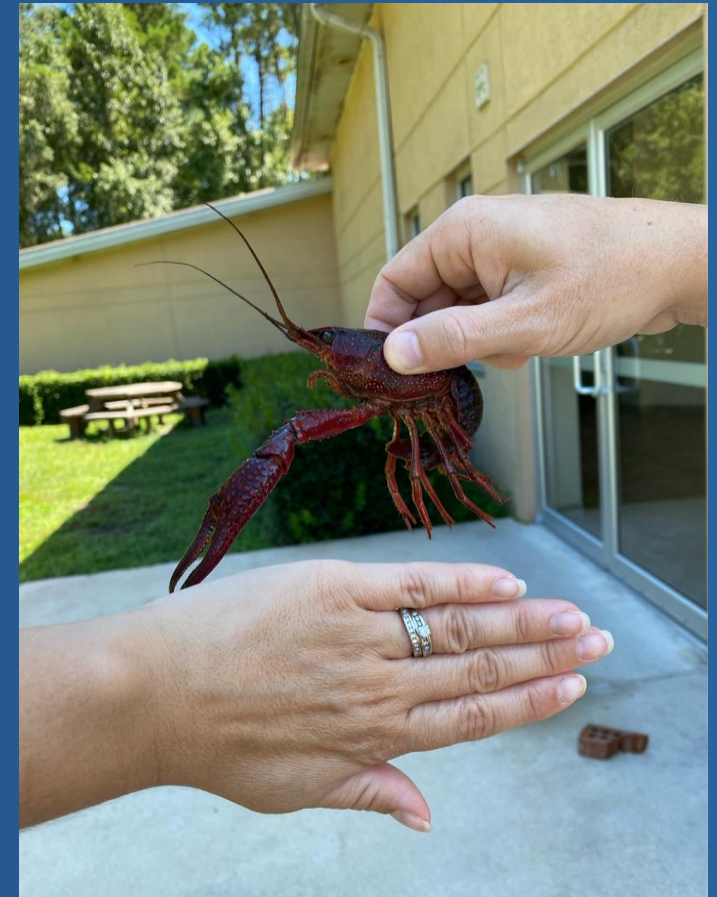
- Caecilian first captured by FWC staff in the Tamiami Canal (C-4) in October 2019
- University of Florida removed ~100 specimens in August 2021 and December 2023
- As of June 21, 2023
  - 62 traps deployed over 10 nights
  - 264 caecilians removed
    - Ranging from 283 mm to 755 mm
    - Gravid females



# Red Swamp Crayfish in Jacksonville

*Procambarus clarkii*

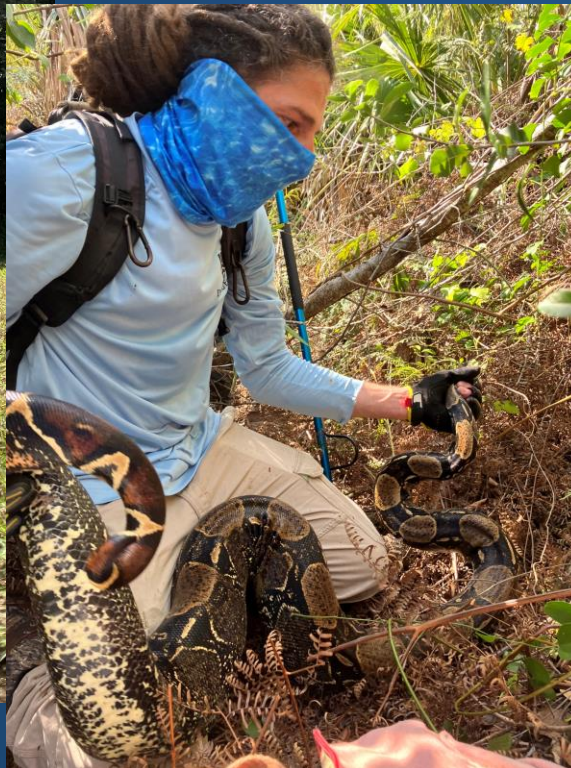
- Native to Escambia River
- Conditional species east of the Apalachicola River
- Reported near Jacksonville in August 2022
- Threaten State listed Black Creek Crayfish (*Procambarus pictus*)
- Conducted 2 copper sulfate treatments in pond and drains = unsuccessful
- Received exemption for and treated with pyrethrin = successful
- Successful Eradication? so far so good!





# Boa Constrictors outside Deering Estate and in Everglades National Park (ENP)

*Boa constrictor*



- Collaboration between Miami-Dade County, FWC, Zoo Miami, and UF
- Deering: 11 surveys conducted by FWC and park staff, effort is ongoing
  - 40.25 hours of survey time as of June 2023
  - Removed 2 Boas and 1 B. python
- ENP: Captured 1 Boa
  - Hispid cotton rat hair found in GI tract

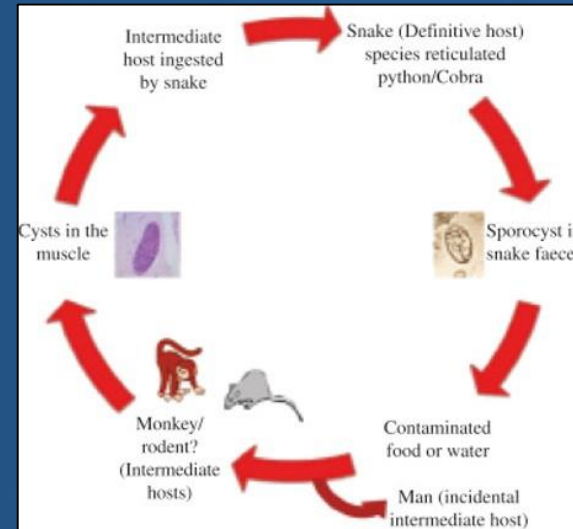


# Burmese Python Parasites and Pathogens

*Python molurus bivittatus*

## Parasite Spillover Study (Crocodile Lake NWR, USFWS)

- Sampling mammals on Key Largo for blood parasites and determining parasite hosts
- Documented die-off of black rats on the Refuge, all *Sarcocystis* parasite
- *Sarcosystis* has been used as a biological control for *Rattus spp.* in other parts of the world, and has been known to occur in and be transmitted by reticulated pythons
- Immediate Concern: Is the *Sarcosystis* parasite a threat to endangered Key Largo cotton mice and woodrats, and are Burmese pythons the host?





# Burmese Python Parasites and Pathogens

*Python molurus bivittatus*

- An Asian snake pentastome (*Raillietiella orientalis*) introduced by Burmese pythons has spilled over to infect over 13 species of native snakes
- Many infected native snakes exhibit high parasite prevalence and are infected by a large number of these lung parasites
- Pentastome has now also spread to nonnative lizards (tegus and tokay geckos)



- Miller et al.2018;  
Miller et al. 2020

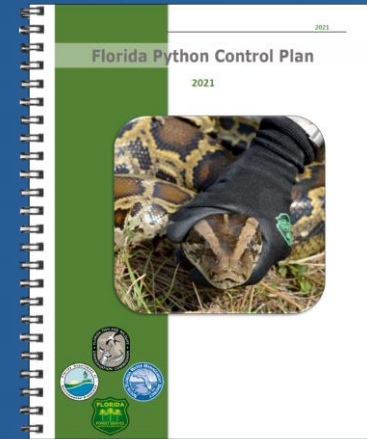
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# Florida Python Control Plan



- Resource guide to cooperatively manage pythons in Florida
- Multi-organizational effort
- Finalized in August 2021
- FPCP Workgroup currently implementing the plan
- Organized Python Panel at International Conference
- FPCP Website is coming soon





# Executive Order 23-16

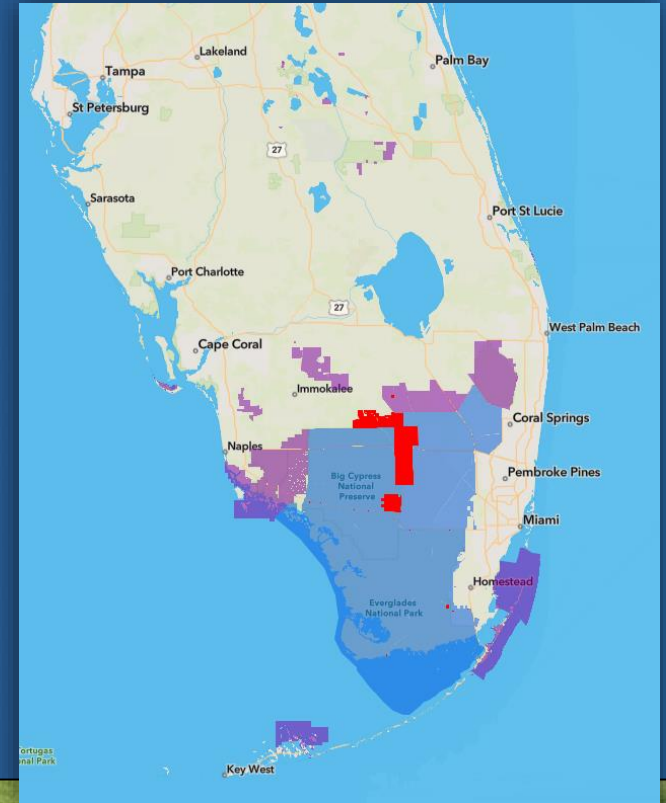
- Expands to 32 Commission-managed lands
- Nonnative reptiles may be humanely killed at any time, no hunting license or bag limit
- Replaces EO 20-17
- South and Southwest region

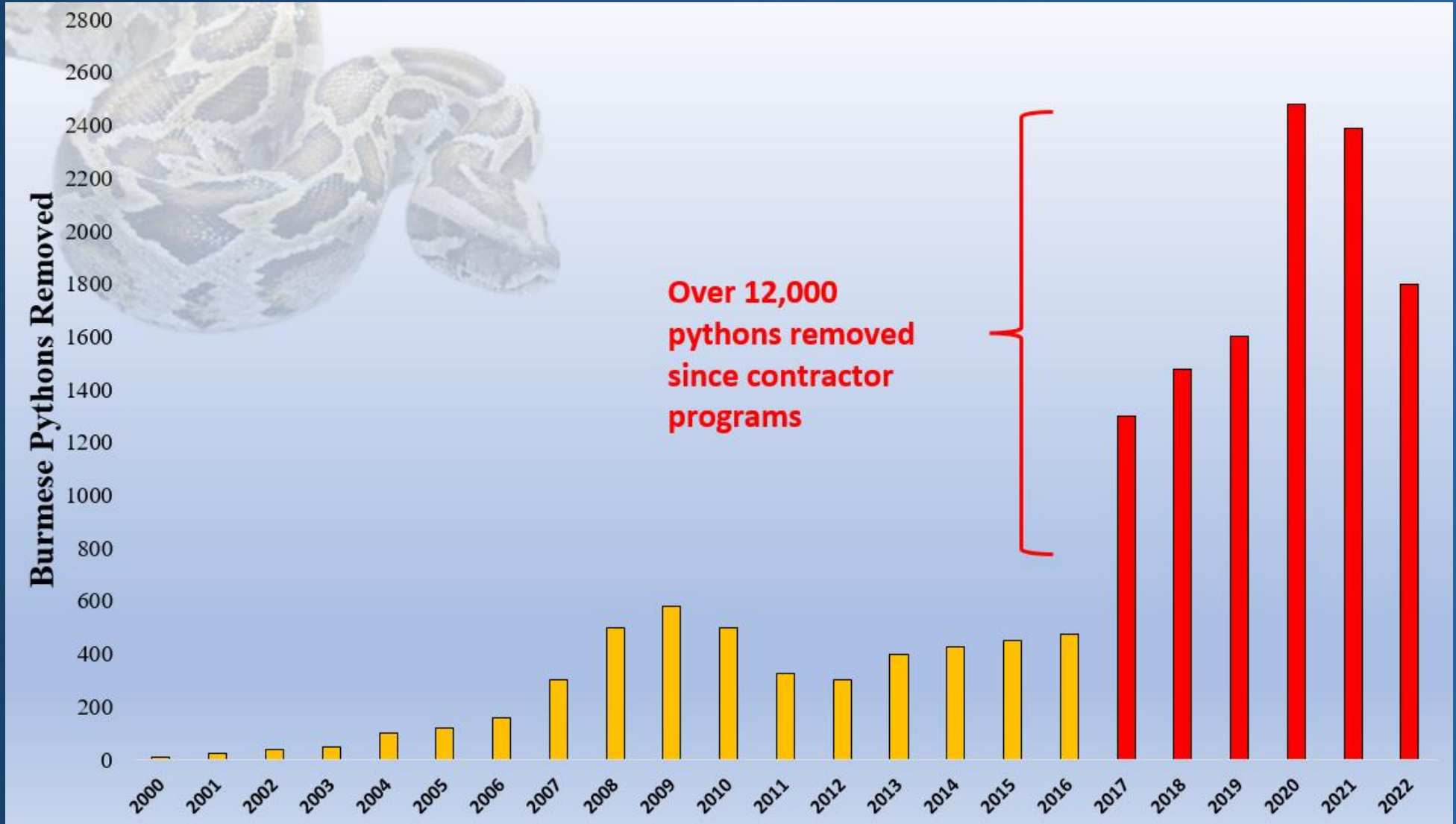




# Python Removal Contractors

- FWC and SFWMD sister programs
- Compensate local experts to survey for and remove pythons
- ~100 paid contractors
- Almost 12,000 pythons removed
- Project area spans 11 counties







# Big Cypress, SW Florida, and EVER-FST 2022 Scout Season



- Partners involved: USGS, NPS, USFWS, UF, FWC, SFWMD, Conservancy of SW FL
- Focus on both removal and vital rates research
- USGS NPS in BICY (23 Scouts of mixed sex)
  - 17 associates found (14M:3F)
    - 2 large breeding aggregations
- UF/SFWMD/FWC/USGS in EFST WMA (est. Nov 2022)
  - 12 Scouts of mixed sex ( 7M:5F)
    - 2 associates captured and 2 nests removed
    - Plan to implement novel radio-telemetry system and drones for tracking pythons soon!
- Conservancy of SW Florida
  - Ongoing removal



# Detector Dogs

## Crocodile Lake NWR

- Detector dog team responds to verified reports of large constrictors on state, federal, and private lands in North Key Largo
- Problem: Burmese pythons are almost always located below the limestone cap rock in underground fissures making retrieval of snakes nearly impossible
- Detector dogs have led to the capture of multiple pythons this past year





# Seminole Tribe of Florida Python Control



- Continue to work together with the Florida Python Control Group & Attend FPCP meeting at NAISMA
- The STOF Environmental Resource Management Department (ERMD) conducted five (5) Python Workshops in 2023.
  - STOF ERMD conducted two in-person and one virtual Python Patrol in coordination with FWC.
  - STOF ERMD hosted one Virtual Training and one in-person training for Community and Tribal School Students
  - STOF ERMD and FWC worked together to conduct a Tribe wide In-Person Python Patrol that included demonstrations for capture, safe handling and humane euthanasia of pythons, and use of python detector dogs.
  - Over 120 people attended in-person training, 60 Caught Pythons & learned safe capture techniques.
- STOF Hosts 1st Tribal Python Elimination Event
  - 3 day 24/7 event, included education & outreach and python necropsy for Community and Guests.



ENVIRONMENTAL RESOURCE MANAGEMENT DEPARTMENT

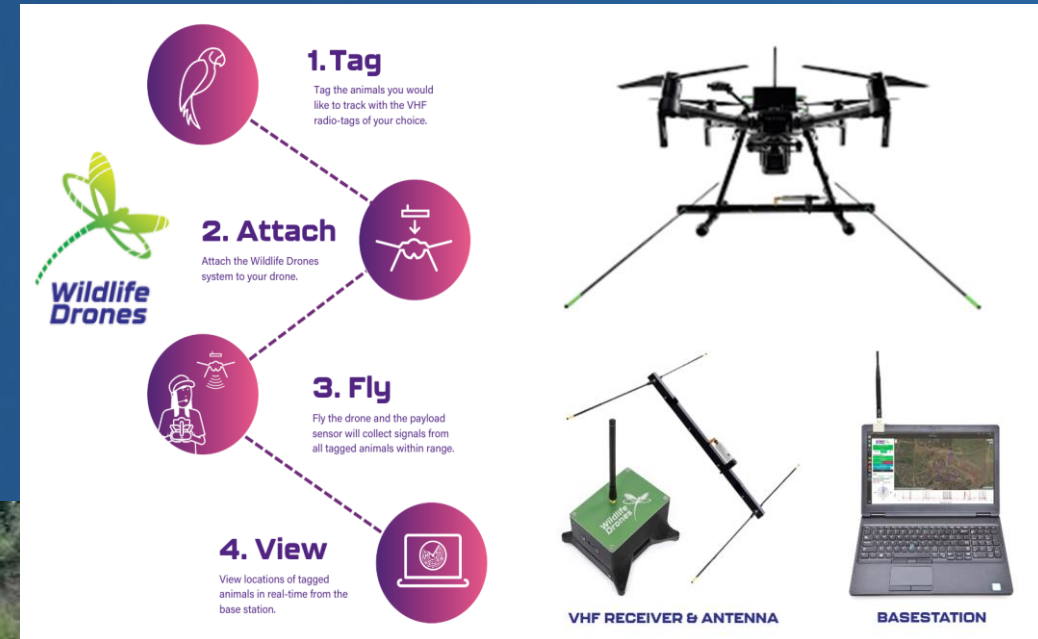
**WILDLIFE**





# Innovative Upcoming Tools for Control

- UF is utilizing drones and novel radio-telemetry system to reduce resources needed to track pythons in FST WMA
- UF is collaborating with Wild Vision Systems to field test an AI smart trap for live trapping tegus in St. Lucie County

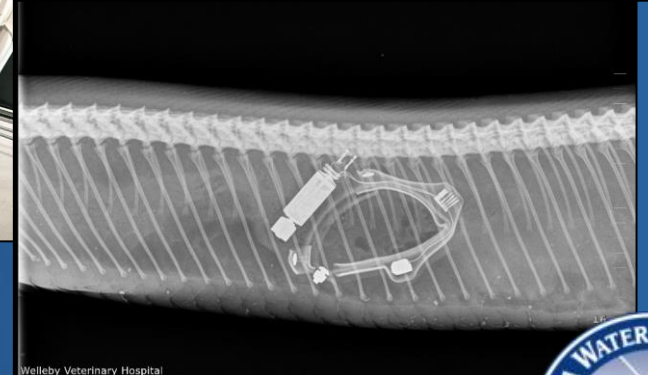




# Innovative Upcoming Tools for Control

Meso-mammal Project (USFWS - Crocodile Lake NWR in partnership with So. Illinois University, NC Museum of Natural Sciences, and SFWMD)

- Understand movement patterns of mammals in North Key Largo
- Captured pythons during the study leading to study expansion
- Can this be used as a control tool?

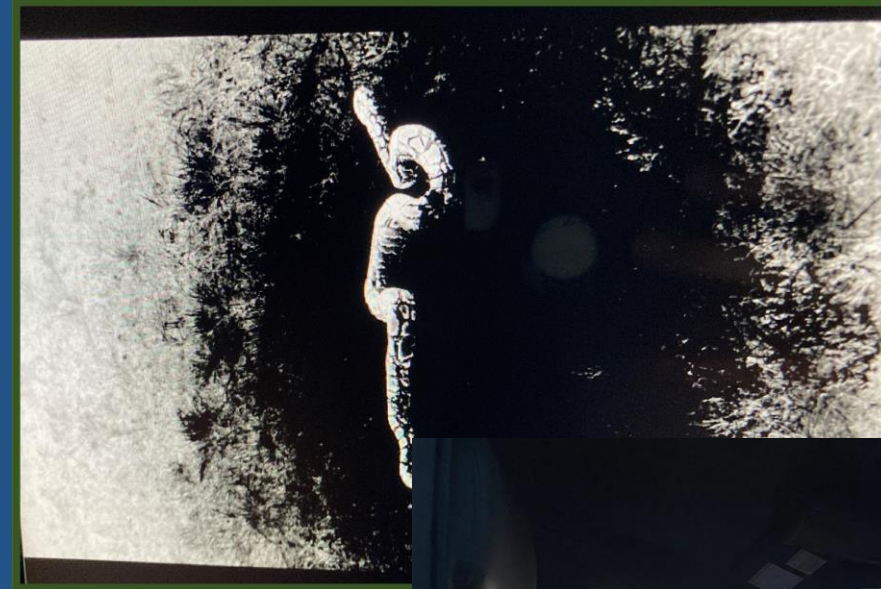




# Innovative Upcoming Tools for Control

## Python Near-infrared Detection Technology

- Collaboration: FWC and University of Central Florida
- FWC converting near-infrared technology onto drones
- FWC continues to test vehicle mounted near-infrared technology





# Innovative Upcoming Tools for Control

Python Lures Project (UF – Miami-Dade and Palm Beach Counties)





# Northern African Python

*Python sebae*

- Large nonnative constrictor
- Localized population established in Miami-Dade County since 2001
- 46 NAPs removed since discovery
  - 8 removed since December 2021
  - Ongoing surveys and canvassing
- Necropsies found raccoons, rats, birds, and unidentified canid in gut

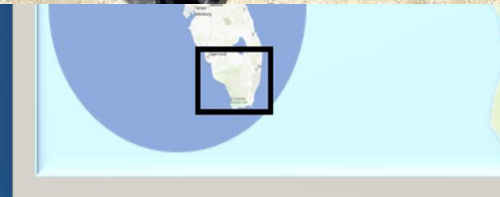
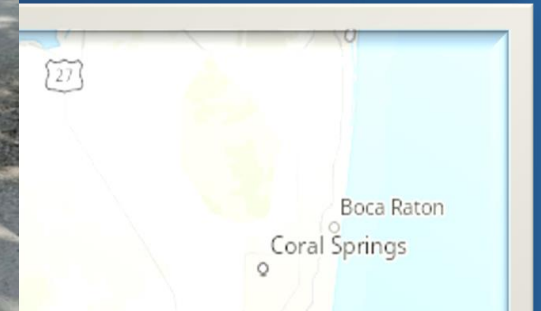




# Rainbow Boa EDRR

*Epicrates cenchria/maurus*

- Native to Brazil
- Not currently established
- 8 removed since 2009
- Negative impacts through consumption of native species
- First documented clutch from wild-caught rainbow boa
  - Female collected March 9, 2023
  - Gave birth to 12 neonates June 2 - 4th

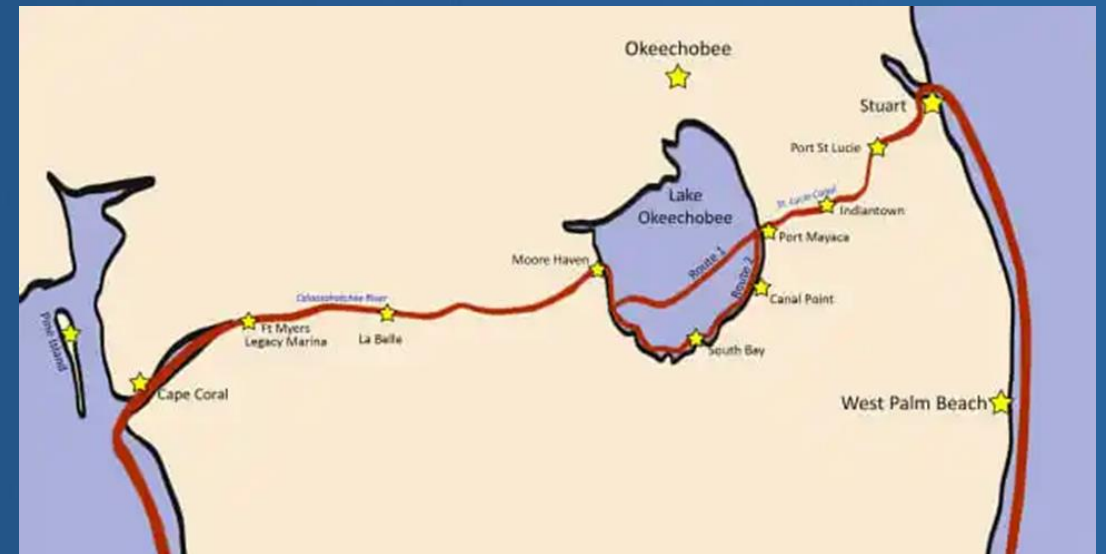




# Herbert Hoover Dike (HHD) Invasive Control

USACE utilizes Economy Act agreement with USDA Wildlife Services to remove burrowing lizards

- Red-headed Agama- 934
- N. Curlytail-157
- B. Basilisk-122
- G. Iguana-69





# Green Iguana Removal in Keys

*Iguana iguana*

- Goal: to minimizing the impact of Green and Spiny-tail Iguanas on critical public conservation lands
- Contractors charged remove iguanas from five Wildlife Environmental Areas (WEAs) and seven State Parks in the Florida Keys
- As of June 2023, 733 iguanas removed
- Success varied by site and was greatly dependent on allotted removal method





# Veiled Chameleon Removal in Lake Worth

*Chamaeleo calyptratus*

- Interagency effort UF, SFWMD, USACE and USGS
- Objectives to 1) eradicate population and 2) statistically assess removal efforts
- 113 surveys during Jan 2021 – Apr 2023
  - Many field survey volunteers across agencies and organizations (thank you!)
- 1117 chameleons removed
- How did we do? Find out in presentation later today!





# Nile Monitor

*Varanus niloticus*

- Large lizard native to sub-Saharan Africa
- Two breeding populations in Florida
  - Cape Coral
  - West Palm Beach
- Apex predator
- 2 removed last year in WPB





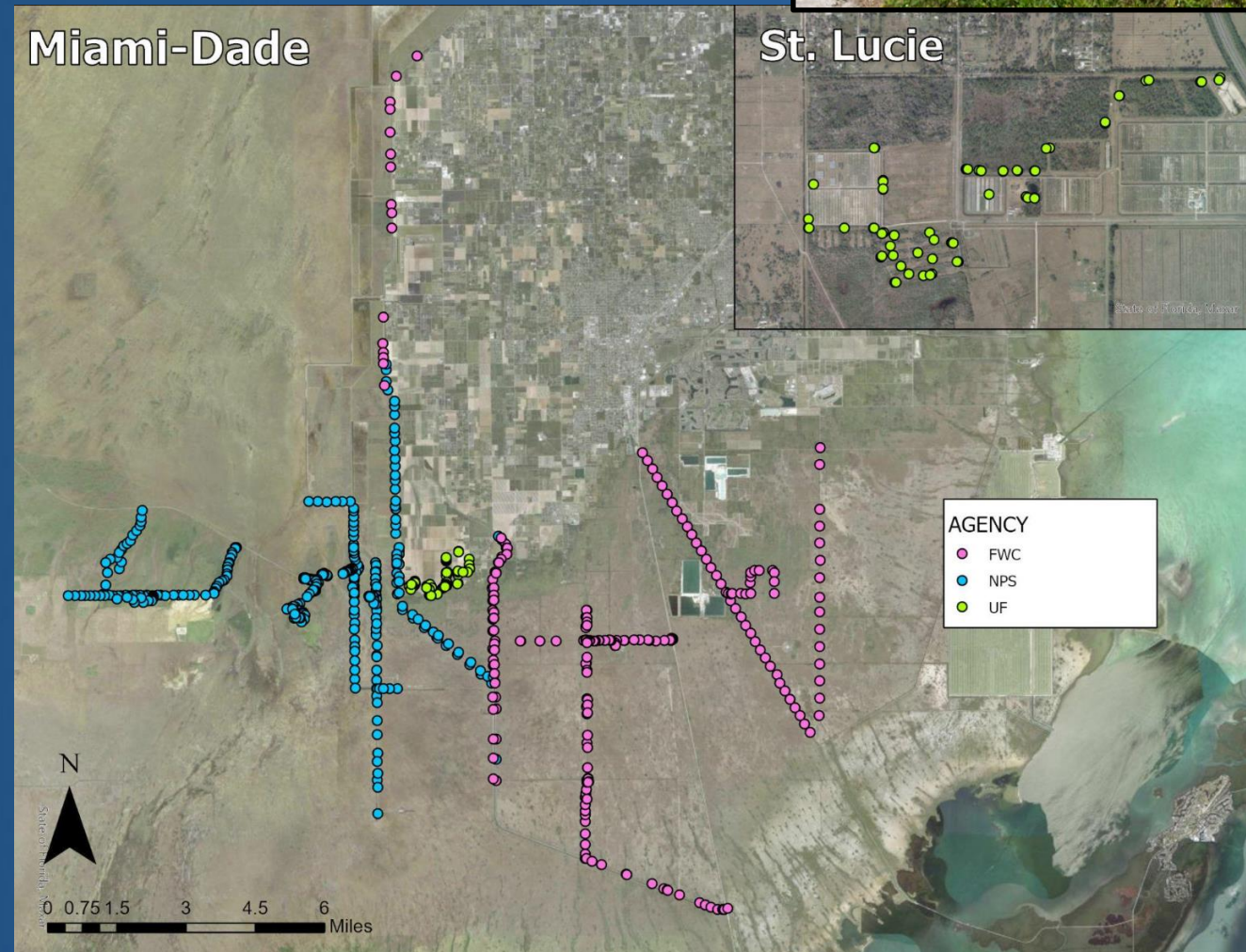
# Black and White Tegu Trapping

*Salvator merianae*



## Agency Capture Summaries - 2022

- Miami-Dade
  - FWC: 547; CPUE=0.026
  - UF: 119; CPUE=0.011
  - NPS: 592; CPUE=0.032
  - NPS: 23; CPUE=0.001
- St. Lucie
  - FWC: 367; CPUE=0.059



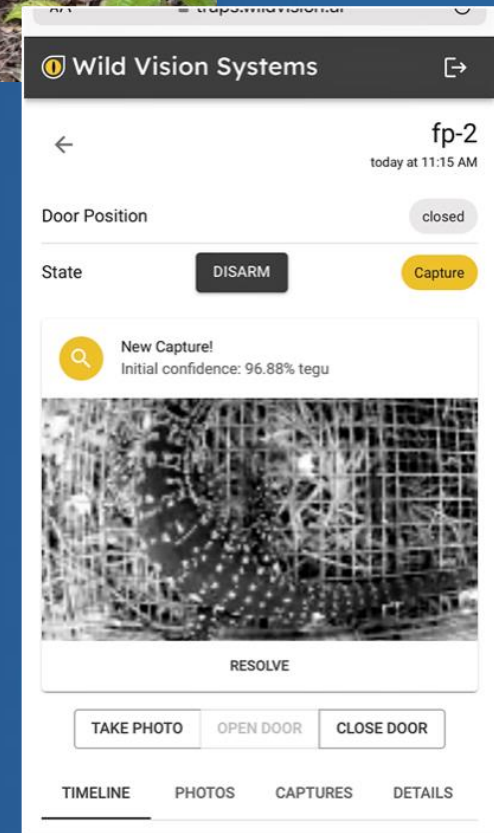


# Black and White Tegu

*Salvator merianae*

## AI Smart Traps Pilot Study - UF and Wild Vision Systems

- Wild Vision Systems (WVS) have designed a smart trap to selectively capture target species and eliminate bycatch
- Traps are solar powered and can be checked and operated remotely via web
- UF and WVS are field testing smart traps for capture of tegus in St. Lucie County and comparing efficacy to traditional traps (see presentation later today to hear preliminary results!)
- See trap demo during breakout session tomorrow!

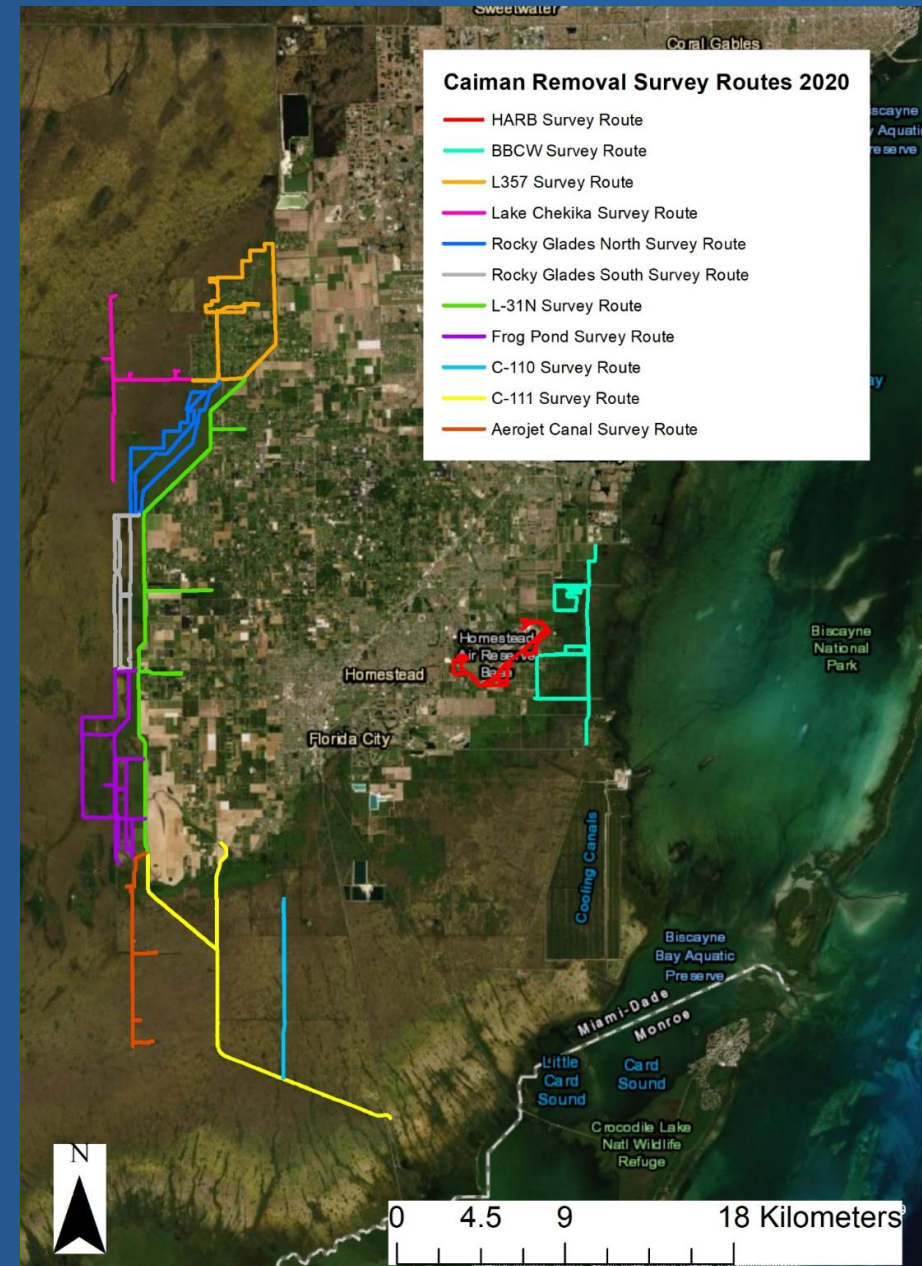




# Spectacled Caiman

*Caiman crocodilus*

- Collaboration among UF and USACE
- Total caiman removed: 290
- Total surveys conducted: 407
- Continue to see decrease in number of caiman removed despite an increase in survey effort indicating likely maximum containment of population





# Feral Hogs/Wild Boar

*Sus scrofa*

- USACE continues to implement hog removal via volunteer trapper program
- Trappers allowed to take hogs along Herbert Hoover Dike
- USDA also provided aerial removal services
- Approximately 75 hogs removed in 2023 so far





# FWC Lionfish Removal

*Pterois volitans*

- So far, 6 Lionfish (LF) tournaments in 2023
- Lionfish Removal and Awareness Day
  - May 2023
  - Over 2,000 people attended
  - Removed over 19,000 LF
- 2023 Lionfish Challenge, June 1-Oct 1, 2023
  - 493 people registered as of June 28, 2023
  - 5,184 LF removed as of June 28, 2023

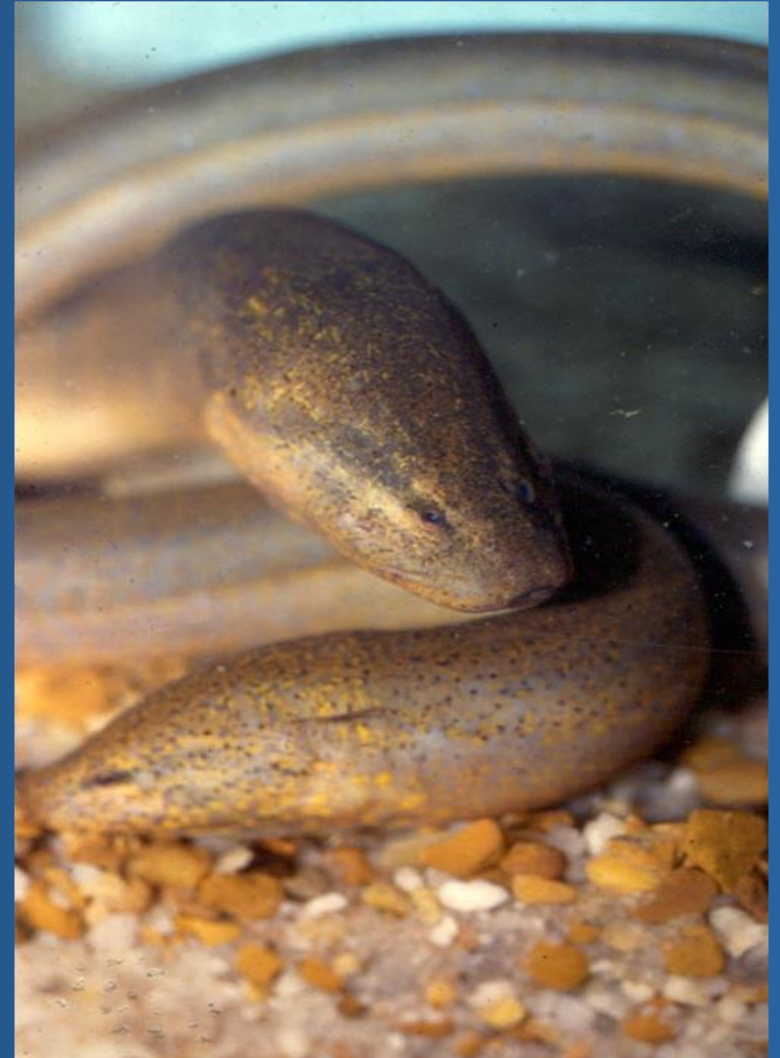




# Asian Swamp Eel

*Monopterus albus/javanensis* complex

- Air breathing, sex-reversing species native to Asia
- Discovered in 1997 in MDC, probably captive releases
- Expanding range in SE Florida into ENP; widespread in SW FL
- Potential impact on small fish and crayfish in ENP, unclear in other areas
- Difficult to detect, other negative factors may mask impacts in freshwater





# Summary

- Interorganizational collaboration and public engagement are key to success
- Continue to see increase in unique species and populations
- Don't Let It Loose!
- If you see it, report it!





# Additional Updates 2023



# Black and White Tegu

*Salvator merianae*

## Camera Surveillance

- UF in collaboration with USACE continue camera surveillance efforts for detecting tegus in Miami-Dade County
- Locations include Biscayne Bay Coastal Wetlands, BNP, and the Redlands Agricultural Area
- 36 cameras placed, 288 unique tegu observations

