

Snake Diversity of Florida's Big Bend



Tonight's Lecture

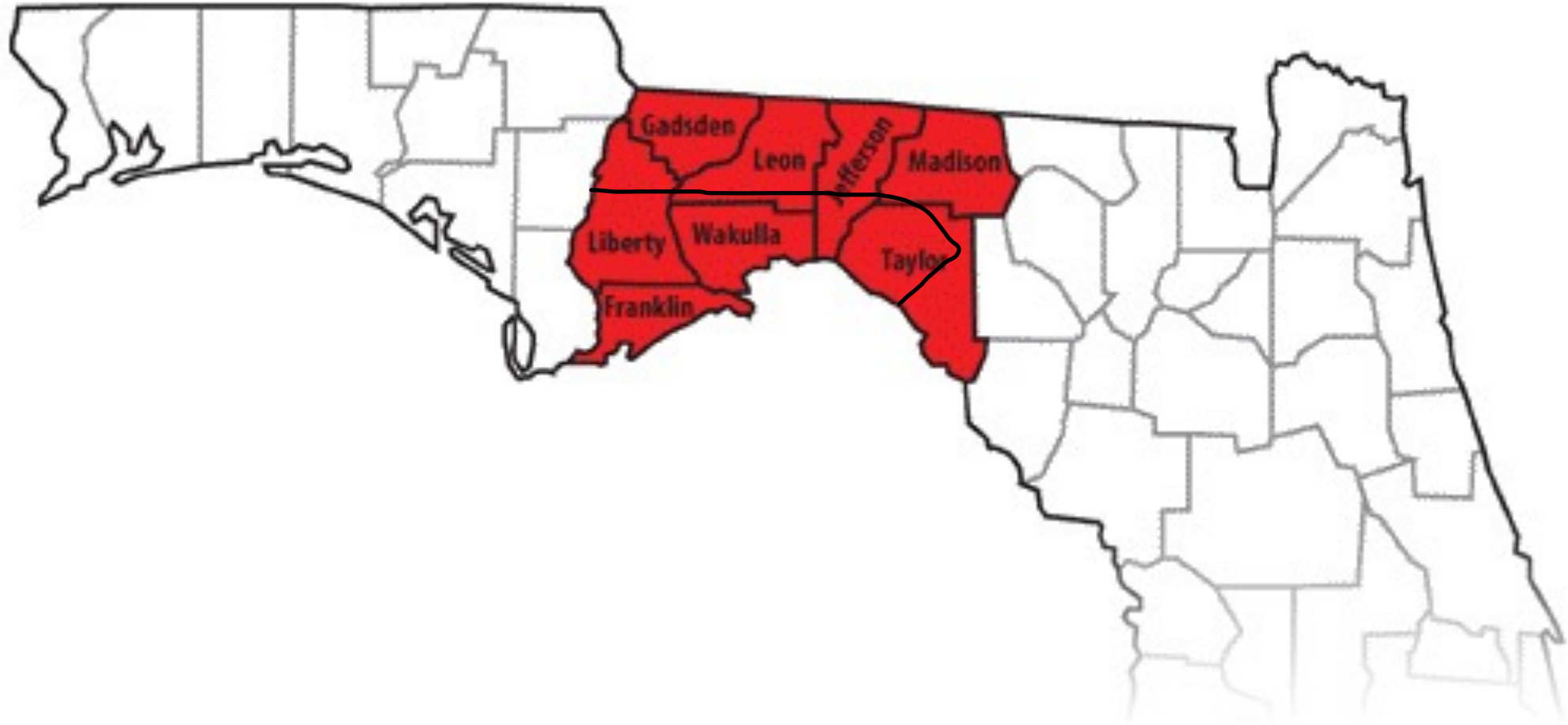
- Snake diversity
- Natural history
- Threats to snakes
- Conservation efforts
- Reptile/amphibian monitoring project

Minor disclaimer: info on natural history and morphology are related to the species and families of the big bend area.

Example: Elapids (egg laying)

Example: Rear-fanged snakes being mildly venomous

Big Bend Counties



Current Taxonomy

- Reptilia
- Squamata (Lizards and Snakes)
- Serpentes

Florida's big bend snake families

- Colubridae
- Dipsadidae
- Elapidae
- Natricidae
- Viperidae

Species accounts



Colubridae

- Many species popular in pet trade (private breeders)
- Oviparous (Egg layers)
- Most are constrictors
- Mostly diurnal
- Most have smooth scales opposed to keeled



Black Racer *Coluber constrictor*

- Common species
- Opportunistic feeder
- Agile, fast moving
- Terrestrial/arboreal
- Ontogenetic color change
- Common in disturbed habitats





Coachwhip Snake *Masticophis flagellum*

- Opportunistic feeder
- Grows over 180+ cm (6 feet)
- Fast moving



Florida Pine Snake *Pituophis melanoleucus*

- Species of Special Concern
- Pocket gophers
- Large neonates
- Defensive posturing
- Gopher tortoise burrows



Photo credit: Dustin Smith

Eastern Indigo Snake *Drymarchon couperi*

- Protected under ESA in 1978
- Zoo captive breeding program
- Release program Nature Cons.
- Longest N. American snake
- Opportunist feeder
- Snakes/small gopher tortoises
- Large home range
- Largely associated with *G. polyphemus* burrows
- Winter activity



Rough Green Snake *Opheodrys aestivus*

- Insectivorous
- Arboreal
- Cryptic among leaves



Scarlet Snake *Cemophora coccinea*

- Coral snake mimic
- Feeds on reptile eggs
- Mostly nocturnal
- White venter



Scarlet Kingsnake *Lampropeltis elapsoides*

- Small, secretive species
- Coral Snake mimic
- Ophiophagus species
- Pine Forest
- Red bands contact black



Scarlet Snake

- Oak Snake
- Arboreal and terrestrial
- Rodents, Birds, & Lizards
- Bird eggs
- Chicken coups



Gray Ratsnake *Pantherophis spiloides*

Gray Ratsnake *Pantherophis alleghaniensis*



- Popular in the pet trade
- Variable coloration
- Rodents, birds, lizards
- Defensive posture

Corn Snake *Pantherophis guttatus*



Eastern Kingsnake *Lampropeltis getula*

- Declining in N. Florida
- Feeds on snakes
- Turtle egg predator
- Popular in pet-trade
- Variety of habitats



Photo Credit – ©Dustin Smith

Photo Credit - ©Greg Theos

- Apalachicola NF variant
- aka *L. meansi*



Photo credit ©Mark Kenderdine

Mole Kingsnake *Lampropeltis rhombomaculata*

- Uncommon in our area
- Secretive
- Burrowers
- Lizards, snakes, and small mammals



Photo Credit: ©Jake Scott

Southeastern Crowned Snake *Tantilla coronata*

- Rare in big bend area
- Small species 26 cm (10 inches)
- Sandhill and pine habitats
- Centipedes, beetle larva, snails, and earthworms



Species accounts

Dipsadidae

- Rear-fanged snakes
- Oviparous (Egg layers)
- Venom is not dangerous to humans
- Fangs located back of the mouth
- Most have smooth scales

Southern Ring-necked Snake *Diadophis punctatus*

- Small species
- Feeds on worms
- Aposematic on venter
- Adults less than 12 inches (30cm)





Photo credit: ©Dustin Smith

Red-bellied Mudsnake *Farancia abacura*

- Young have a sharp tail tip
- Secretive
- Aquatic
- Found while crossing roads
- Amphiumid and Sirens



Rainbow Snake *Farancia erytrogramma*

➤ Similar to Mudsnakes



Photo Credit: ©Jay York

Eastern Hog-nosed Snake *Heterodon platirhinos*

- Fairly uncommon
- Uprturned snout
- Burrowing species
- Feeds on toads
- Tolerant of toxins toads produce
- Several defense mechanisms



- Feigning death
- Producing musk
- Defecating
- Regurgitating meals



- Hooding
- Appearing larger



Appearing cryptic among leaves



Photo credit: ©Dustin Smith

Southern Hog-nosed Snake *Heterodon simus*

- Possibly uncommon in our area
- Sand-hill habitat
- More common in Central Fl.
- Secretive



Pine Woods Littersnake *Rhadinaea flavilata*

- West and east of Big Bend area
- Small species 30cm (12 inches)
- Amphibians and worms
- Generally nocturnal
- Yellow-lipped Snake



Species accounts

Natricidae

- Ovoviviparous (Live-bearing)
- Most have keeled scales
- Most are aquatic or semi-aquatic



Banded Watersnake *Nerodia fasciata*

- All bodies of fresh water
- Feeds on amphibians & fish
- Very fecund
- Often mistaken for cottonmouth
- Females larger than males



Brown Watersnake *Nerodia taxispilota*

- Similar natural history
- All bodies of water (rocky habitats)



Florida Green Watersnake *Nerodia floridana*

- Similar natural history
- Common in Tate's Hell SF



Plain-bellied Watersnake *Nerodia erythrogaster*

- Similar natural history
- Uncommon in our area



Gulf Saltmarsh Snake *Nerodia clarkii*

- Coastal species
- Mangroves and salt marshes
- Fish and amphibians



Blue-striped Ribbonsnake *Thamnophis sauritus*

- Both color variations in this area
- Semi-aquatic
- Amphibian, spider, small fish
- Fecund (up to 25 young)



Eastern Gartersnake *Thamnophis sirtalis*

- Blue-striped variant
- Amphibian, small fish
- Fecund (up to 50 young)
- Urban areas and most other habitats
- More terrestrial than ribbon snakes



Dekay's Brown Snake *Storeria dekayi*



Smooth Earthsnake *Virginia valeriae*



- Four similar Fossorial species
- All small species 25cm (10 inches)
- Common in urban areas
- Earthworm, soft-bodied insect, slugs

Red-bellied Snake *Storeria occipitomaculata*



Rough Earthsnake *Haldea striatula*



Black Swampsnake *Liodytes pygaea*

- 38cm (15 inches)
- Nocturnal
- Aquatic floating vegetation
- Amphibians, fish, arthropods



Phot Credit: ©Keegan Smith

- Crayfish predator
- 60cm (24 inches)
- Aquatic-dense aquatic vegetation



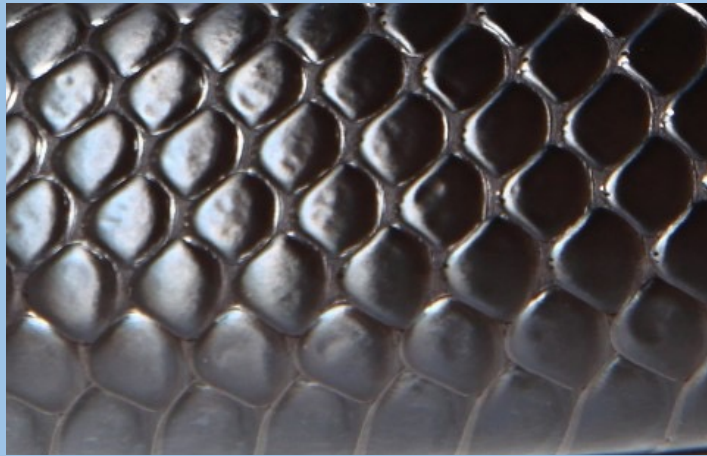
Striped Swampsnake *Liodytes alleni*

Eastern Glossy Swampsnake *Liodytes rigida*



Species accounts

Elapidae



- Smooth scales
- One species in Big Bend region
- Oviparous (Egg layers)
- Fixed-fangs in front
- Dangerously venomous

Eastern Coral Snake *Micrurus fulvius*

- Feeds on snakes
- Females larger than males
- Red bands in contact with yellow





Scarlet Kingsnake



Species accounts

Viperidae



- Pit-vipers
- Large retractable fangs
- Includes cottonmouths, copperheads and rattlesnakes
- Dangerously venomous
- Ovoviviparous (Live-bearing)
- Robust body
- Mostly terrestrial
- Ambush predators

Florida Cottonmouth *Agkistrodon conanti*

- Possibly worst reputation
- Many rural myths
- Deaths are extremely rare
- They do not chase people
- Opportunistic feeder
- Feeds on snakes



Neonate



- Defensive mouth gaping
- Yellowish tail in juveniles
- Caudal luring



Adult

Eastern Copperhead *Agkistrodon contortrix*

- Feeds on cicadas
- Similar to the Cottonmouth
- Less aquatic
- Cryptic among decaying leaves



Eastern Diamondback *Crotalus adamanteus*

- Heaviest Native N. America snake
- Dangerously venomous
- Declining throughout its range
- Generally dry habitats
- Palmettos and gopher tortoise
- 183 cm (72 inches)
- Ambush predator
- Up to 30 young





Dusky Pigmy Rattlesnake *Sistrurus miliarius*

- Lung worms causing decline
- Small species 54 cm (21 inches)
- Tiny rattle (insect sound)
- Often very common (ANF)
- Not considered life threatening
- Lure prey yellowish tail





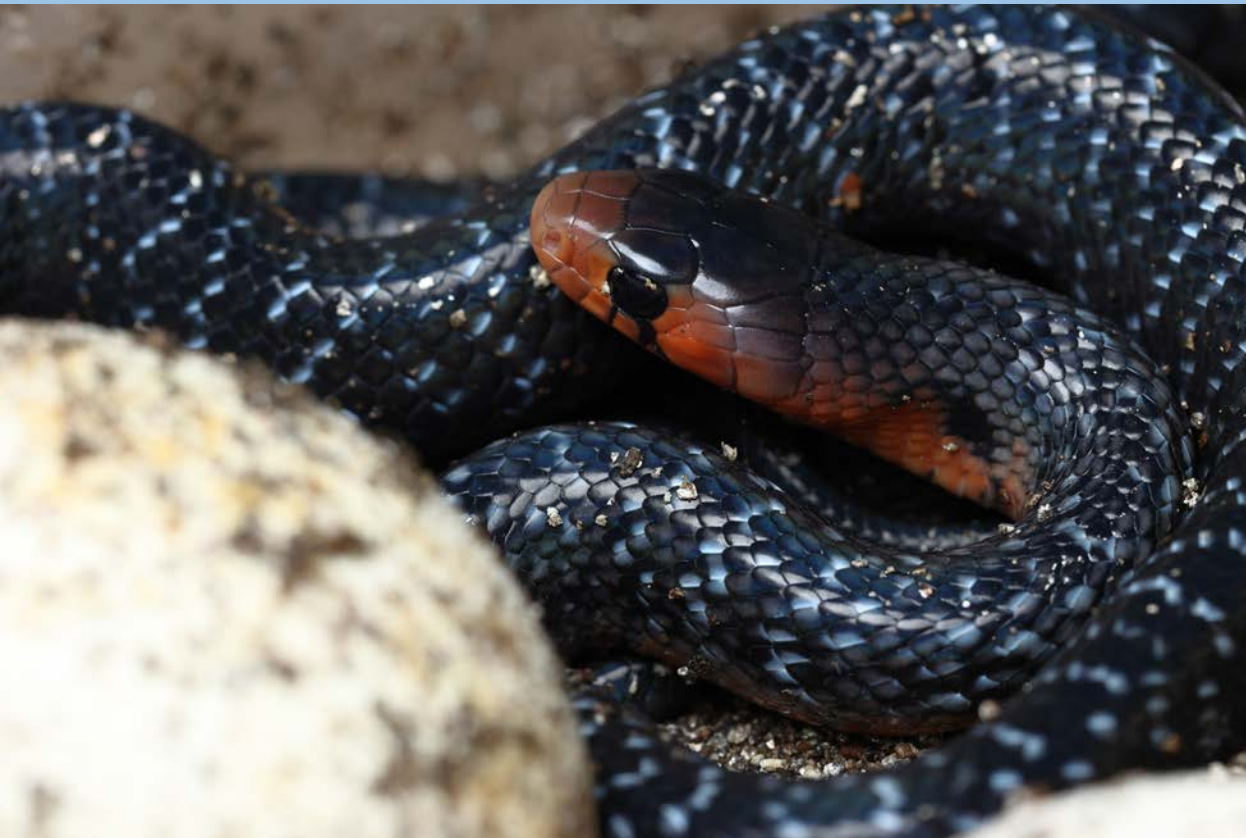
Threats to Snakes

- Habitat Destruction (Cities, Farmland, Housing Dev.)
- Roads
- Fire Suppression
- Invasive species (fire ants, cats)
- Collecting
- Indiscriminate or Accidental killing
- Disease



Successful Conservation efforts

- Orianna Center For Indigo Conservation
- Operated by Central Florida Zoo
- Specimens being produced and released
- NC Zoo hatched the two pictured here



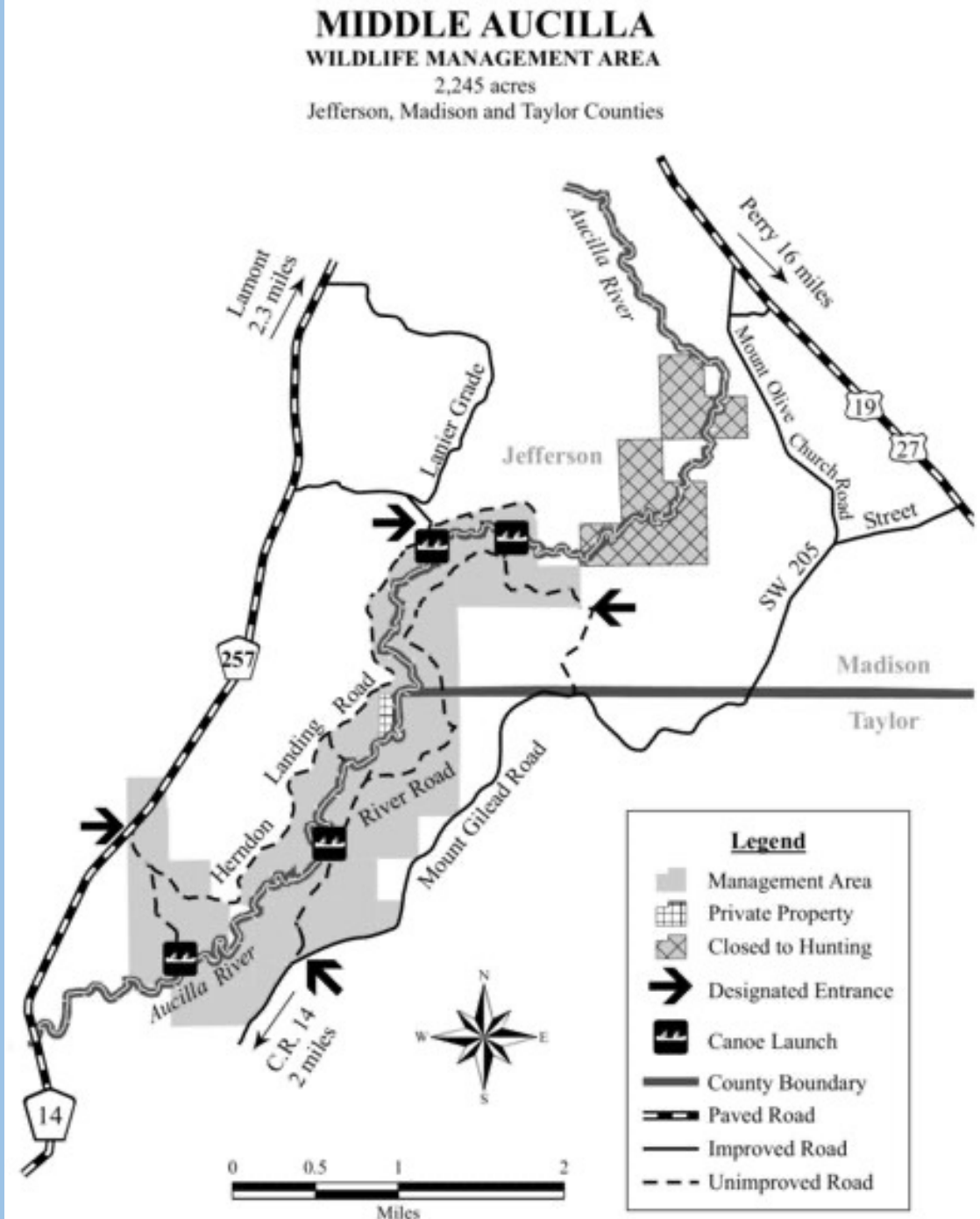
Herp Monitoring Project

- Started 1986 continuing through 2023
- Search and locate methods (Road transect survey)
- April 15th through June 1st
- 0900 to 1400 then again 1700-2200
- All reptiles and amphibians were recorded
- 17.7 km (11 miles)
- One way completion (30 mins at 40KMS-25MPH)

Cataloged: 36 reptile species, 11 amphibian species

- 19 snake species
- 6 lizard species
- 10 turtle species
- A. alligator
- 11 frog species

- One species severely declined
- One species considerably increased



Year	# of hours	# of <i>L. getula</i>		Year	# of hours	# of <i>L. getula</i>
1986	46	10		1993	57	0
1987	27	9		1994	72	0
1988	59	11		1995	15	0
1989	36	6		2000	12	0
1990	24	0		2003	26	0
1991	61	0		2013	41	0
1992	38	0		2021	65	0



- Two were DOR
- One was collected
- One recaptured

Year	# of hours	# of <i>L. getula</i>	# <i>S. miliarius</i>		Year	# of hours	# of <i>L. getula</i>	# <i>S. miliarius</i>
1986	46	10	2		1993	57	0	5
1987	27	9	1		1994	72	0	9
1988	59	11	3		1995	15	0	3
1989	60	6	2		2000	12	0	2
1990	24	0	1		2003	26	0	6
1991	61	0	2		2013	41	0	7
1992	38	0	2		2021	65	0	4



Thoughts and Discussion

In 2023, 6 *Sistrurus miliarius* were observed and 0 *Lampropeltis getula*

What has changed since 1986?

- Est. 30% habitat alteration from swamp, mixed hardwood/long-leaf pine to tree farms
- Habitat along the Aucilla river is now a WMA

What hasn't changed in this area.

- Roads are still well-maintained dirt roads
- Roughly the same amount homes/farms (little pop. growth)
- Frequency of vehicles is the approximately the same
- Water table appears to be roughly the same
- Other species of reptiles/amphibians (food source) (Increase in *S. miliarius*)
- Turtles laying eggs on the road is still prevalent

Habitat adjacent to road transect and along Aucilla River











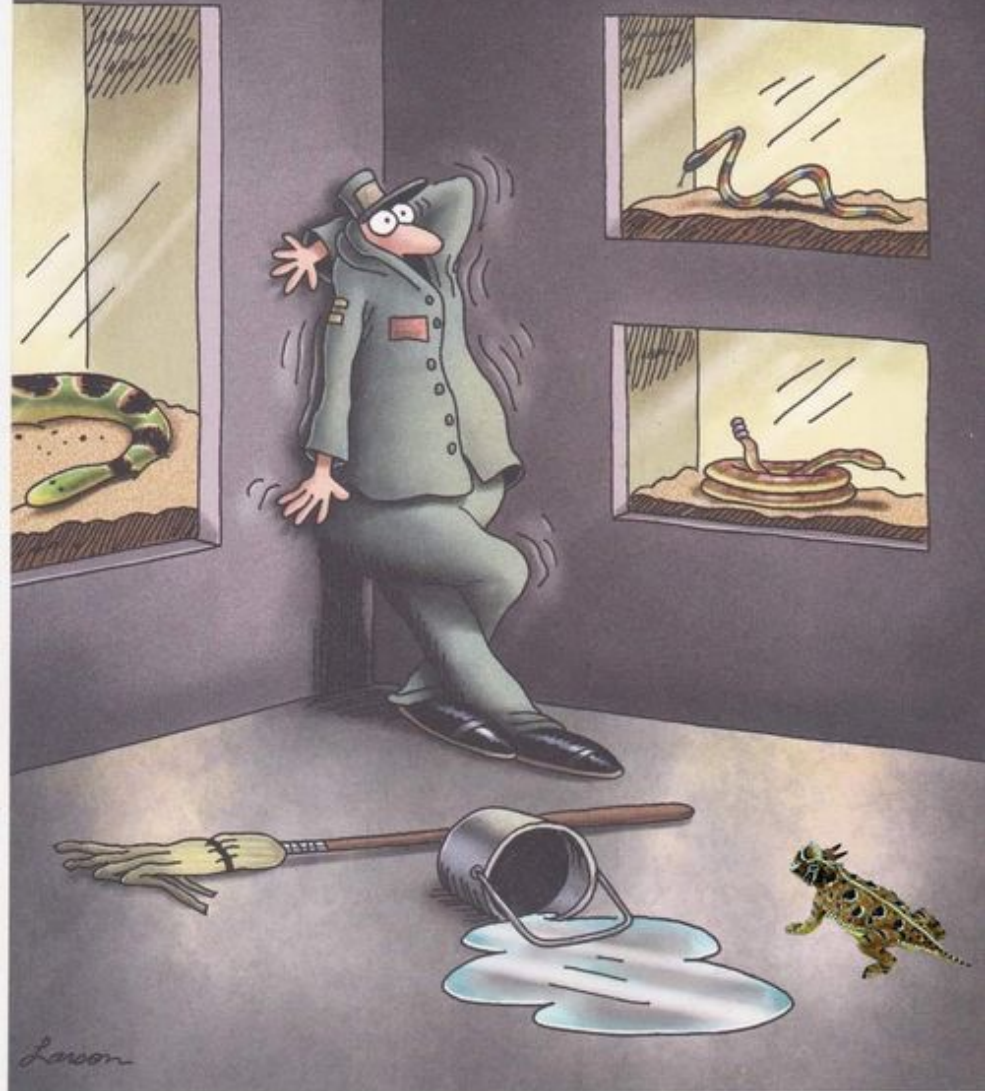




So why did the kingsnakes decline?

- Simply unsure
- 1980s and 1990s- Increase herping activity/popularity statewide
- Habitat changed by ~35% over 37 years
- Clear cutting occurred an estimated 10% during the first 10 years I sampled
- Only adults were observed (120 cm +)

All Done!



After 30 uneventful years at the zoo's snakehouse, curator Richard Reams has a cumulative attack of the willies.

Queen Snake *Regina septemvittata*

- Fairly rare in Florida
- Primary food are crayfish
- Streams and river
- 60cm (24 inches)



Photo credit: ©Dustin Smith

- S. Florida variant
- aka *L. floridana*



South Florida variant

