

# Herpetofaunal Monitoring at the GTM Research Reserve

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## INTRODUCTION

Reptiles and amphibians make up an important part of food webs. As both predators and prey with complex life histories, they are sensitive to environmental changes. These factors allow herpetofauna to serve as an environmental indicator, especially in wetland areas. The GTM Research Reserve's resource management team has begun a long-term reptile and amphibian monitoring project in the reserve's upland habitats. This project has two main goals: to conduct an initial inventory of all the reptile and amphibian species living within our managed lands while identifying potential indicator species, and to monitor these populations over several years in order to look for change over time. The results of the monitoring program will help inform management practices.

## METHODS

1. Drift fence arrays: Fencing lined with aluminum screen funnel traps. Four locations in four different habitats including beach dunes, mesic flatwoods, mesic hammock, and interdunal swale.
2. Dip-netting: Seven wetland locations. Water quality data taken using a YSI device.
3. PVC pipe refugia: 2.5 cm, 3.8 cm, and 5 cm pipes mounted in the ground and on a tree at ten locations.
4. Visual surveys: To, from, and around each survey site.
5. All observations are marked with GPS location using Survey123.

# Monitoring Herpetofaunal Populations Will Inform Uplands Management Practices



## REPTILES

COMMON NAME	SCIENTIFIC NAME
FL Cottonmouth	<i>Agkistrodon piscivorus conanti</i>
American Alligator	<i>Alligator mississippiensis</i>
Green Anole	<i>Anolis carolinensis</i>
Brown Anole*	<i>Anolis sagrei*</i>
E. Six-lined Racerunner	<i>Aspidoscelis sexlineata</i>
N. Scarletsnake	<i>Cemophora coccinea</i>
S. Black Racer	<i>Coluber constrictor</i>
Gopher Tortoise	<i>Gopherus polyphemus</i>
Striped Mud Turtle	<i>Kinosternon baurii</i>
FL Mud Turtle	<i>Kinosternon steindachneri</i>
E. Coachwhip	<i>Masticophis flagellum</i>
FL Watersnake	<i>Nerodia fasciata pictiventris</i>
Rough Green Snake	<i>Opheodrys aestivus</i>
E. Glass Lizard	<i>Ophisaurus ventralis</i>
E. Ratsnake (Yellow)	<i>Pantherophis alleghaniensis</i>
Red Cornsnake	<i>Pantherophis guttatus</i>
S.E. Five-lined Skink	<i>Plestiodon inexpectatus</i>
Broad-headed Skink	<i>Plestiodon laticeps</i>
FL Redbelly Cooter	<i>Pseudemys nelsoni</i>
Pine Woods Snake	<i>Rhadinea flavilata</i>
Little Brown Skink	<i>Scincella lateralis</i>
Dusky Pygmy Rattlesnake	<i>Sistrurus miliarius barbouri</i>
FL Redbellied Snake	<i>Storeria occipitomaculata</i>
Peninsula Ribbonsnake	<i>Thamnophis saurita</i>
E. Garter Snake	<i>Thamnophis sirtalis sirtalis</i>
FL Box Turtle	<i>Terrapene carolina bauri</i>

## AMPHIBIANS

COMMON NAME	SCIENTIFIC NAME
FL Cricket Frog	<i>Acris gryllus</i>
Oak Toad	<i>Anaxyrus quercicus</i>
S. Toad	<i>Anaxyrus terrestris</i>
Greenhouse Frog*	<i>Eleutherodactylidae planirostris*</i>
S.E. Dwarf Salamander	<i>Eurycea quadridigitata</i>
E. Narrow-mouthed Frog	<i>Gastrophryne carolinensis</i>
Green Tree Frog	<i>Hyla cinerea</i>
Pine Woods Treefrog	<i>Hyla femoralis</i>
Barking Tree Frog	<i>Hyla gratiosa</i>
Squirrel Treefrog	<i>Hyla squirella</i>
S. Leopard Frog	<i>Lithobates sphenoccephalus</i>
Cuban Treefrog*	<i>Osteopilus septentrionalis*</i>
S. Chorus Frog	<i>Pseudacris nigrita</i>
Pig Frog	<i>Rana grylio</i>
E. Spadefoot	<i>Scaphiopus holbrookii</i>

\*Indicates nonnative species

## RESULTS

- 5,385 observations using combined methods
- 41 species documented: 26 reptiles, 15 amphibians
- Florida mud turtle and Florida red-bellied snake previously unrecorded



*Kinosternon steindachneri*



*Storeria occipitomaculata*

- 3 nonnatives: *O. septentrionalis*, *A. sagrei*, and *E. planirostris*
- Some species previously recorded are not as abundant/absent
- Snake fungal disease detected in pygmy rattlesnakes

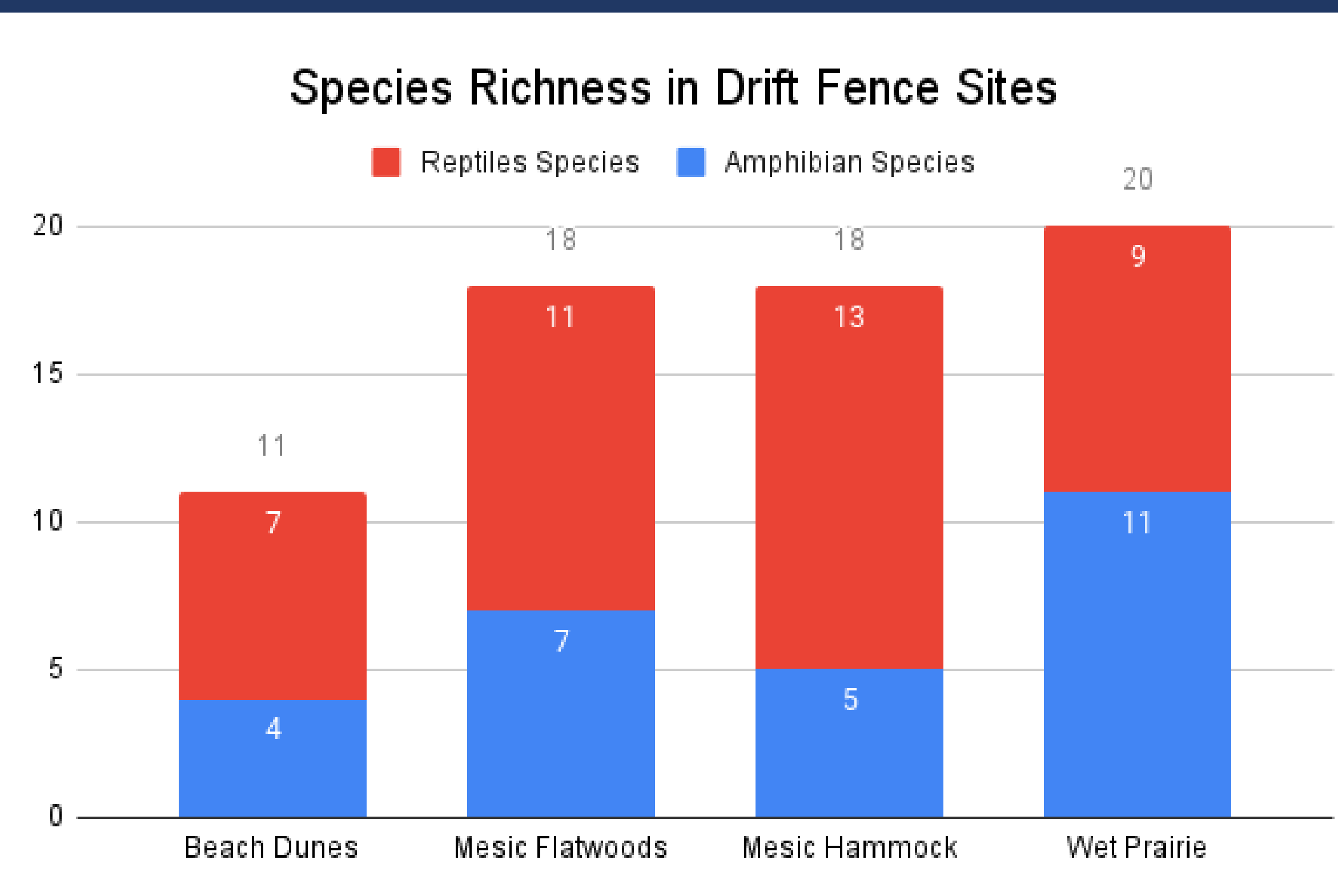
## WHAT CAN WE LEARN FROM THIS?

### Conclusions after one year of monitoring:

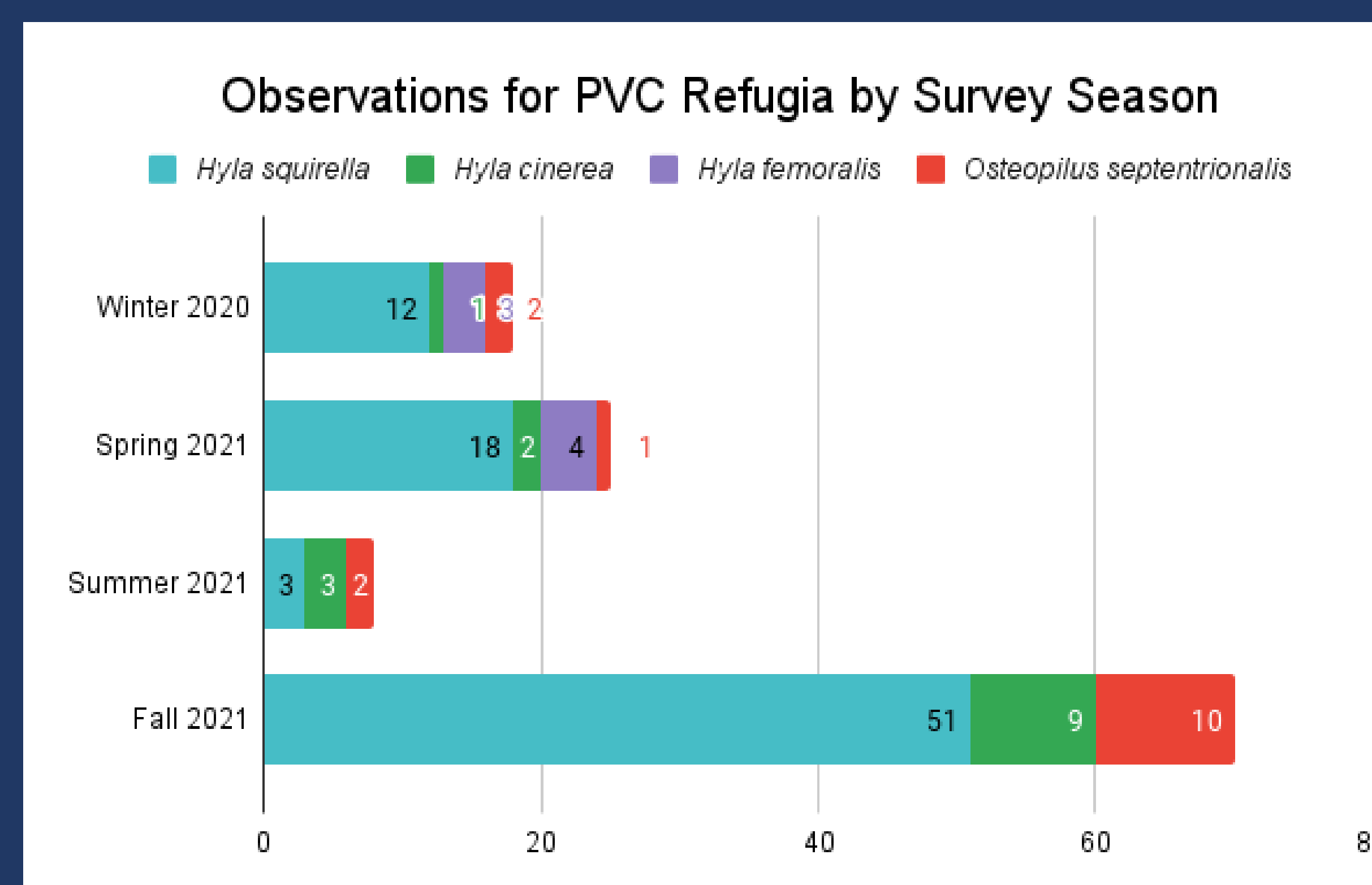
- The GTM uplands displays a fair amount of species richness.
- Burn suppression seems to have affected species distribution/presence.
- All surveyed wetlands showed signs of amphibian breeding with varying levels of species richness.
- Exotic species seem to be site specific in distribution and compete minimally with native populations.
- Striped newts were undetected and may be extirpated from the reserve.

### Questions we can answer after several years of monitoring:

- Will Cuban tree frogs remain in urbanized areas and stay off the GTM peninsula?
- How have prescribed burns impacted herpetofaunal populations, and will they improve uplands water quality?
- Will invasive hog control benefit herpetofaunal populations?
- Will snake fungal disease continue to negatively affect pygmy rattlesnake populations and/or spread to other species?



*Rana grylio*



*Hyla cinerea*