Monitoring Amphibians and Reptiles

Network parks where resource is being monitored:

All GULN parks (BITH, GUIS, JELA, NATR, PAAL, PAIS, SAAN, and VICK)

Importance

All Gulf Coast Network parks host breeding populations of diverse amphibian and reptile (herpetofuana) species. Key reasons for monitoring amphibians and reptiles in network parks are that (1) various species are specifically identified in the management objectives of some of the parks; (2) herpetofaunal species are widely considered to be effective indicators of the quality and condition of park aquatic and wetland systems; (3) comparable regional and national programs, methodologies, and datasets exist for herpetofauna monitoring; and (4) some species have, or have the potential, for legal mandates for monitoring under provisions of the Endangered Species Act.

Bufo valliceps, the Gulf Coast Toad, is common to most GULN parks and may serve as a cross-park comparative indicator for amphiban monitoring.

Monitoring Objectives

- Determine annual changes in species composition and relative abundance patterns for common species of adult herpetofauna in selected habitats on each sampled park.
- Estimate and assess annual status and changes in reproductive success of selected amphibian species in selected breeding habitats (ponds, streams, wetlands) on each sampled park.
- Investigate adult herpetofauna – habitat relationships and how they relate to vegetation structural changes due to either natural or human-induced processes. (*The GULN Vegetation Structure and Composition monitoring protocol will help to address this issue*.)

The Texas tortoise, *Gopherus berlandieri*, is listed as a threatened species in the state of Texas and is being monitored on two GULN parks.

Basic Approach

This is a composite monitoring protocol comprised of several park-specific projects designed to address park-specific management concerns. Each project is a stand-alone monitoring effort using one or more standard herpetological monitoring methods. Sampling approaches emphasize the use of passive techniques to limit harm to park fauna caused by some sampling methodologies. Project selection, design, and scale are specifically intended to provide assessment of the resources in a focal area on a park; most projects are NOT intended to provide inference across the entire park.

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PARK	ANTICIPATED SAMPLING TECHNIQUES				
	CB	PVC	FT	MR	VES
Big Thicket National Preserve	X	X	X		X
Gulf Islands National Seashore	X	X	X	X	X
Jean Laffite National Preserve	X	X	X		
Natchez Trace Parkway	X	X	X		X
Palo Alto National Historical Park				X	X
Padre Island National Seashore	X		X		X
San Antonio Missions National Historical Park	X	X		X	X
Vicksburg National Military Park	X	X			X

Cover-board deployed at GUIS.

Funnel trap deployed at JELA.

Key Standardized Sampling Methods

- **Cover-Board Arrays (CB)** – Long-term placement of metal or wood "boards" in fixed arrays in selected terrestrial monitoring sites. Provides species, frequency, occupancy, age, size and sex data.
- **PVC-pipe Tree Samplers (PVC)** – A passive sampling method suitable for tracking adult tree frogs in forested habitats. Provides species, frequency, occupancy, and population characteristics.
- **Funnel Traps (FT)** – Short-term samplers deployed in arrays in shallow water to collect aquatic amphibians. Provides occupancy, species, frequency, and developmental data on larval and aquatic adult amphibians.
- **Mark-Recapture (MR)** – Used to track individuals through space and time (growth, longevity, fate, movement, population size, habitat use, and reproductive assessment. Used for Texas tortoise and Gulf coast box turtles.
- **Visual Encounter Surveys (VES)** – Time- or area-limited technique where observers walk transects and observe individuals and their position relative to the transect path. Provides occupancy, density , species richness, location, and frequency for surface-active species.

PVC-pipes deployed at GUIS.

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