



Amphibian Monitoring Program Summary

Network Parks Where Monitoring Occurs

Jean Lafitte National Historical Park and Preserve (JELA), Gulf Islands National Seashore (GUIS), and San Antonio Missions National Historical Park (SAAN).

Importance

All Gulf Coast Network parks host breeding populations of diverse amphibian species. Key reasons for monitoring amphibians in network parks are that (1) they are known to be highly sensitive to environmental conditions, making them valuable as ecological indicators; (2) in and around the Gulf Coast region, amphibian diversity is high and includes many geographically restricted species; (3) amphibian populations are in decline across the globe, due to anthropogenic influences and environmental change.

Monitoring Objectives

1. Determine species composition of the amphibian communities that use the monitored cover objects (PVC pipes and coverboards) at each site, and determine species richness for native and exotic species separately.
2. Determine the frequency (yes/no detected) and relative abundance (counts per pipe or board) of the more commonly encountered amphibian species at each site, and determine trends over time.



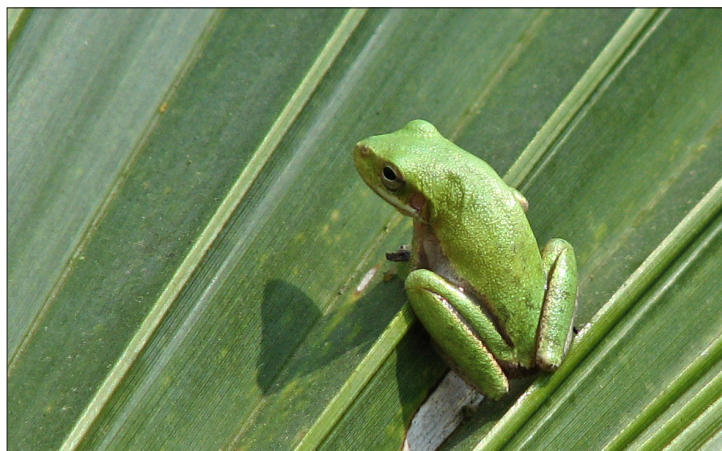
Eleutherodactylus planirostris, the greenhouse frog, is a non-native species from islands in the Caribbean. Because it can reproduce in high humidity without standing water, it has successfully spread into many habitats throughout the southeast. The Gulf Coast Network was the first to formally document this species at its monitoring sites in both Jean Lafitte National Historical Park and Preserve and Gulf Islands National Seashore, and the network continues to monitor the species for changes in its presence and relative abundance over time.



Incilius nebulifer, the Gulf Coast Toad, is common in Jean Lafitte National Historical Park and San Antonio Missions National Historical Park.

Basic Approach

The Gulf Coast Network uses coverboards and PVC pipes for monitoring amphibians in focal habitats. When placed on the ground or in trees, respectively, these objects create artificial cover for amphibian species, providing a favorable microclimate and allowing the animals to come and go unharmed. Each PVC pipe or board is checked during park visits that take place every other month. In addition to counting the number of each amphibian species, the crew records the environmental conditions on-site, including temperature in and around the pipe or board, relative humidity, barometric pressure and water levels in the nearest waterbody. Ancillary data on rainfall and temperature in the days prior to sampling are obtained from nearby weather stations. Project findings are presented once every other year as two-page briefs and once every 6 years as Status and Trends Reports. Additional information, including links to all reports, can be found at <https://www.nps.gov/im/guln/amphibians.htm>



Hyla squirella, the squirrel treefrog, is common in several Gulf Coast Network parks.

Standardized Sampling Methods

- **Plywood coverboards**—Long-term placement of clusters of four untreated plywood boards, distributed along a transect through a selected terrestrial site. Coverboards are 0.9 × 1.2 meters [m] (3 × 4 feet) in size and are used as cover objects by some terrestrial amphibians. The most common occupants in one or more of the focal parks are narrow-mouth toads (*Gastrophryne carolinensis*), Gulf Coast toads (*Incilius nebulifer*), greenhouse frogs (*Eleutherodactylus planirostris*) and Rio Grande chirping frogs (*E. cystignathoides*).
- **PVC pipes**—Long-term placement of PVC pipes in trees that are near the coverboard clusters at two focal parks (Jean Lafitte NHP and Gulf Islands NS). The PVC pipes are 0.6 m (2 feet) long, 2.5 or 5 cm (1 or 2 inches) in diameter, and they are hung in pairs of two differently-sized pipes at 1.37 m (4.5 feet) above ground level. They are used as cover by some species of adult treefrogs including squirrel treefrogs (*Hyla squirella*), green treefrogs (*Hyla cinerea*), Cope's gray treefrogs (*Hyla chrysoscelis*), pine woods treefrogs (*Hyla femoralis*) and bird-voiced treefrogs (*Hyla avivoca*).



Left: Plywood coverboard at Gulf Islands National Seashore.

Above: PVC pipes at Gulf Islands National Seashore.

About the Gulf Coast Network

In 1999, the National Park Service initiated a long-term ecological monitoring program, known as “Vital Signs Monitoring,” to provide the minimum infrastructure to allow more than 270 national park system units to identify and implement long-term monitoring of their highest-priority measurements of resource condition. The overarching purpose of natural resource monitoring in parks is to develop scientifically sound information on the current status and long-term trends in the composition, structure, and function of park ecosystems, and to determine how well current management practices are sustaining those ecosystems.

The NPS Vital Signs Monitoring Program addresses five goals for all parks with significant natural resources:

1. Determine the status and trends in selected indicators of the condition of park ecosystems,
2. Provide early warning of abnormal conditions,
3. Provide data to better understand the dynamic nature and condition of park ecosystems,

4. Provide data to meet certain legal and congressional mandates, and
5. Provide a means of measuring progress towards performance goals.

Effective long-term management and stewardship of natural resources begins with baseline knowledge of these resources and a scientifically-rigorous understanding of how they change over time. In collaboration with park staff and other stakeholders, the Gulf Coast Network strives to meet this need for the eight parks in its region. The network’s geographic region encompasses portions of Florida, Alabama, and Tennessee, all of Mississippi and Louisiana, and the southeastern quarter of Texas.

For more information

GULN Home Page:
<https://www.nps.gov/im/guln/index.htm>

About the NPS Inventory & Monitoring Division:
<https://www.nps.gov/im/index.htm>

Data Downloads via the Natural Resource Information Portal:
<http://irma.nps.gov>