



Monitoring of Springs, Seeps, and Hanging-Garden Communities

Importance

Springs, seeps, and hanging gardens provide essential water, food, and wildlife habitat in desert landscapes. They are also important oases of biodiversity and productivity. Spring and seep ecosystems are inherently fragile. Human activities, such as recreation, groundwater diversion, and livestock grazing, can reduce the ecological integrity of these sensitive systems. Monitoring at springs, seeps, and hanging gardens will help us to better understand the impacts of land use and climate change on these ecosystems.

Purpose and Use

The primary goal of monitoring springs, seeps, and hanging gardens is to assess trends in key indicators of spring and seep ecosystem health: water quantity, water quality, and spring-related vegetation.

The NPS Southeast Utah Group (SEUG) has monitored spring flow and water quality at a small number of sites for over 10 years. The Northern Colorado Plateau Network (NCPN) has worked closely with SEUG staff to develop a long-term springs monitoring program that augments that sampling. This joint program collects data on site vegetation and disturbance, samples flow, and now includes endemic-plant counts at hanging gardens.

Information gathered from NCPN monitoring of springs, seeps, and hanging gardens will be used to:

- Track changes in the amount of spring flow,
- Detect dramatic changes in water quality that may signal aquifer contamination,
- Establish regional abundance and diversity of vegetation in Colorado Plateau springs, seeps, and hanging gardens, and
- Improve understanding of these ecosystems in parks.

Objectives

Preliminary objectives for springs and seeps monitoring are to determine long-term trends in:

1. Discharge,
2. Core and site-specific water-chemistry parameters,
3. Habitat area, and
4. Vegetation composition, with particular emphasis on endemic plants at hanging-garden sites.

Status and Trends

Endemic plant counts help us to track plant populations and assess water availability at sites with little or no surface water, such as hanging gardens. In 2014, these counts continued at Arches National Park and Natural Bridges National Monument, and were begun at Canyonlands National Park. Pilot data of endemic plant counts were also analyzed. These data will be used to develop a sampling plan for hanging gardens. Flow monitoring continued at springs in Arches and Canyonlands national parks. The springs and seeps monitoring protocol was submitted for peer review.

Contact

Rebecca Weissinger, rebecca_weissinger@nps.gov

Network park units where springs, seeps, and hanging gardens are monitored

Arches National Park
Canyonlands National Park
Hovenweep National Monument
Natural Bridges National Monument

Alcove Spring, Canyonlands National Park.

