



Springs, Seeps, and Hanging Garden Community Monitoring

Importance

Springs, seeps, and hanging gardens provide essential water, food resources, and wildlife habitat, and are important oases of biodiversity and productivity in desert landscapes. Because of their inherent fragility, spring and seep ecosystems are sensitive to a variety of human activities that have reduced the ecological integrity of these ecosystems through recreation, groundwater diversion, and livestock grazing. Monitoring spring and seep ecosystems will enable a more thorough understanding of the impacts of human activities and climate change on these ecosystems.

Long-term Monitoring

The primary goal for long-term monitoring of springs, seeps, and hanging gardens is to assess trends in key indicators of spring and seep ecosystem health. The National Park Service Southeast Utah Group (SEUG) has been monitoring water quality at a small number of spring 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 by adding information on site vegetation and disturbance at existing monitoring sites, initiating flow sampling at additional sites, and including hanging gardens.

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

- Identify ecologically impaired sites;
- Identify priority restoration needs;
- Establish regional abundance and diversity of vegetation in Colorado Plateau springs, seeps, and hanging gardens; and
- Improve understanding of these ecosystems in parks.

Monitoring Objectives

Preliminary objectives for springs and seeps monitoring are to:

1. Determine long-term trends in discharge;
2. Determine long-term trends in core and site-specific water-chemistry parameters;
3. Determine long-term trends in habitat area; and
4. Determine long-term trends in vegetation composition, with particular emphasis on rare plants at hanging-garden sites.

Status and Trends

Spring flow monitoring continued at sites in Arches and Canyonlands national parks and Hovenweep National Monument in 2013. A double-observer study of proposed endemic plant counts is underway at hanging gardens in Arches NP and Natural Bridges NM. Given the fragile nature of springs and seeps, the monitoring design attempts to minimize observer impacts. The NCPN monitoring protocol for springs, seeps, and hanging gardens will be submitted for peer review in winter 2013–2014.

Contact

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

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

