



Southern Colorado Plateau Network



DAVID MIKESIC / NAVAJO NATURAL HERITAGE PROGRAM

Inventory and Monitoring Program

The National Park Service’s mission is to manage park resources “unimpaired for future generations.” To provide parks with the information they need to manage their natural resources, the Inventory and Monitoring program collects scientific information about the conditions of the parks. The program does this by (1) inventorying the baseline condition of the natural resources in the parks and (2) monitoring these natural resources over time to detect change in the ecological health of the parks.

The Inventory and Monitoring program has organized more than 270 park units into 32 net-

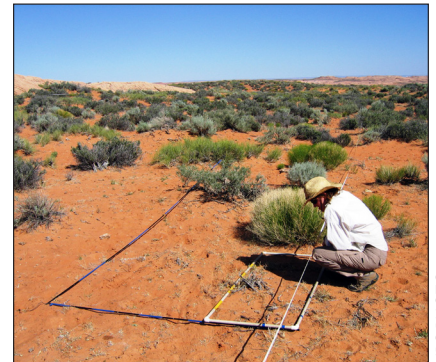
works that link parks with similar geographic and natural resource characteristics. Each network is responsible for collecting, analyzing, synthesizing, and modeling data for all their parks. The networks then share the information with park managers, the scientific community, and the general public. Park managers can use the information for planning, management, and decision making.

Over time, the scientific information provided by each network will help national parks meet the challenges of maintaining the ecological health of parks in the face of complex natural resource issues.



NPS PHOTO

The network annually monitors aquatic macroinvertebrates to track stream health over time.



NPS PHOTO

The network collects data on upland vegetation and soils from permanent plots on an annual basis.

Vital Signs Monitoring

Park vital signs are selected physical, chemical, and biological elements and processes of park ecosystems that represent the overall health or condition of a park. They can also be park attributes that are highly valued by the public but not necessarily indicative of general park health. The scientific information obtained through long-term ecological monitoring will have multiple applications for management decision-making, research, education, and promoting

public understanding of park resources.

Each network chooses the vital signs that will be monitored based on the greatest needs of the parks in the network. The Southern Colorado Plateau Network developed their vital signs monitoring program by collaboratively defining network goals and objectives, identifying and prioritizing potential vital signs, and then selecting a set of vital signs for long-term monitoring.

Vital Signs of the Southern Colorado Plateau Network

NPS PHOTO



UPLAND VEGETATION AND SOILS

Vegetation and soils are the foundation upon which all terrestrial ecosystems are built and they provide habitat upon which terrestrial fauna depend. The Southern Colorado Plateau Network is monitoring vegetation and soils in selected predominant vegetation types within network parks. The legacy of past livestock grazing, altered fire regimes, adjacent land-use activities, and climate change are major issues impacting the condition of upland ecosystems within these parks.

NPS PHOTO



RIPARIAN SYSTEMS

Vegetation is an important component of riparian ecosystems. Near-stream vegetation stabilizes stream-banks and provides habitat, organic matter, and nutrients essential to terrestrial and aquatic organisms. Riparian plant communities are sensitive to hydrologic change and vary depending on local geomorphology. Human activities, including dams and water diversions, livestock grazing and recreational use, can alter the condition of riparian ecosystems. Natural disturbances, including flooding, fire, and droughts, can also affect riparian systems. Integrated monitoring of vegetation, hydrology, and geomorphology can detect impacts to these systems.

U.S. FISH AND WILDLIFE SERVICE



BIRD COMMUNITIES

Because of their high body temperature, rapid metabolism, and high ecological position in most food webs, birds are a good indicator of the effects of local and regional changes in ecosystems. Bird monitoring within the Southern Colorado Plateau Network focuses on several habitats where upland vegetation or riparian monitoring is also occurring. In this way, information on the status and trends of bird communities contributes to our overall understanding of ecosystem condition.



AQUATIC MACROINVERTEBRATES

Aquatic macroinvertebrates, such as insect larvae, crayfish, snails, and worms, play a vital role in stream ecosystems, both as a food source and as consumers of algae and other organic matter. Because macroinvertebrates are sensitive to environmental change, monitoring them can help us to detect chemical, physical, and biological impacts to aquatic ecosystems. Because the four states represented within Southern Colorado Plateau Network parks all use macroinvertebrates as part of their water quality monitoring programs, monitoring efforts will also contribute to a broader regional understanding of aquatic conditions.



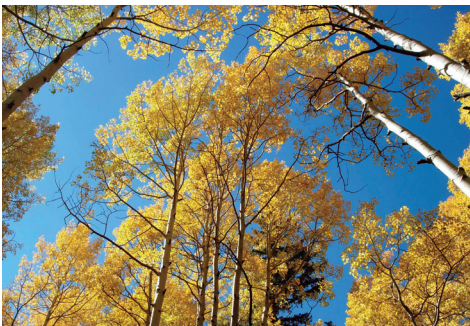
WATER QUALITY

Water quality is monitored to satisfy state and federal regulations and as an indicator of watershed condition and ecosystem health. Perennial streams are rare on the Colorado Plateau, and most streams in the region are intermittent or ephemeral. For this reason, and because of remoteness, water quality data on SCPN streams are sparse. Park managers need information on status and trends in order to develop plans and take actions to maintain or restore surface water quality and to work cooperatively with other agencies to protect park waters.



SPRINGS

Springs are important water sources in arid landscapes, supporting unique plant associations and sustaining high levels of biotic diversity. They also provide habitat for rare and endemic species. Because springs rely on groundwater, they can serve as important indicators of change in local and regional aquifers. Throughout the Southwest, more than 90% of springs have been converted for human or livestock use in historic times. Springs on National Park Service lands can provide reference condition data for degraded springs in other areas.



VEGETATION CONDITION AND PHENOLOGY

Climate change may have complex ecological consequences as it lengthens the growing seasons and alters annual precipitation. The Southern Colorado Plateau Network is using Moderate Resolution Spectraradiometer (MODIS) satellite data to monitor the productivity and timing of life-cycle events for vegetation of the major ecosystems in the parks. The trend information collected will aid assessment of how climate change is affecting the vegetation. The recent combined effects of drought, increased fire frequency, and associated insect outbreaks have made the need to monitor these patterns more urgent.

Contact Us

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SCPN Ecosystems



NPS PHOTO

Mixed conifer forest



NPS PHOTO

Ponderosa pine forest



NPS PHOTO

Pinyon juniper woodland



NPS PHOTO

Riparian woodland



NPS PHOTO

Shrubland



MARC WEISSINGER

Semi-arid grassland

Southern Colorado Plateau Network Parks and Setting

Covering nearly 3 million acres, the Southern Colorado Network encompasses 19 National Park Service units located in northern Arizona, north-western New Mexico, southwestern Colorado, and southern Utah.

The network includes many parks established to protect the cliff dwellings, great houses, and other archeological resources from the cultures of ancestral Puebloan people. Many of the parks also preserve significant geologic resources, ranging from Late Triassic paleontological resources found in Petrified Forest National park to the volcanic features and landscapes of Sunset Crater and El Malpais National Monuments. Several parks preserve the history of early contact between American Indians and Europeans. The network also includes the 277-mile stretch of the Colorado River and thousands of miles of tributary side-canyons. in Grand Canyon National Park.

Extending from desert communities growing in rugged canyons to alpine tundra found on the region's highest peaks, the biota of the Colorado Plateau is exceptionally diverse. This is largely due to the varied topography and geographic position of the Colorado Plateau between the Great Basin to the west and Rocky Mountains to the east. The ecosystems found within the parks reflect this diversity and include montane forests, pinyon-juniper woodlands and savannas, semi-desert grasslands, and shrub-steppe communities. The parks also include rivers, streams, and springs, which are scarce resources in the arid Southwest.

