



2007

Integrated Upland Monitoring

Importance

Uplands represent the vast majority of land area in the Northern Colorado Plateau Network (NCPN), and include rock outcrops, badlands, shrublands, grasslands, woodlands, and forests. Upland vegetation provides energy to other trophic levels, habitat structure for various organisms, and is a significant component of species diversity. The ability of uplands to retain soil and nutrients, absorb and release water, and buffer high-runoff precipitation events is a major influence on riparian condition. Upland ecosystems are easily disturbed and slow to recover, yet several NCPN units contain relatively undisturbed examples of grasslands and shrublands. Historic land uses include livestock and timber production; more recently, recreational use has increased. To effectively manage uplands, the National Park Service needs to know the impacts of these uses.

Long-term Monitoring

Integrated upland monitoring includes measuring soil and site stability, hydrologic function, biotic integrity, vegetation composition and structure, and biological soil crusts. The NCPN is working collaboratively with the Southern Colorado Plateau Network to monitor upland ecosystems. At six NCPN parks, a complex survey design incorporates plots that are visited in two consecutive years, followed by a relatively long interval between revisits, with plots that are visited only once every 5–10 years. This design minimizes the chances that sensitive, arid ecosystem plots will be damaged by repeated visits in successive years and is a cost-effective way to estimate the health of the upland ecosystem across a large area. NCPN upland monitoring is intended to strike a balance between increasing fundamental understanding of these systems and providing managers with early warning of undesirable change.

Status and Trends

Upland monitoring began in 2006, when 31 plots were established at Canyonlands NP. In 2007, these plots were revisited, nine more plots were established, and 40 plots were established at Capitol Reef NP. Plots will be installed at Dinosaur NM, Black Canyon of the Gunnison NP, and Curecanti NRA in 2008. The NCPN will monitor each of these sites for three consecutive years to obtain an estimate of the variance in the parameters listed above. This information will help to determine how many plots are needed for monitoring. The pilot sites are selected in a manner that ensures they will be included



Grassland targeted for monitoring at Capitol Reef National Park.



Vegetation transect used for upland monitoring at Canyonlands National Park.

Network park units where uplands are being monitored

Arches NP	Curecanti NRA
Black Canyon of the Gunnison NP	Dinosaur NM
Canyonlands NP	Zion NP
Capitol Reef NP	

NP = National Park; NM = National Monument; NRA = National Recreation Area

in monitoring after the initial three field seasons and incorporated into the analysis of data in future full-scale efforts.

Contact

Steven Garman, Steven_Garman@nps.gov