



2013

Riparian Monitoring: Wadeable Streams

Importance

Riparian ecosystems are potentially sensitive indicators of landscape-level change because they are linked to both aquatic and upland systems, perform important ecological functions, and are biologically diverse. Riparian systems face a number of anthropogenic threats, including streamflow damming or diversion, channel-stabilization structures, invasive exotic species, livestock grazing, timber harvesting, agricultural clearing, groundwater pumping, and trail creation. These disturbances can alter watershed conditions and directly or indirectly influence downstream riparian ecosystems. Developing credible, efficient monitoring approaches will help in assessing riparian-system health and provide early warning of system degradation.

Long-term Monitoring

Integrated riparian monitoring involves the collection of vegetation, hydrology, and geomorphology data in wadeable streams. The NCPN monitors wadeable streams with flow regimes that are perennial (year-round), intermittent (surface flow during certain times of the year and a shallow water table in at least portions of the stream), or ephemeral (surface flow for relatively short periods in direct response to precipitation). Park staff selects individual streams for monitoring based on management priorities. Wadeable streams are monitored at one site in each of four park units: Courthouse Wash (Arches NP), the Fremont River (Capitol Reef NP), Armstrong Canyon (Natural Bridges NM), and the East Fork of the Virgin River (Zion NP).

Repeat sampling of permanent transects allows us to track changes in the cover and species composition of riparian vegetation, including the relative abundance of native and non-native species. Measures of physical drivers, including streamflow, alluvial groundwater dynamics, and changes in channel form, are used to assess whether observed changes are primarily the result of natural variability or anthropogenic stressors.

Information gathered from this protocol will provide park managers with (1) a baseline against which to gauge the long-term status and trends of riparian resources relative to natural processes and anthropogenic stressors; and (2) information for evaluating the effectiveness of management interventions aimed at protecting or restoring these ecosystems.



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Courthouse Wash, Arches National Park.

Status and Trends

Due to cuts resulting from the federal budget sequester in 2013, riparian monitoring efforts were scaled down for the first time since the protocol was initiated in 2008. In 2013, most monitoring activities occurred at Arches NP. Network staff established one new reach and sampled vegetation at two reaches. In addition, cross-sections of the channel and the location of the thalweg were surveyed at three reaches in the park.

Hydrologic monitoring equipment that was installed at one reach each in Arches, Capitol Reef, and Zion national parks continues to be maintained and monitored and was resurveyed in spring 2013. However, due to sequestration, no riparian vegetation measurements were obtained at Capitol Reef or Zion national parks, and no monitoring activities occurred at Natural Bridges NM in 2013. Data collected from 2008 to 2012 are currently being summarized in reports for all four park units.

Contacts

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Network park units where wadeable streams are monitored

Arches NP	Natural Bridges NM
Capitol Reef NP	Zion NP

NP = National Park; NM = National Monument