



Monitoring Bird Communities

Importance

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. For these reasons, bird communities were selected for monitoring as an indicator of the overall condition of upland and riparian ecosystems in the Southern Colorado Plateau Network (SCPN). Moreover, it has been suggested that birds are perhaps the most highly valued component of North America's biological diversity. Many bird species are obligates in habitats that are widely distributed across the network, and some of these species and habitats are considered to be of conservation concern due to changes in habitat condition. For many of these habitats, relatively undisturbed SCPN sites serve as a reference for comparison with more degraded conditions on adjacent lands.

Long-term Monitoring

Bird-community monitoring focuses on several habitats where integrated upland 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. Bird-community monitoring consists of breeding-season surveys that employ variable circular plot methodology. At each sampling point, an eight-minute survey is performed. Observations of birds by sight or call are recorded, along with the distance from the point to the first detection of an individual. Habitat monitoring includes ground cover, canopy closure, vegetation cover by functional groups (e.g., shrubs, perennial grasses,

Gray-crowned
rosy-finch
(*Leucosticte
tephrocotis*).



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forbs), and forest-structure attributes. In upland habitats, we may also monitor nesting success for selected breeding species.

Management Applications

Ecological effects of adjacent land-use activities, such as livestock grazing, forest management, water diversion, urban/exurban development, and emissions of industrial and agricultural pollutants are of concern across SCPN parks. Habitat loss and fragmentation resulting from adjacent land-use activities may result in an increase in species that are widely distributed and do not have stringent habitat requirements and a loss of species with narrow habitat requirements. Because of their mobility and wide-ranging habitat needs for breeding, migration and wintering, climate change is expected to affect migratory birds differently than many other vertebrates; climate change-induced range shifts have the potential to greatly influence the species composition of breeding neo-tropical migrants in various regions within the next 100 years.

The first few years of monitoring data will be used to document current conditions of habitat-based bird communities. Over the long term, integrated riparian data will be used to (1) determine status and trends in composition and abundance of breeding bird communities associated with selected upland and riparian ecosystems, and (2) improve our understanding of breeding bird-habitat relationships in these ecosystems.

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Mountain chickadee (*Poecile gambeli*).



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