



Sagebrush-obligate Birds and Climate Change

Bird species that rely on sagebrush for foraging, nesting, and/or brood rearing are considered sagebrush obligates. They include the greater sage-grouse (*Centrocercus urophasianus*), Brewer's sparrow (*Spizella breweri*), sage thrasher (*Oreoscoptes montanus*), and sage sparrow (*Amphispiza belli*). Each of these species is found in at least two Upper Columbia Basin Network (UCBN) parks. However, their abundance and distribution has declined across the West during the last century as their habitat has been reduced and altered by changes in land use and fire regimes. The sage-grouse is gone from 5 of the 16 states in which it once resided. The warmer temperatures associated with climate change are expected to magnify the two primary threats to the remaining sagebrush-steppe habitat: invasion by nonnative plants and more frequent and intense fires. Climate change may also increase outbreaks of West Nile virus in bird populations.

Wildland Fire and Invasive Plants

When sagebrush steppe covered vast expanses of the West, fire helped recycle nutrients from dead biomass into growing plants, a cycle disrupted by the introduction of livestock, non-native plants, and fire suppression. Without periodic fire, pinyon-juniper woodlands often spread into upland sagebrush steppe, reducing the understory. But the recent phenomenon of more frequent fire has exacerbated the fragmentation of sagebrush-steppe habitat and made it more vulnerable to invasion by cheatgrass (*Bromus tectorum*) and other non-native plants. Warmer temperatures and higher concentrations of atmospheric carbon dioxide and possibly nitrogen deposition are favorable for the highly flammable cheatgrass. Its proliferation can reduce fire intervals to a few years and prevent sagebrush recovery.

Sage-grouse

As a game bird and a candidate for listing under the Endangered Species Act, the sage-grouse has been the most closely monitored of the sagebrush-obligates. An annual grouse hunting season is held in 10 states, including portions of the two UCBN parks where the sage-grouse is found: Craters of the Moon National Monument and Preserve (CRMO) and City of Rocks



PHOTO BY TOM MUNSON



PHOTO BY MICHAEL WOODRUFF

The sage thrasher and Brewer's sparrow.



PHOTO BY DOMINIC SHERONY



USFWS PHOTO

The sage sparrow and greater sage-grouse.

National Reserve (CIRO). In response to the significant declines of sage-grouse numbers, the Idaho Fish and Game Department reduced the season to seven days in 1996 and established a conservation plan to maintain and, where possible, increase sage-grouse populations and habitat in the state.

Sage-grouse prefer sagebrush mixed with grassy areas and are apt to return to the same breeding site each year. In the spring, the males gather on leks, open areas where they perform courtship displays. One of the most active leks in CRMO (107 males counted in 2007) probably developed after the sagebrush there burned in 2000. The linear nature of the 150-acre fire left sagebrush nearby for nesting and brood-rearing. Cheatgrass is present throughout the park, but at the site's 5,500 elevation it grows profusely only within the burned areas; the adjacent land continues to be dominated by native shrubs, grasses, and forbs.

Monitoring Sagebrush-obligate Birds

In addition to the monitoring of sage-grouse at CRMO and CIRO, the other sagebrush-obligate species are surveyed at UCBN parks as part of more general bird monitoring. Brewer's sparrows, for example, are the most common bird species in CRMO, accounting for about one-third of all birds recorded there. They prefer dense stands broken up with grassy areas, a habitat type prone to fires that can result in landscapes dominated by grasses and non-native plants. The American Bird Conservancy has designated CRMO as an Important Bird Area (IBA) of global significance, in part because it provides habitat for sagebrush-associated species, especially Brewer's sparrow and sage-grouse. CRMO is adjacent to or near three other IBAs, which together comprise one of the largest protected sagebrush areas in North America, at approximately 1.3 million acres.

For More Information

Upper Columbia Basin Inventory and Monitoring Network
<http://science.nature.nps.gov/im/units/ucbn/>