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USGS Western Ecological Research Center

Publication Brief

Greater Sage-Grouse Nesting Success and Habitat Use in Wildfire-Impacted Habitat

The impact of natural and human-influenced wildfires on Great Basin sagebrush landscapes is of concern. Studies to-date suggest that after fires, sagebrush landscapes are prone to takeover by invasive, nonnative annual grasses such as cheatgrass. The spread of cheatgrass prevents the return of dense shrub cover preferred by sage-grouse and other wildlife. Additionally, cheatgrass is a more flammable fuel, leading to a cycle of higher wildfire frequency and continued suppression of native plants.

Greater sage-grouse (*Centrocercus urophasianus*) prefer to conceal nests in dense shrubbery, relying on camouflage and structure to deter potential predators of eggs and chicks—shrubbery that could be lost to changing wildfire regimes and nonnative plant invasions. Researchers from USGS, Idaho State University, and Nevada Department of Wildlife assessed whether greater sage-grouse nesting site preferences and nesting success rates differed in postfire landscapes, and published their findings in *The Journal of Wildlife Management*.

The study was conducted in the Virginia Mountains of Nevada, in an area that experienced a wildfire event 10 years ago. Researchers found that the fire impacted sites in the Virginia Mountains had less available shrub cover than similar Great Basin sites unaffected by recent wildfire events. Coincidentally, nest survival rate for sage-grouse in the Virginia Mountains was lower than other Great Basin estimates.

Analyses revealed that sage-grouse preferred nesting sites with greater shrub canopy cover, and less cheatgrass cover. Although sagebrush (*Artemisia* spp.) is vital to annual sage-grouse survival, this study also revealed that at nest locations, the suitable shrub cover includes non-sagebrush plant species. In the postfire areas assessed in this study, female sage-grouse did not discriminate between shrub cover provided by sagebrush species versus other plant species when selecting nest locations, and were found to utilize shrubs other than sagebrush as nesting cover.

This Brief Refers To:

Lockyer, ZB, PS Coates, ML Casazza, S Espinosa, DJ Delehanty. 2015. **Nest-site selection and reproductive success of greater sage-grouse in a fire-affected habitat of northwestern Nevada.** The Journal of Wildlife Management. doi:10.1002/jwmg.899
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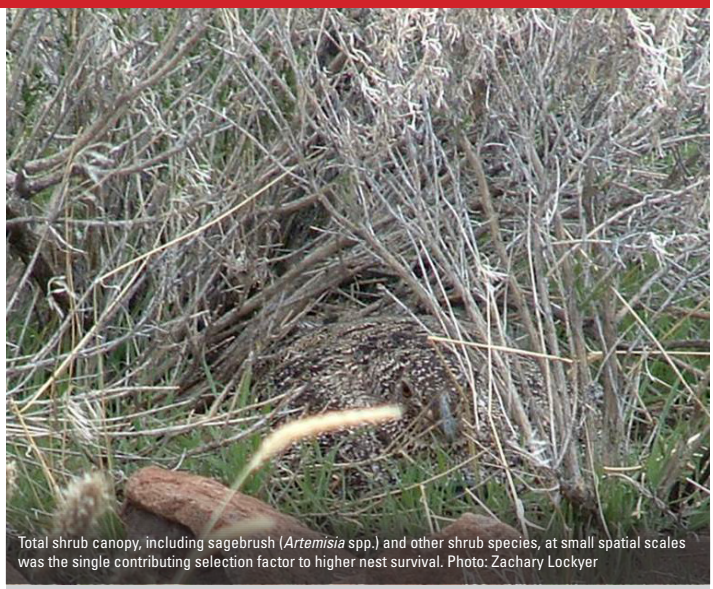

Total shrub canopy, including sagebrush (*Artemisia* spp.) and other shrub species, at small spatial scales was the single contributing selection factor to higher nest survival. Photo: Zachary Lockyer

MANAGEMENT IMPLICATIONS

- The findings underscore the importance of shrub canopy cover to sage-grouse reproduction. However, the analysis suggests that non-sagebrush shrub species appear to provide suitable cover during recovery periods. Thus, agencies may have flexibility in management and restoration actions to enhance sage-grouse nest survival following a wildfire event, as managers work to re-establish sagebrush communities.
- Related studies have suggested that native plant restoration efforts on post-fire sites in the Great Basin have limited success or require more than 20 years of implementation. The relative scarcity of shrub cover observed in the Virginia Mountains—even after 10 years of recovery—lends weight to prioritizing conservation of existing shrub cover, in addition to efforts to restore fire-impacted landscapes.

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