

USGS Sagebrush Science

A quarterly report from the USGS Sagebrush Working Group

July–September 2026

News

Watch the USGS Sagebrush Ecosystem and Fire Science 2026 Webinars!

In June, the USGS Land Management Research Program and the Great Basin Fire Science Exchange teamed up to present updates in sagebrush, fire, invasives, wildlife, and monitoring related research. Each 90-minute webinar was comprised of multiple manager-focused presentations. Recordings of the five webinars are now available on the [Great Basin Fire Science Exchange Website](#).

Updates to the Range-wide Population Trend Analysis for Greater Sage-grouse

This [updated population analysis](#) (1960–2025) provides State and Federal land and wildlife managers with the best available science to help guide management and conservation plans aimed at benefitting greater sage-grouse populations and the ecosystems they inhabit. Included in this report are methodological updates to period terminology, expanded reporting of trends across all nadir-to-nadir combinations, and revised extirpation probability estimation that utilizes every historic population nadir to forecast abundance.

USGS Research Informs Big Game Management

To help inform big game-related restoration priorities, the USGS and their collaborators assessed the drivers of change in mule deer fawn-to-doe ratios over 20 years in Wyoming in summer and winter use areas. Scientists found that temperature had, by far, the strongest effect on age ratios and seasonal habitat suitability had the second strongest effect. The findings of this research can help guide mule deer management and inform restoration priorities to support big game populations and the economies they help sustain.

[Learn more about this study](#).



Additional updates to the Land Treatment Exploration Tool

USGS recently launched another update to the [Land Treatment Exploration Tool](#). New features include additional chart capabilities for on-the-ground monitoring data, inclusion of special status species in the Site Characterization Report, addition of iNaturalist species observations, and new/updated data sources. Learn more about application updates: [Land Treatment Exploration Tool 3.1 Launch](#)

New Products

Wildlife

TYPE	TITLE & URL	SUMMARY
PUBLICATION	Range-wide Population Trend Analysis for Greater Sage-Grouse (Centrocercus urophasianus)—Updated 1960–2025	Updates to period terminology, expanded reporting of trends across all nadir-to-nadir combinations, and revised extirpation probability estimation.
PUBLICATION	Estimating greater sage-grouse population sizes within Oregon, 2017–24	Researchers estimated annual population sizes of greater sage-grouse (Centrocercus urophasianus; sage-grouse) within the state of Oregon, USA between 2017–2024. Population estimates were delineated among 24 Priority Areas for Conservation (PACs) and considered additional sources of information including female-to-male sex ratios, lek attendance rates, unmodeled leks, and the existence of unsampled/unknown leks.
PUBLICATION	Lead exposure of snakes near recreational and military shooting areas in a sagebrush steppe ecosystem	Scientists analyzed lead concentrations in liver and two types of bone from 24 gophersnakes and 12 Great Basin rattlesnakes in The Morley Nelson Snake River Birds of Prey National Conservation Area in Idaho from 2018-2021. They also quantified lead concentrations in the soil near where the dead snakes were found.
PUBLICATION	Effects of oiling common raven nests on ravens and greater sage-grouse in sagebrush ecosystems	Researchers found that application of oil to raven eggs reduced raven egg-hatchability by 94.5%. Sage-grouse nest survival probabilities more than doubled at egg-oiled treatment sites and estimated abundances of sage-grouse increased at oil-treated sites by 44% relative to controls following oil treatments of raven eggs.
PUBLICATION	Mountain lion prey-selection in a community comprised of native and introduced ungulate species	Researchers investigated (1) seasonal patterns of prey use within individual mountain lion home ranges; (2) prey use relative to availability; and (3) seasonal kill rates on the two primary ungulates in the study area, wild horses and mule deer.

Invasive Annual Grasses & Sagebrush Restoration

TYPE	TITLE & URL	SUMMARY
PUBLICATION	Spatial variation in effectiveness and costs of sagebrush restoration treatments across the western United States	Researchers compared cost-effectiveness of two sagebrush restoration practices, aerial and drill seeding, across the western United States, identifying opportunities to more effectively and efficiently prioritize limited funds to protect and restore this imperiled ecosystem.
PUBLICATION	Bacterial bioherbicide increased the ratio of native-to-exotic annual grasses, despite no molecular signature of establishment	Researchers measured soil, microbial, and plant community responses to D7 bioherbicides for 1-2 years after spraying it on mixed cheatgrass and perennial bunchgrass lands.
PUBLICATION	Decadal effects of fuel treatments and annual grass invasion on sagebrush ecosystem carbon stocks	Scientists analyzed above and belowground carbon stock estimates before and ten years after fuel treatment to determine if fuel treatments affected ecosystem carbon storage in the Sagebrush Steppe Treatment Evaluation Project (SageSTEP). They also assessed whether cheatgrass invasion impacted soil carbon storage.
PUBLICATION	Allometric Relationships to Calculate Aboveground Biomass for Eight Rangeland Shrubs Using the SageSTEP Network	Allometric equations are a valuable resource to land managers and researchers who require shrub fuel loading information using a less time intensive sampling technique than destructive sampling. USGS and university scientists created new allometric equations that encompass eight shrubland species and span a range of site conditions in the Great Basin.

PUBLICATION	A quantitative, empirical method for generating fuel-bed maps from plant cover estimates reveals thresholds and one-to-many fuel-to-plant type relationships	Researchers describe a new and more efficient and effective method for generating the maps of fuels needed to parameterize wildfire spread models, with application to many areas that burned recently or had many years since fire across the sagebrush rangelands of the western USA.
PUBLICATION	Leveraging time-series remote sensing to predict post-fire invasive annual grass response in western US rangelands	Scientists quantified the impacts of wildfire on exotic annual grasses (EAG), with emphasis on understanding the factors driving the spatial and temporal variability of those impacts, highlighting the role of drought. Results show that fire impacts on EAG are often delayed, with limited effects in the first post-fire year followed by increasing cover over subsequent years.
DATA	Fire Invasive Response Metric (FIRM) and Habitat Invasive Risk (HIR) for Western U.S. Rangelands	Datasets quantifying the impacts of wildfire on exotic annual grasses, with emphasis on understanding the factors driving the spatial and temporal variability of those impacts, highlighting the role of drought.
DATA	Greater Northern Sagebrush Vulnerability Map	This map represents a spatially smoothed vulnerability index for sagebrush (<i>Artemisia spp.</i>) ecosystems at the northern extent of the sagebrush biome.

About the USGS Sagebrush Working Group

The USGS Sagebrush Working Group, coordinated by the USGS Land Management Research Program, includes over 50 scientists from a range of USGS centers, programs, regions, mission areas, and cooperative units. Decades of experience investigating and developing solutions for natural resource management issues in sagebrush ecosystems have made the group a go-to resource for partners.

Learn more about the group and explore ongoing projects across the biome on our website:

[USGS Sagebrush Working Group](#)

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