

USGS Sagebrush Science

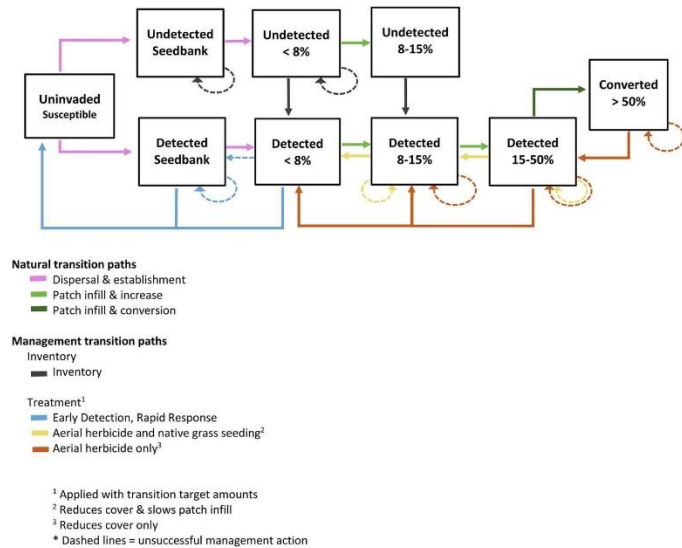
A quarterly report from the USGS Sagebrush Working Group

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News

New tools for a growing threat: Co-developed science informs the fight against invasive grasses in the sagebrush biome

In a new study, USGS scientists worked with resource managers to co-develop a strategic framework for invasive grass management across the sagebrush biome. The framework, implemented through computer simulation models, can help resource managers explore the efficacy of invasive grass management strategies and develop informed, economic conservation plans.



New Products

Energy Development

TYPE	TITLE & URL	SUMMARY
PUBLICATION	Integrating climate and anthropogenic dynamics can inform multifaceted management for declining mule deer populations	Using a 40-year dataset for herd units across Wyoming, researchers quantified the relative influence of drought, temperature, precipitation, energy, landcover, and wildfire disturbance, and habitat restoration in winter use areas on mule deer recruitment, indexed by age ratios.
WEBPAGE	Wyoming Landscape Conservation Initiative (WLCI) research at NOROCK	The projects highlighted on this page provide information on sagebrush ecosystem vegetation management, mule deer, pronghorn, and pollinators, offering resource managers tools to enhance the terrestrial habitats and the economy of Southwest Wyoming.

Greater Sage-Grouse

TYPE	TITLE & URL	SUMMARY
PUBLICATION	A model-based decision support framework for siting communication tower infrastructure to reduce adverse effects on a sagebrush-obligate species	Increased tower density and proximity contributed to a 1.2% decline in population growth rates. Approximately 14,000 km ² of habitat changed from positive to negative growth post-tower placement. Findings can inform local, regional, and national conservation strategies to minimize, or mitigate impacts from communication towers.

Invasive Annual Grasses & Sagebrush Restoration

TYPE	TITLE & URL	SUMMARY
DATA	Exotic Annual Grass (EAG) Phenology estimates for Western U.S. Rangelands based on 30-m HLS for 2017 - 2025	Updated Exotic Annual Grass (EAG) Phenology estimates
PUBLICATION	Invasion resistance varies by fuel break type in sagebrush ecosystems	In this study, researchers investigated whether exotic annual grass cover was associated with fuel breaks across the sagebrush biome using multiple data sources, including targeted field surveys, land-management agency monitoring data, and remotely sensed vegetation cover data products.
PUBLICATION	A matter of timing: sagebrush steppe restoration seeding outcomes altered by species responses to warmer spring temperatures and interannual weather variation	Researchers evaluated the effects of higher spring temperatures in different periods, and species differences in seedling emergence and survival, on restoration outcomes. They also tested the indirect effects of warming treatments on outcomes via abundance of cheatgrass, a competitive, widespread invasive annual sensitive to weather variability.
PUBLICATION	Supporting dryland restoration success with applied ecological forecasting of seeding outcomes	Researchers developed ecological forecasts that predict the outcome of restoration seeding by integrating long-lead weather forecasts, an ecosystem water balance model, and plant establishment models. They highlight a species-specific ecological forecast for big sagebrush (<i>Artemisia tridentata</i>) establishment.
PUBLICATION	A regional simulation modeling framework for evaluating invasive annual grass management across the sagebrush biome	This study describes a model and framework that can help managers develop realistic conservation plans before money and resources are committed to sagebrush landscapes.

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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