University of Idaho
Rangeland Center
Promoting Collaborative Solutions for Rangelands

Research Summary: Indaziflam application for invasive annual grass control & impacts on sage-grouse habitat conditions & use

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Rinker Rock Creek Ranch (John Finnell, TNC Idaho photo)

Invasive annual grasses are a threat to the greater sage-grouse (*Centrocerus urophasianus B.*), which rely on perennial and annual forbs for both nutrition and cover during brood-rearing. While the application of indaziflam has been shown to reduce invasive annual grasses, the impact on preferred forbs (sage-grouse food source) is less understood. This summary is based on the master's work of Kirby Lau at the University of Idaho, which compared greater sage-grouse habitat use and plant composition within indaziflam-treated and adjacent nontreated sagebrush steppe with moderate invasion by annual bromes.

METHODS

This study took place at the University of Idaho Rinker Rock Creek Ranch in south-central Idaho. This area is classified as mid-elevation sagebrush steppe, dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*). The ranch and surrounding area are priority habitat for greater sage-grouse. This study sampled three management units at the ranch, which had been aerially treated with indaziflam (5 oz/ac) in 2019 and 2020 as well as paired untreated control areas that were selected based on matching aspect, slope, and vegetation community. Plant and sage-grouse pellet surveys were conducted along 50m transects in the treated and nontreated areas in 2023 & 2024.

KEY TAKEAWAYS

- Indaziflam treatment presents possible benefits to greater sage-grouse populations, both through changes in local forage and in reduced fire risk.
- Sage-grouse habitat use was higher in treated areas, suggesting positive effects of indaziflam treatment on habitat conditions.
- If managing for sage-grouse, managers should consider the composition of sage grouse-preferred forb communities before choosing areas for indaziflam treatment. Preferred annual forb cover may decrease in treated areas but this study found preferred perennial forb cover was higher in treated areas in the second year of the study.

Vegetation survey at Rinker Rock Creek Ranch (Kirby Lau photo)

RESULTS

Indaziflam application resulted in an average of 74% less invasive annual *Bromus spp.* cover compared to nontreated transects.

Preferred annual forb cover (including non-native species), richness, and diversity were lower in treated areas, confirming previous research which suggested annual forb cover and diversity may decrease with indaziflam treatment. However, preferred perennial forb cover was higher in treated areas in the second year of the study.

Transects treated with indaziflam had approximately two times more sage-grouse pellet piles than nontreated transects.

MANGAGEMENT IMPLICATIONS

Indaziflam has the potential to improve greater sage-grouse habitat by reducing invasive annual grass cover and is associated with higher sage-grouse utilization in treated areas. These findings illustrate the potential use of indaziflam treatments as a restoration tool for sagebrush-associated wildlife species, particularly in systems with moderate invasion levels and existing native perennial plant communities. Managers should consider the composition of preferred forb communities before choosing areas for indaziflam treatment. If the preferred forb community is dominated by annual forbs, sage-grouse could experience a reduction in food availability as long as the herbicide persists.

Greater sage-grouse scat (Kirby Lau photo)

The Rangeland Center is bridging the gap between science and land management by engaging stakeholders to develop solution-based research that has valuable and real world implications for Idaho rangelands.

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ADDITIONAL INFORMATION

Authors & Investigators:

Kirby Lau
kirby.lau218@gmail.com

Tracey Johnson, University of Idaho, Director of Research, Rinker Rock Creek Ranch Associate Professor,
traceyj@uidaho.edu

Tim Prather, University of Idaho, Professor and Senior Associate Director of Rangeland Center,
tprather@uidaho.edu