

# **Exhibit B**

**Supplemental Public Correspondence  
Received as of August 15, 2025**

# GREATER SAGE-GROUSE IN SOUTHEASTERN OREGON

## BACKGROUND

Greater sage-grouse species of conservation concern, a regulated game bird

## STUDY GOALS

- Estimate probability of sage-grouse being harvested during hunting season
- Evaluate impact of harvest on survival rates

## KEY FINDINGS

### LOW HARVEST RATE



Average annual probability of

**3.6%**

Below the state's 5%

### NATURAL MORTALITY HIGHER



Natural causes were more deaths than hunting

### NO DETECTABLE SURVIVAL IMPACT



Survival rates were similar during hunted and non-hunted periods

### ENVIRONMENTAL THREATS DOMINATE



Wildfire and conifer encroachment more influential

## IMPLICATIONS FOR MANAGEMENT

- Current regulations are sustainable
- Adaptive monitoring
- Adaptive monitoring

## **Harvest and Survival of Greater Sage-Grouse in Southeastern Oregon: written testimony provided by Christian A. Hagen, Ph.D. 15 Aug 2025**

---

### **Background**

The greater sage-grouse is a flagship species of the sagebrush steppe, a unique and increasingly threatened ecosystem across the western U.S. Habitat loss, wildfire, invasive plants, and climate change have contributed to major population declines. Despite being a species of conservation concern, sage-grouse remain a legally hunted game bird in Oregon.

Oregon's hunting regulations are intentionally conservative — short seasons, low bag limits, and a limited-permit system — designed to keep harvest rates below 5% of the fall population. The Oregon Department of Fish & Wildlife (ODFW) is one of the few state agencies with a rigorous, data-driven, and adaptive harvest management framework for allocating sage-grouse hunting permits. This framework lends itself to a conservative approach to setting tag numbers, ensuring that harvest pressure remains sustainable even under changing environmental conditions. However, the validity of this framework has not been evaluated to ensure that harvest remains at or below the 5% level.

### **Study Goals**

Researchers at Oregon State and US Geological Survey studied two southeastern Oregon populations, Warner Mountains and Trout Creek Mountains, to:

1. Estimate the probability of a sage-grouse being harvested, recovered, and reported during hunting season.
2. Determine the effect of harvest on monthly and annual survival rates.
3. Evaluate these patterns in the broader context of environmental stressors like wildfire and conifer encroachment.

### **Study Design**

Mark-recapture and band recovery dataset: 1,146 sage-grouse were marked between 2010 and 2022 with leg bands, VHF radio collars, or GPS transmitters.

Known-fate survival dataset: 502 adult female sage-grouse fitted with GPS transmitters between 2015–2022 provided precise monthly survival records.

Warner Mountains had continuous hunting; Trout Creek Mountains had no hunting from 2012–2018 after wildfire, resuming in 2019 with low tags.

### **Key Results**

- Harvest probability avg 3.6% across the two study areas, well below Oregon's 5% target.
- Only 24 marked birds were confirmed harvested and reported in 12 years.
- Natural mortality exceeded hunting mortality; highest in spring nesting season.
- No detectable drop in survival after hunting resumed in Trout Creek in 2019.
- Environmental factors (wildfire, conifer encroachment) had stronger impacts on survival than hunting.



### Implications for Management

- Current harvest regulations are sustainable, supported by ODFW's adaptive harvest management framework.
- Prioritize habitat threats such as wildfire prevention and conifer removal.
- Maintain and expand GPS-based monitoring.
- Integrate habitat conservation with regulated hunting in adaptive management.

### Why This Matters

This is the first empirical estimate of sage-grouse harvest probability in Oregon and uses one of the largest GPS-based survival datasets for the species. Findings show current hunting regulations — guided by ODFW's science-based framework — are not a major threat, guiding policymakers to maintain limits, focus on habitat threats, and support long-term monitoring.

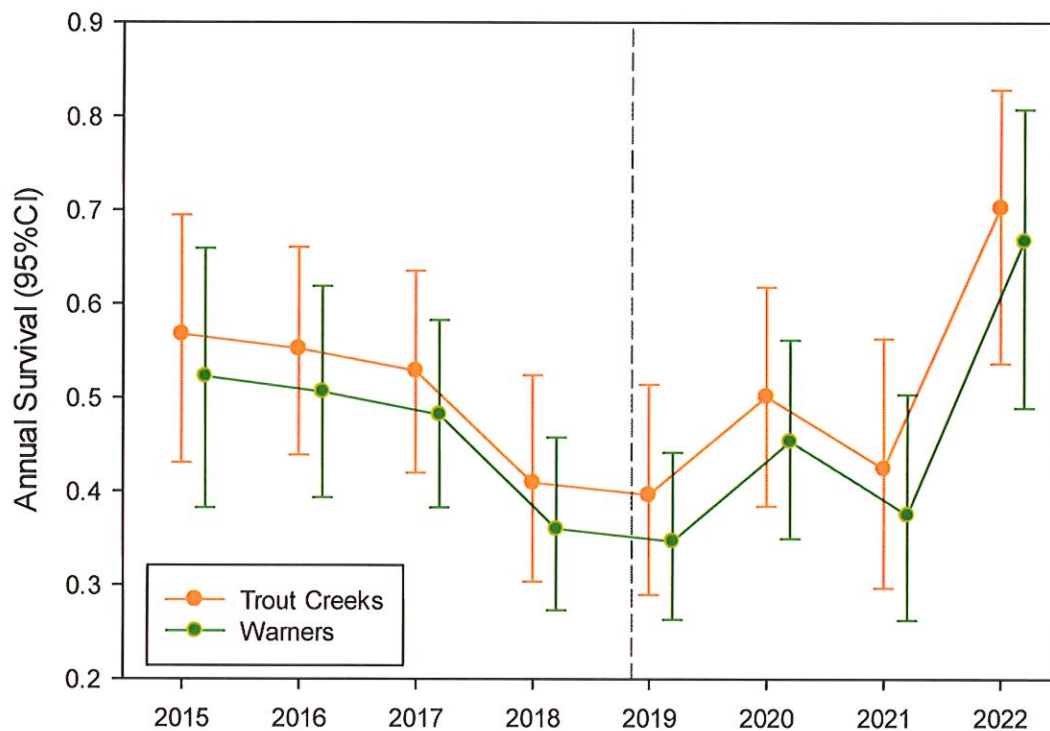


Figure 1. Annual survival estimates of GPS-satellite marked female greater sage-grouse ( $n = 502$ ) in the Trout Creek (orange) and Warner Mountains (green), the vertical dashed line indicates the year harvest was reopened in the Trout Creeks (2019), harvest occurred annually in the Warners. Survival fluctuated annually in a similar pattern between Warners and Trout Creeks both pre-(2015-2018) and post-hunting season opening (2019-2022). It is notable that overall average annual survival (49%) has been unchanged among both areas since harvest was reinstated in 2019 (48%).