

Grant Application



Elizabeth Schuyler

Email : elizabeth.schuyler@oregonstate.edu

Application ID : A4SE37

Custom Ref. -

Application Start Date: 2021-04-06 18:47:37

Application Completed Date: 2021-04-09 20:50:59

1 Have you ever applied for an OWF grant before?

yes

1.1 What was the name of the project?

Wildfire Effects on Sage Grouse Ecology

2 Have you ever been denied for an OWF grant before?

no

3 Project Title

Wildfire Effects on Sage Grouse Ecology

4 Name of my Organization

Oregon State University

5 If your organization is not a tax-exempt nonprofit, please list the name of your fiscal sponsor

-

If this does not apply to you, write N/A

N/A

6 Project Manager Full Name

Christian Hagen & Lizz Schuyler

7 Project Manager Mailing Address

-

Please enter full address with city, state & zip

104 Nash Hall, Corvallis, Oregon 97331

8	Project Manager Phone Number
541-410-0238	
9	Project Manager Email Address
christian.hagen@oregonstate.edu	
10	Please provide a brief biographical statement about yourself
<p>Christian Hagen has been involved in the research, monitoring and management of prairie grouse and prairie and sagebrush ecosystems since 1996. His expertise focuses on how these species respond to landscape-scale conservation and specifically demography and habitat use of prairie-grouse. As umbrella species, these birds serve as barometers to their ecosystems. He served as Science Advisor to USDA-NRCS Lesser Prairie-Chicken Initiative (2011-2020), where he focused on delivering scientifically based conservation efforts that provide mutual benefit for agricultural producers and prairie dependent species. Previously, he served as Sage Grouse Coordinator to the Oregon Department of Fish and Wildlife (2004-2011). Currently, as research faculty he continues to evaluate outcomes of conservation and disturbance as it relates to greater sage-grouse in the Great Basin. However, he has begun to expand his portfolio examining issues of water availability on the ecology of overwater nesting birds, and the (extremely rare) yellow rail in the Klamath Basin. Lizz Schuyler: I feel that as wildlife biologists, we play a vital role in understanding how drivers of change influence wildlife populations to ensure well informed conservation and management decisions are made. Therefore, the focus of my research is largely based on applied ecology, in which I use spatial and statistical modeling to understand how disturbances influence habitat use and population dynamics of harvestable species. Currently, my research with the Hagen Lab examines the effects of a large scale wildfire on a population Greater sage-grouse in the Trout Creeks Mountains in Oregon and Nevada.</p>	
11	Provide any social media handles you use - Enter social handles or URLs such as instagram, facebook, twitter, youtube, etc. so that we can use to cross promote on our channels - if you do not have any, please place N/A
N/A	
12	Please indicate if you are currently following Oregon Wildlife Foundation on our social media channels
<ul style="list-style-type: none"> - Instagram - Facebook - LinkedIn 	
13	Total estimated project cost
367169	
14	Funding that you are requesting from OWF - If you're request if for more than \$5,000, please contact Tim Greseth - tim@myowf.org before submitting your application.
5000	
15	What type of project are your proposing?
Wildlife	

16	Will your project address an Oregon Conservation Strategy habitat or species?
	yes
16.1	What habitat or species is addressed?
	Greater Sage-grouse and Sagebrush Ecosystem
17	Start date of project- Day/Month/Year
	02-07-2021
18	End date of project
	01-07-2023
19	Location of project
	Fields, OR, USA
20	Has a local, state or federal biologist reviewed this project?
	yes
20.1	What is their name and contact info?
	Mikal Cline, mikal.l.chline@state.or.us
21	Have you already or will you obtain necessary permits from all requisite agencies as applicable to proposed project?
	yes
22	What will the requested funds be used for?
	to purchase and refurbish GPS PTTs
23	Provide a brief Project Summary

In the summer of 2012, several wildfires burned >1 mil acres of sagebrush including some the best remaining sage-grouse habitat and highest density of sage-grouse in Oregon. For the future conservation of this species, it is critical to understand longer-term spatial response to catastrophic fire as well as impacts on their demography. This project will target the high density sage-grouse populations within perimeter of the Holloway fire. Since spring of 2013, more than 280 female sage-grouse have been captured and marked with solar-powered global positioning satellite (GPS) transmitters. The data collected from these collars and those into 2020 will provide an understanding as to the lag-effects of wildfire on sage-grouse ecology.

24 Upload pre-project pictures or a video -
By submitting these photos or video I warrant that I am the legal owner of this media and grant the Foundation permission to reproduce, exhibit, or publish them for all general purposes in relation to Oregon Wildlife Foundation's work. If you have questions about photo or video submissions please refer to myowf.org/grants for guidance.

□

□

□

25 Fill out the budget

Project Revenue	Cash	In-Kind	Committed / Pending
Oregon Wildlife Foundation Request	10000		
ODFW- PR GRANT	367169		Committed
TOA	2000		Pending
OSU Waiver - overhead reduction		20800	Committed
ODFW Upland Stamp	51735		Committed
Volunteer Trappers and Banders		9799	Committed
ODFW Staff		11613	Committed
REVENUE	430904.00	42212.00	
		TOTAL PROJECT SUPPORT	473116.00
Project Expenses	Cash	In-Kind	Total
Salaries + Benenefits	205712		205712.00
Equipment + Supplies	20200		20200.00
Travel	32000		32000.00
Technicians	50000		50000.00
Indirect	59257		59257.00
TOA - PTT refurbish	2000		2000.00
OSU Waiver		20800	20800.00
ODFW Staff - Trapping/Banding		11613	11613.00
ODFW Stamp - ARGOS/PTTs	51735		51735.00
Volunteer Trappers/Banders	9799		9799.00
OWF - PTT purchase	10000		10000.00
			0.00
			0.00
			0.00
		TOTAL PROJECT EXPENSES	473116.00
Balanced budget? This cell should read "0" ---->		NET	0.00

27 Upload letters of support

1 Document Uploaded

28 I understand that I am required to submit a Project Completion Report, copies of any publications or social media posts crediting the Foundation's support, and post-project pictures at the completion of my project

yes

Powered by **Submit.com**

— Grant Application

Elizabeth Schuyler

Application ID: **A4SE37**

1 Are the eligible?

No Answer Provided

Examining Greater Sage-Grouse Ecology in Relation to Large Scale Wildfire: A Prospectus

Prepared by C. A. Hagen, Ph.D., Oregon State University 6 April 2021

Project Summary

Greater sage-grouse (here-after sage-grouse) populations and distribution have diminished range wide by about 50% since European settlement. Sage-grouse populations in Oregon followed a similar pattern although distribution was less impacted than those across the range. Because of these past trends and on-going stressors sage-grouse, they are species of conservation priority in Oregon and across the West. One of the key stressors for sage-grouse in the Great Basin is conversion of sagebrush habitat to annual grasses primarily through catastrophic wildfire. Southeast Oregon is part of one of the largest contiguous sage-brush steppe habitats remaining within the extant range of greater sage-grouse. A series of very large fires occurred in SE Oregon in 2012, which affords the opportunity to increase our understanding of sage-grouse response to these fire-altered landscapes.

In the summer of 2012, several wildfires included within their perimeters more than 1 million acres of Oregon sage-grouse habitat; the Holloway and Long Draw fires were the two largest fires and included some of the best remaining sage-grouse habitat and highest density of sage-grouse in Oregon. For the future conservation of this species, it is critical to understand the acute as well as longer-term spatial response of sage-grouse to catastrophic fire as well as impacts on sage-grouse demography. Such knowledge is needed to predict sage-grouse population response to wildfire and to prioritize areas for pre-fire treatments to reduce fire risk in key areas, and post-fire treatments to minimize the impact of wildfire on sage-grouse populations.

Funding Request

I am requesting \$10,000 to purchase 3 GPS Transmitters (fondly referred to as Adopt-A-Collar) for field seasons 2022-2023. The primary funding source for this project are Pittman-Robertson Wildlife Restoration Act funds, which require a 25% non-federal match. ODFW Upland Stamp will provide the most of the non-federal match but not all. Thus, to unlock the \$ 367,169 of PR grant and to fully fund all the next 2 years of this work an investment of \$10,000 in FY-23 is needed.

Conservation Opportunity Area

The Conservation Opportunity Area (COA) Trout Creek Mountains (NBR-11) is a high priority because of its unique high elevation sagebrush ecosystem which is home to important Strategy species such as Lahontan cutthroat trout and sage-grouse. The Holloway fire consumed most if not all of the COA boundary. The proposed research aims to track the recovery of this ecosystem post-fire by following the ecological response of sage-grouse to

this altered landscape. The ultimate goal, is to provide land managers with a “roadmap” of habitats to be restored first, and habitat areas that would be protected first when suppression is plausible.

Project Description

This project will target the high density sage-grouse populations within perimeter of the Holloway fire, but it is expected that some of these birds may also use portions of the Long Draw fire. Since spring of 2013, more than 280 female sage-grouse have been captured and marked with solar-powered global positioning satellite (GPS) transmitters. The data collected from these collars will provide an understanding as to the lag-effects of wildfire on sage-grouse ecology. We have published 60 peer-reviewed science articles from the first 7 years of study.

This project will continue (proposed 2022-2023) to build on the baseline and begin to understand some of the lag-effects related to fire and sage-grouse ecology. Female sage-grouse will be captured using accepted procedures (primarily night-lighting) in the area of the Trout Creek Mountains and fitted GPS transmitters to gain detailed spatial information about sage-grouse habitat use in a large wildfire altered landscape. Transmitters are pre-programmed to gather multiple locations on a daily basis throughout the year. These location data are uploaded to the ARGOS satellite system. GPS transmitters are also equipped with GroundTrack® which allows for ground locations by researchers equipped with a UHF antenna and receiver.

Primary objectives:

Task 1: Deploy 30 GPS transmitters on female sage-grouse in the Trout Creeks in 2022 and 2023.

Our aim is to continue to deploy GPS transmitters to maintain a minimum of 30 radio marked females each year. We will use established spotlighting and hoop-net methods (Wakkinen et al. 1992) to capture female sage-grouse either within or near (≤ 2 km) the Holloway fire perimeter during January, March and April. The wing patterns and morphology of captured individuals are examined to determine their sex and age. We will attach 22-g ARGOS/GPS Solar PTTs (PTT-100, Microwave Telemetry 3 Inc., Columbia, MD 21045 USA) to yearling and adult females (Braun and Schroeder 2015), using a rump-mount technique (Rappole and Tipton 1991). Although males are not the primary target during these capture events, we will capture and band males when we encounter them to increase the number of banded birds within the population (see Task 1.3).

Task 2: Continue to monitor and document apparent nest and brood success in the Trout Creeks during 2022 and 2023.

We plan to continue to monitor nest and brood success of the radio marked females in the Trout Creeks using GPS location data and routine observations.

Apparent nest success:

If GPS locations of an individual are stationary for >18 hours, we will visit the location to document the bird's status. When visiting a potential nesting bird, we will use to avoid flushing females off their nests by locating nests with binoculars from a distance (≥ 10 m). We will revisit the nest after termination, and will consider a nest 'successful' if a female has incubated for approximately 27 days and ≥ 1 egg displayed with a distinct egg cap and intact egg membrane, signifying a hatched egg (Webb et al. 2012) or considered the nest 'failed' if these criteria are not met. If a nest fails, we will attempt to identify the cause of nest failure by looking for signs of nest predation.

Apparent brood success:

We will conduct brood counts at approximately 14, 24, 34, 44, and 54 days' post-hatch. We will use a single observer method to actively flush birds (Dahlgren et al. 2010). Individuals will be located with hand held receivers and Yagi antennas. Once the observer has a strong signal or visual on the brood, they will walk swiftly towards the location to flush the brood. After a bird is flushed, the observer will walk a 50 m grid at 2-4 m transects around the location to locate other birds that might attempt to avoid detection. If the hen is not observed or she does not have chicks, we will conduct another brood count within 30 minutes of the first flush. If the hen is observed without her brood during the count, we will conducted two more counts. If the hen does not have chicks after three counts, we will considered the brood failed (no chicks).

Task 3: Determine the effects of legal harvest of sage-grouse in the Trout Creeks.

Sage-grouse hunting in the Trout Creeks was reinstated in 2019 which had provided an opportunity to directly estimate harvest probability as well as examine the potential effects of harvest on sage-grouse movement and survival. Thus, we have been capturing and banding males (N= 30) while trapping females and have implemented the same strategy in the Warner GMU (N= 58) to serve as a reference to the Trout Creeks with respect to harvest rates (Figure 2). We will also capture and band hatch year birds in July and August before legal harvest occurs. The Warner GMU has not been affected by wildfire in recent history and hunting has been continuous in this unit since the early 1990s. Although significant progress has been made in our capturing and banding efforts of males, more time is needed to acquire

a sufficient sample size. Therefore, we propose extending these efforts for two additional years.

Task 4: Identify Greater sage-grouse source and sink habitats on a post-fire landscape.

We aim to identify source-sink dynamics for sage-grouse nesting and brood-rearing habitats within the Holloway fire perimeter. This requires the development of a landscape-level occupancy model to predict where females are likely to nest and brood-rear, followed by the development of a survival model to identify areas that pose a high risk for nest and chick survival. These two pieces of information combined will allow us to develop a spatially explicit predictive surface to determine areas where sage-grouse are likely to be successful (source) and to identify ecological traps (sinks) where nests and broods are likely to fail. This predictive surface will also aid in providing guidance on where to prioritize restoration efforts for future wildfires that occur within critical sage-grouse habitat (Task 3).

Task 5: Develop an individual-based model to predict and compare sage-grouse population responses to habitat restoration and recovery options 10 years on a post-fire landscape.

The rigorous and intensive research efforts from this project have provided a valuable and unique opportunity to comprehensively predict the response of a population of sage-grouse following a large-scale wildfire under different recovery scenarios. Our goal is to integrate previous research findings from this project (i.e., survival estimates (Anthony 2020), habitat selection maps (Schuyler et al. 2021), demographic risk maps (Objective A), and lek data (ODFW)) to build a spatially explicit individual-based model (IBM) to inform future recovery planning. The IBM will provide a common framework to predict sage-grouse abundance and persistence under baseline and alternative population scenarios. The IBM will also play a valuable role in recovery planning by targeting key areas that would benefit the most from recovery actions and provide insight into the magnitude and time scale of the recovery goals.

Outcomes

The results of this project will greatly enhance our understanding of the response and recovery time of sage-grouse populations to large-scale wildfires. Future management and restoration efforts can be based on the findings from this research project. The implications from this research can also aid in other agencies ability to respond to the influence of wildfire on sage-grouse population dynamics and sage-grouse habitat.

My background

I have worked extensively in both conservation and research arenas of North American grouse species (sage-grouse, prairie chickens, and sharp-tailed

grouse) since 1996. I served as Sage Grouse Coordinator for ODFW from 2004-2011. Since 2011, I have been a research-faculty member at Oregon State University (Associate Professor), where I primarily serve as Science Adviser to NRCS's Lesser Prairie-Chicken Initiative. I now have the ability to maintain a focused research program and mentor a small cadre of graduate students in Oregon. As a land grant institution, OSU is well poised to foster and maintain this long-term ecological research on one of Oregon's iconic species, the greater sage-grouse.



Oregon

Kate Brown, Governor

Department of Fish and Wildlife

Hines Office
Malheur Watershed District
237 Hwy 20 S.
PO Box 8
Hines, Oregon 97738
(541) 573-6582
FAX (541) 573-5306

April 7, 2021

Tim Greseth, Executive Director
Oregon Wildlife Foundation
901 SE Oak St, Suite 103
Portland, OR 97214

Dear Mr. Greseth,

I am writing to express support for the "Wildfire Effects on Sage Grouse Ecology: implications for post-fire restoration" grant proposal being submitted by Oregon State University (OSU). This grant proposal represents continued funding for the first long-term research project evaluating the response of greater sage-grouse to wildfire. In 2012, the Holloway Fire burned a large portion of the sage-grouse core area in the Trout Creek mountains; nearly 100,000 ha burned in southern Harney and Malheur counties, Oregon. Wildfire has been identified as a primary threat to sage-grouse in Oregon, and this OSU research project, now entering its 9th year, continues to provide novel and highly valuable information for the conservation and management of sage-grouse in Oregon. Oregon Department of Fish and Wildlife is co-funding this project, and the provision of funding by Oregon Wildlife Foundation this year would help achieve ODFW's and OSU's goal of extending the research project through the full initial 10 years of habitat recovery following the Holloway Fire.

We appreciate your consideration of the "Wildfire Effects on Sage Grouse Ecology: implications for post-fire restoration" grant proposal. If you need additional information please do not hesitate to contact me at (541) 573-6582.

Sincerely,

Skyler Vold
Sage-Grouse Conservation Coordinator





