

Grant Application



Rachael Orben

Email : raorben@gmail.com

Application ID : A76OR159

Custom Ref. -

Application Start Date: 2024-02-11 22:43:37

Application Completed Date: 2024-02-12 22:41:04

1 Have you previously applied for a grant from the Oregon Wildlife Foundation?

yes

1.Y.1 What was the name of the project?

Understanding Declining Population of Tufted Puffins

2 Has a previously submitted grant application been denied funding support?

no

3 Title of your proposed project

Monitoring Tufted Puffin Diets in Oregon

4 Name of your organization

Oregon State University

5 If your organization is not a 501c3 nonprofit, please identify your fiscal sponsor

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

Oregon Wildlife Foundation

6 Your name or the name of the Project Manager

Rachael Orben

7 organization mailing address

Please enter full address with city, state & zip

rachael.orben@oregonstate.edu

8 your phone number or that of the Project Manager

831-212-2696

9 your email address or that of the Project Manager

rachael.orben@oregonstate.edu

10 a brief biographical statement about yourself or that of the Project Manager

Rachael Orben is an Assistant Professor (Senior Research) in the Department of Fisheries, Wildlife, and Conservation Sciences at Oregon State University. She leads the Seabird Oceanography Lab at Hatfield Marine Science Center. Dr. Orben has studied seabirds for nearly 20 years. She specializes in using biologging to track the behavior and movement of seabirds in relationship to environmental conditions.

11 social media handles that your organization uses

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

@RachaelOrben

12 are you are currently following Oregon Wildlife Foundation on its social media channels?

- Twitter
- LinkedIn
- Facebook
- Instagram

13 what is the total estimated cost of your project?

11550

14 Funding that you are requesting from OWF

If your request is for more than \$5,000, please contact Tim Greseth tim@myowf.org before submitting your application.

2000

15 what type of project are you proposing?

fish or wildlife research

16 will your project address an Oregon Conservation Strategy habitat or species?

yes

16.Y.1 What habitat or species is addressed?

Tufted Puffin

17 what is the location of your proposed project?

Cannon Beach, OR, USA

18 what ecoregion and Conservation Opportunity Area (COA) is your proposed project located in?

See <https://www.compass.dfw.state.or.us/> for the information you need to answer this question

Nearshore

19 what is the anticipated start date of your project?

Day/Month/Year

01-04-2024

20 what is the anticipated end date of your project?

31-03-2025

21 has a local, state or federal biologist reviewed this project?

yes

21.Y.1 What is their name and contact info?

Shawn Stephenson, Shawn_Stephenson@fws.gov

22 have you already or will you obtain necessary permits from all requisite agencies as applicable to proposed project?

yes

23 what will the funds you are requesting be used for?

this would be a good time to review, if you haven't already done so, our grantmaking guidelines at www.myowf.org/grants

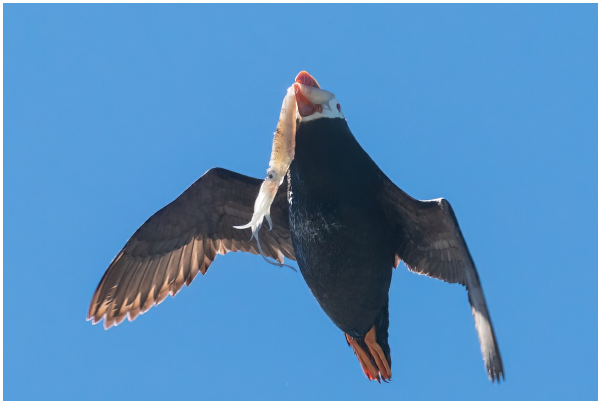
Travel & Field Housing

24 provide us a brief summary of your proposed project

One of the major hurdles to increasing our ecological knowledge of coastal birds in Oregon is a lack of specific diet information and how this varies over time. This is particularly relevant for the emblematic tufted puffin. The advent of digital cameras and associated technological advances have improved the capacity of photographers to capture elusive animals in motion. Tufted Puffins fly into Haystack Rock in Cannon Beach, Oregon carrying bill loads of prey and are a challenging photographic subject. A successful data collection effort is contingent on the patience and dedication of the observer. In 2024, we are requesting funding support to continue our annual bill load photography effort to monitor diets of Tufted Puffins in Oregon. This will mark the 3rd summer of data collection using the camera equipment supported by Oregon Wildlife Foundation.

25 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.



			0.00
		TOTAL PROJECT EXPENSES	11550.00
Balanced budget? This cell should read "0" ---->		NET	0.00

27 upload a narrative of your proposed project

Please make sure your narrative is no more than 7 pages long, single spaced, 12 pt. font (Calibri preferred).

1 Document Uploaded

28 upload letters of support

letters of support are strongly encouraged. in particular a letter from a supervising biologist

1 Document Uploaded

29 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

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— Grant Application

Rachael Orben

Application ID: **A76OR159**

Monitoring Tufted Puffin Diets in Oregon

Principal Investigator: Dr. Rachael Orben

Major cooperators(s):

Shawn Stephensen, Wildlife Biologist, USFWS, Oregon Coast Islands NWR Complex; Friends of Haystack Rock

Primary location of work: Cannon Beach, Oregon

Abstract

One of the major hurdles to increasing our ecological knowledge of coastal birds in Oregon is a lack of specific diet information and how this varies over time. This is particularly relevant for the emblematic tufted puffin. The advent of digital cameras and associated technological advances have improved the capacity of photographers to capture elusive animals in motion. Tufted Puffins fly into Haystack Rock in Cannon Beach, Oregon carrying bill loads of prey and are a challenging photographic subject. A successful data collection effort is contingent on the patience and dedication of the observer. In 2024, we are requesting funding support to continue our annual bill load photography effort to monitor diets of Tufted Puffins in Oregon. This will mark the 3rd summer of data collection using the camera equipment supported by Oregon Wildlife Foundation.

Rational

One of the major challenges in managing Oregon's living marine resources is that complicated predator-prey relationships make it difficult to predict the continued availability of these resources. For instance, stock assessments of Oregon's commercially-valuable fisheries are performed regularly, but much of the variation in these stock sizes may depend on the dynamics of the varied small forage fishes they feed upon, which often receive less attention from scientists and managers. These forage fishes drive ecosystem function by enabling the transfer of nutrients and energy from small, planktonic sources to their predators, which include large fish, marine mammals, and seabirds (Pikitch et al. 2013). Although forage fishes are often abundant and play outsized roles in ecosystem performance, they remain poorly understood, especially in coastal waters (Rivers et al. 2022). This may be because traditional means of researching forage fish stocks are expensive and time-consuming. Recently, breeding seabirds have been noted as exceptional samplers of local forage fish populations (Schoen et al. 2018, Rivers et al. 2022).

Tufted puffins are a generalist foraging seabird and prey upon a diverse set of prey species (Schoen et al. 2018). Their diet composition is expected to reflect prey availability within 100 km of their nesting colonies, effectively making them indicators of forage fish abundance and availability on the Oregon coast. Their diet composition can also act as a metric of ecosystem health. Dietary data from Tufted Puffins nesting in Oregon will allow managers to link puffin populations to their marine prey in coastal Oregon and conversely gain a better understanding of changes in forage fish populations. The Tufted Puffin, along with the forage fishes they depend on, are Strategy Species in the Oregon Department of Fish & Wildlife (ODFW) Oregon Nearshore Strategy. Preliminary data from summer 2022 and 2023 indicate that prey species of Tufted puffins include squid, larval fishes, and the following Oregon Nearshore Strategy Species: Pacific herring/sardine, Pacific lamprey (a Federal Species of Concern and an Oregon Sensitive species), smelts, salmonids, and Pacific sandlance (Figure 1). Forage fish management occurs under ODFW's Forage Fish Management Plan, which aims to quantify and enact conservation and management of forage fish populations that play a central role in the health of both coastal ecosystems and Oregon's fisheries.

In Oregon, Tufted Puffin populations have declined substantially starting in the 1980s. This, along with predicted climate change mediated declines, motivated a recent review by the USFWS for listing under the Endangered Species Act. However, ESA listing was deemed unwarranted given the abundance of Tufted Puffins in the northern portion of their range, despite the rapid decline of Tufted Puffin populations in the contiguous United States (USFWS, 2020). Very little is known about the status and ecology of the population nesting in Oregon due to their sensitivity to disturbance and often inaccessible nesting habitat (Stephensen, 2018).



Figure. 1. Tufted puffins with fish flying into Haystack Rock, 2022. Prey items pictured include a Pacific lamprey, squid, Pacific herring/sardine, and larval fishes.

The advent of modern and high-tech digital cameras have improved the capacity of photographers to capture elusive animals in motion. Tufted Puffins fly into Haystack Rock carrying bill loads of prey and are an exceptionally challenging photographic subject. Until we purchased a modern digital camera in 2022 with support from OWF, this method of non-invasive data collection was not considered possible for this species in Oregon.

Objectives

1. Photograph Tufted Puffins when they are delivering bill loads of prey to their chicks.
2. Track the changing composition of forage fish species sampled by Tufted Puffins.

Procedures

Tufted Puffin chicks hatch in early July and adults bring bill loads of prey to feed chicks daily. A project field technician will be based in Cannon Beach to photograph Tufted Puffins mid-July to mid-August arriving at Haystack Rock. The field technician will be trained in bill load photography at the Yaquina Head common murre colony in Newport, Oregon. A professional-quality camera and lens set-up tailored to photographing birds in flight will be used for this project (Sony A9 mirrorless body, 200-600mm lens and a 1.4x teleconverter). The combination of the telephoto reach and the advanced stabilizing capabilities of this lens make these photos possible. The field technician will record field effort, eagle predation disturbances, document informal outreach interactions with visitors to Haystack Rock, and the photos will be used to document the total number and timing of bill loads delivered. Photos will be sorted, cataloged for prey ID, and preliminary prey ID conducted concurrent with the summer field effort. A Faculty Research Assistant (FRA) with specialized expertise will review the photos and perform the technical prey ID portion of the project.

Impact

Oregon's coastal environment and marine ecosystems are expected to undergo continued alterations due to climate change. This study will enhance our understanding of Tufted Puffin diets and the changing availability of different forage fishes along the Oregon Coast. Forage fishes drive ecosystem function in our

marine waters and are important food for many commercially-valuable fishes and for many charismatic seabirds, like Tufted Puffins. Despite this, our understanding of the availability of this diverse group of species is limited. Tufted Puffins and many of these forage fish species are designated as Strategy Species in ODFW's Oregon Nearshore Strategy. Without adequate information on how these forage fishes contribute to the diet of this iconic seabird, managers are unable to make informed management decisions and no ecological context for the decline of this species is available. Without concrete data this declining seabird species will continue to be overlooked. This project will develop methods to collect vital data on Tufted Puffin diet and consequently nearshore forage fish prey availability. The project will produce a multi-year time series of diet data that will contribute to ecosystem-based fisheries management. In addition to publishing the results in a peer-reviewed journal, we plan on communicating the project with coastal communities through conversations with visitors at Haystack Rock, blog posts, and through our continued relationship with Oregon Wildlife Foundation.

This project will contribute to the management of marine living resources on the Oregon coast. Data on the relative contributions of different forage fishes to Tufted Puffin diet will be contributed to annual ecosystem assessments that help inform regional fisheries management (e.g., Weber et al. 2021). These ecosystem assessments involve agency biologists, academic researchers, and resource managers, ensuring that these results will directly reach a relevant audience. This project will also provide a much-needed first step in documenting the diet of a small but well-known population of a charismatic seabird. Tufted Puffins are important tourism-draws for some of Oregon's small coastal communities and are a valued-part of the coast's natural heritage. Additional information on the requirements of this declining species will thus be important for managers intent on preserving the economic and cultural benefits that our coastal communities derive from this iconic species.

References

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12-February-2024

Oregon Wildlife Foundation
2337 NW York St. #201C
Portland, OR 97210

Dear Project Committee:

I am writing in support of Dr. Rachael Orben's proposal: *Monitoring Tufted Puffin Diets in Oregon*. Dr. Orben's work would contribute to the conservation of an Oregon Strategy Species by providing vital data that will allow us to better understand the Tufted Puffin's diet and subsequently help to inform critical management decisions.

In 2021, the U.S. Fish and Wildlife Service estimated that only 553 individual Tufted Puffins remain in Oregon--a staggering decline from nearly 5,000 puffins counted on a similar survey back in 1998. The decline of Tufted Puffins along the southern portion of their range is not fully understood, and the dramatic declines documented over such a short time span demands immediate attention. Warming ocean temperatures related to climate change and subsequent impacts to the Tufted Puffin's forage fish prey base is thought to be a primary factor, but more information is needed.

In September 2023, Audubon launched a project in support of coordinated Tufted Puffin conservation, focused primarily on the California Current. This new collaborative approach involving agencies, academia, and nonprofit organizations will leverage expertise and limited resources to close data gaps, implement conservation strategies, and bolster public awareness and support of Tufted Puffins – all in hopes of restoring and maintaining self-sustaining populations of the species within their historical range in Oregon, Washington, and California. A better understanding of the Tufted Puffin's diet was noted as a key priority by the stakeholders involved with this new effort.

Haystack Rock in Cannon Beach serves as one of the Northwest's most accessible locations to observe puffins during breeding season, and makes it the ideal location to photograph – utilizing appropriate equipment – the adults when they are delivering bill loads of prey to their chicks. Providing the funds to support Dr. Orben's research will help fill a critical data gap that will be instrumental in identifying and prioritizing conservation actions for not only for an iconic seabird, but also for the forage fish on which its existence along the Oregon coast depends. Many thanks for your consideration to support this important, ongoing research.

Sincerely,

/s/ Katherine Luscher

Sr. Coordinator, Tufted Puffins

National Audubon Society

katherine.luscher@audubon.org

(c) 503.816.9192

















