

Grant Application



Rachael Orben

Email : raorben@gmail.com

Application ID : A23OR65

Custom Ref. -

Application Start Date: 2022-02-10 09:58:05

Application Completed Date: 2022-02-10 19:22:07

1 Have you ever applied for an OWF grant before?

yes

1.1 What was the name of the project?

Enhancing our understanding of the declining population of tufted puffins (*Fratercula cirrhata*) on the Oregon coast through a multi-pronged non-invasive approach

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

no

3 Project Title

Using photography to determine tufted puffin diet

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

Oregon Wildlife Foundation

6 Project Manager Full Name

Rachael Orben

7 Project Manager Mailing Address

-

Please enter full address with city, state & zip

Hatfield Marine Science Center, 2030 Marine Science Drive, Newport, OR 97365

8	Project Manager Phone Number
	541-264-5626
9	Project Manager Email Address
	rachael.orben@oregonstate.edu
10	Please provide a brief biographical statement about yourself
	Rachael Orben is an Assistant Professor (Senior Research) at 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 movements of seabirds in relationship to environmental conditions.
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
	https://www.instagram.com/puffinsandprey/ @RachaelOrben
12	Please indicate if you are currently following Oregon Wildlife Foundation on our social media channels
	<ul style="list-style-type: none">- Instagram- Twitter- Facebook
13	Total estimated project cost
	13000
14	Funding that you are requesting from OWF - If you're request is for more than \$5,000, please contact Tim Greseth - tim@myowf.org before submitting your application.
	4000
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?
	Tufted Puffin

17	Start date of project- Day/Month/Year
	01-04-2022
18	End date of project
	31-12-2022
19	Location of project
	Haystack Rock, Cannon Beach
20	Has a local, state or federal biologist reviewed this project?
	yes
20.1	What is their name and contact info?
	Shawn Stephensen, Shawn_Stephensen@fws.gov
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?
	Camera Equipment
23	Provide a brief Project Summary
	<p>In 2021, with support from OWF, we successfully developed a community science initiative called Birds with Fish which is designed to encourage and engage experienced nature photographers to submit photographs of birds with fish in their bills or talons. Birds with Fish has placed a special emphasis on collecting photographic data on Oregon's tufted puffins at Haystack Rock in Cannon Beach. The unique intertidal location of Haystack Rock makes photography a practical and noninvasive method to study tufted puffin diets. In 2021, a researcher supported by OWF spent 6 weeks in Cannon Beach taking over 12,000 photographs of puffins with bill loads – photo processing is still ongoing. However there is a clear need for photographic equipment that improves zoom capabilities to allow accurate prey identification. Our goals for 2022, include continuing to develop and gain interest in Birds with Fish and placing a field technician at Haystack Rock for a month to collect tufted puffin diet photographs with camera equipment fit for purpose. We are requesting additional support from OWF for the purchase of this camera equipment. The tufted puffin is an Oregon Strategy Species with diminishing habitat and a reliance on coastal forage fish populations. Our project will provide much needed information on the diets of tufted puffins on the Oregon coast.</p>
24	<p>Upload pre-project pictures or a video -</p> <p>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.</p>
25	Fill out the budget

Project Revenue	Cash	In-Kind	Committed / Pending
Oregon Wildlife Foundation Request	4000		Pending
OSU Marine Studies Initiative	3000	0	Committed
PADI	5000	0	Pending
Oregon Wildlife Foundation Fundraising	1680	0	Committed
Oregon Birding Association	1000	0	Committed
Friends of Haystack Rock	0	3000	Pending
REVENUE	14680.00	3000.00	
		TOTAL PROJECT SUPPORT	17680.00
Project Expenses	Cash	In-Kind	Total
Birds with Fish Project Manager	2180		2180.00
Photoprocessing	4500		4500.00
Camera Equipment	5000		5000.00
Field Technician	3000		3000.00
Field Housing	0	3000	3000.00
			0.00
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		TOTAL PROJECT EXPENSES	17680.00
Balanced budget? This cell should read "0" ---->		NET	0.00

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

1 Document Uploaded

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](https://submit.com)

RESEARCH PROPOSAL FOR OREGON WILDLIFE FOUNDATION 2022 FIELD SEASON

Using photography to determine tufted puffin diet

Principal Investigator:

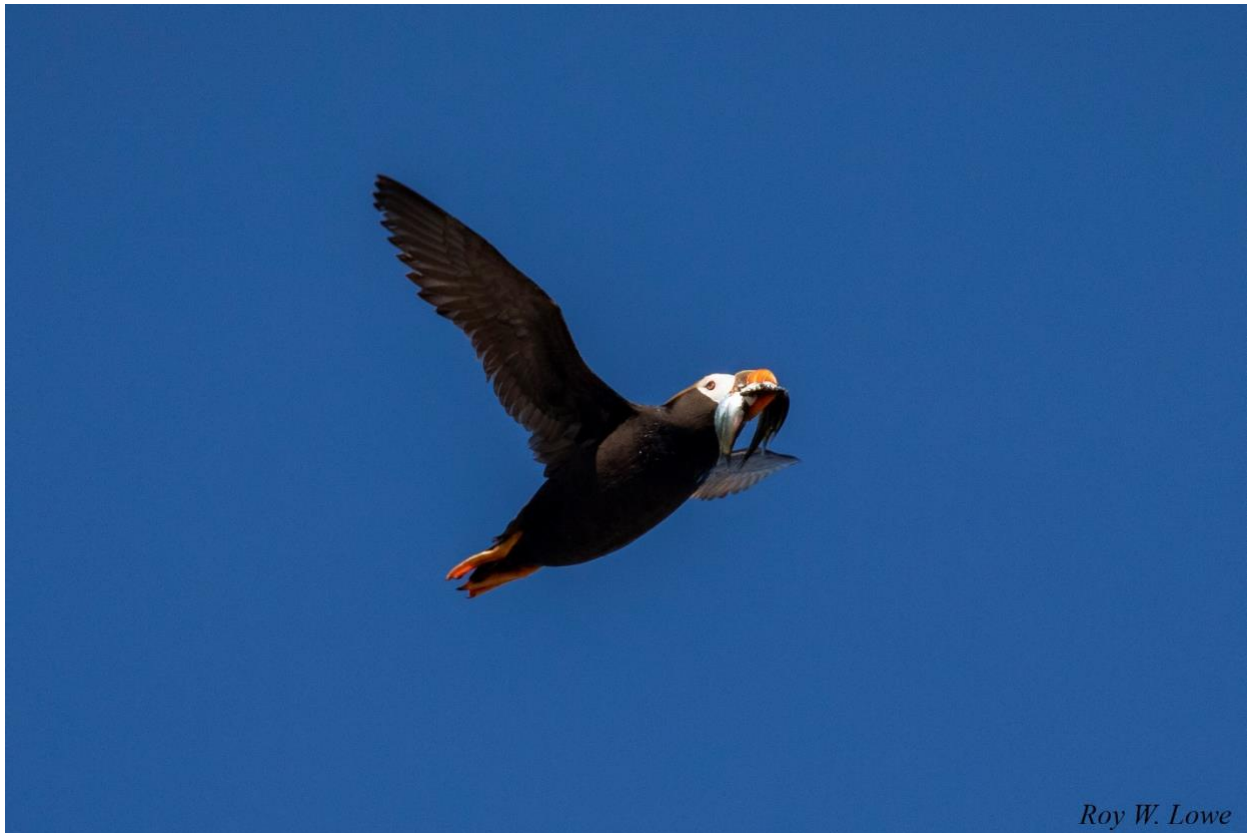
Dr. Rachael Orben
Department of Fisheries, Wildlife, and Conservation Sciences
Oregon State University
Hatfield Marine Science Center
Newport, Oregon

Major cooperators(s):

Shawn Stephensen, Wildlife Biologist, USFWS, Oregon Coast NWRC
Friends of Haystack Rock

OSU Professional Science Masters Student: Noah Dolinajec

Primary location: Cannon Beach, Oregon



Roy W. Lowe

Photo: A puffin carries five forage fish at Haystack Rock in the summer of 2021.
Photo submitted to *Birds with Fish* by Roy Lowe.

The tufted puffin (*Fratercula cirrhata*) is *the* emblematic seabird species of the Oregon Coast. Its image can be seen on buses, t-shirts and mugs, a large tufted puffin statue looks out over Coquille Point and visitors to the Oregon Coast Aquarium can view tufted puffins from close proximity. However, there are limited viewing opportunities to view tufted puffins in the wild on the Oregon Coast. Tufted puffins are diving seabirds and rely on the availability of forage fish (Piatt & Kitaysky 2002). Tufted puffins nest in earthen burrows and rocky crevices on off-shore islands in the North Pacific - ranging from Japan to the Bering Sea and south to the US West Coast. However, despite this wide range of distribution, populations in the southern reaches of the species' range are experiencing contractions.

The tufted puffins in the California Current Large Marine Ecosystem (CCLME) saw large declines in population numbers from the 1980's to 2008. In 1988, the U.S. Fish and Wildlife Service (USFWS) conducted a coast-wide survey of the Oregon islands; this survey recorded 4,858 birds nesting on 49 distinct islands. In 2008, the next coast-wide survey found just 142 birds observed on 15 islands (Kocourek et al. 2009). Furthermore, habitat modeling has identified that populations in northern California, Oregon and Washington are at risk of complete (or virtually complete) extirpation by 2050 under climate change scenarios (Hart et al. 2018). In addition to climate change, oil spills, fisheries bycatch, mammalian and avian predation, invasive species competition, and anthropogenic disturbances can all negatively impact tufted puffin populations (USFWS 2020).

In 2018, the USFWS began a species status assessment for tufted puffins to be listed under the U.S. Endangered Species Act (ESA). The Species Status Assessment (SSA) was drafted in March of 2020 and in early December of 2020, the USFWS published their decision not to list the tufted puffin under the ESA due to insufficient data differentiating the populations of tufted puffins in the southern ranges of their distribution from the stable/increasing Alaskan populations. One of the data gaps identified was the prey composition of tufted puffin chicks along the Oregon coast.

Investigation of tufted puffin chick diet composition through digital photography

Understanding the composition of a seabird's diet supplies vital information regarding regional variations in the health and function of marine food webs. For tufted puffins in Oregon, this information could fill valuable data gaps in pelagic feeding habits of tufted puffins, and how forage fish prey availability may affect population trends. This diet information can inform future management decisions for both tufted puffins and their prey species. For instance, in 2021 a photo of a tufted puffin carrying a pacific lamprey was obtained by a *Bird with Fish* participant. While pacific lamprey are likely not a common prey item for puffins, this is notable as pacific lamprey are listed as a sensitive species in Oregon. Additionally, we know from common murre chick diets that there has been a measurable shift in sand lance availability over the last two-decades on the central coast of Oregon, which likely has also impacted tufted puffin populations given sand lance are documented in photos of tufted puffin bill loads.

In 2021, we demonstrated that the collection of a prey photography for tufted puffins at Haystack Rock was a realistic goal. These methods will be extended to the 2022 season with a refined focus. During the chick rearing period a field technician will photograph tufted puffins with bill-

loads at Haystack Rock from mid-July to mid-August. The funds requested from OWF would support a substantial upgrade in camera equipment. In 2021, we used a camera borrowed from the USFWS with a 400mm lens capable of shooting at f6.0. A camera set-up designed for purpose, with a 400-600mm lens and teleconverter (total 800mm), gimbal head tripod, and a modern digital SLR body would much improve our ability to collect identification quality photos. Using this camera, a field technician will take advantage of the tidal schedule and weather conditions, to maximize high quality photographs. Time observing and eagle disturbances will be recorded.

Additionally, photos of common murre bill loads will also be opportunistically taken. We anticipate that there will be entire field days without the collection of a tufted puffin bill load photograph. But, the collection of even a small sample size (~n=30) bill load photographs in nesting season will provide invaluable baseline information. Consecutive years of this data collection is vital to understand how tufted puffin chick diets change with fluctuating environmental conditions.



Photo 1: A tufted puffin with a bill load of larval fishes taken in 2021 using a 400mm lens at f6.0 at Haystack Rock. Additional magnification would allow individual prey items to be counted and increase our ability to identify prey items. Photo: N. Dolinajec.

Community Sourced Photography: *Birds with Fish*

Secondly, we will continue to advertise and expand our wide-spread community science outreach program, *Birds with Fish*, that encourages professional and skilled amateur photographers to contribute to the collection and submission of photos of coastal birds with fish to our [web portal](#) that was developed in 2021. We anticipate this portion of the project to be to produce useful results for tufted puffins and other piscivorous seabirds of interest on the Oregon coast. Interspecies diet data will continue to help provide equally strong indicators about coastal ecosystem health.

Birds with Fish garnered significant support within the nature photography community on the Oregon coast, including volunteer training from wildlife photographer Keith Wallach and participation by a collection of high quality photographers. This initiative will continue to drive data collection complimentary to the dedicated field technician. The main species of interest will be the tufted puffin, but photographers will be encouraged to submit photos/metadata for other marine foraging species as well (e.g. common murre, pigeon guillemots, marbled murrelets, ospreys and eagles). The campaign will be advertised in collaboration with the OCNWRC, Friends of Haystack Rock, Haystack Rock Awareness Program, and the Oregon Wildlife Foundation through social media, blogs and targeted outreach to groups such as the Portland Audubon Society and Lincoln County Audubon Society.

Support from Oregon Wildlife Foundation

With support from the Oregon Wildlife Foundation, we will purchase a new camera setup that will greatly increase our ability to capture tufted puffin bill loads at Haystack Rock. These projects not only contribute to building a more complete understanding of Oregon's iconic tufted puffins but also provide Oregon's coastal communities with a chance to have an active role in the continued monitoring and conservation projects aimed at tufted puffins and other coastal birds.

Under the supervision of the PI of Oregon State University's Seabird Oceanography Lab, in collaboration with OCNWRC and with 2022 summer field work led by a dedicated field technician, the results from this project will form the basis of a Professional Sciences Masters degree in Fisheries and Wildlife at OSU.

This information will fill a critical and time sensitive knowledge gap necessary for tufted puffin monitoring and management in the long term. Successful completion of this project will lay the foundation for further study and funding proposals of this species in Oregon.

Conclusion

Oregon's coastal environment and marine ecosystems are expected to undergo continued changes due to climate change; This project is designed to dramatically enhance our understanding of Oregon's tufted puffin populations, a declining yet emblematic and important seabird on the Oregon coast. The tufted puffin, along with the forage fish they depend on, are Strategy Species in the Oregon Nearshore Strategy. Forage fish management occurs under ODFW's Forage Fish Management Plan, which aims to quantify and enact conservation and management of Oregon's forage fish populations that play a central role in the health of both Oregon's coastal ecosystems and fisheries. This project will expand an already developed effective and easily manageable non-invasive method to collect vital data on tufted puffin prey composition and consequently nearshore forage fish prey availability. Tufted puffin research in Oregon is minimal and our project would provide the foundation for long term research and conservation of an iconic Oregon species on the brink.

We will continue to focus heavily on engaging coastal communities in the research and process through a calculated community science effort. In addition to our goals of publishing the results of this study in a peer-reviewed journal, we plan on devising a series of communication methods with coastal community members through conversations with visitors of the Haystack Rock, blog posts updating the project status, targeted outreach to wildlife photographers and birders, and status reports shared with our collaborators and support groups such as Friends of Haystack Rock, Haystack Rock Awareness Program, Portland, Kalmiopsis, Lane and Lincoln County Audubon Societies, the USFWS, ODFW, Marine Studies Initiative of Oregon State University, Bureau of Land Management, Oregon Shores Conservation Coalition, and the Oregon Birding Association and with financial support from the Oregon Wildlife Foundation.

REFERENCES CITED:

- Hart CJ, Kelly RP, Pearson SF (2018) Will the California Current lose its nesting Tufted Puffins? PeerJ 6:e4519–26
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- Piatt, J.F. & Kitaysky, A.S (2002). Tufted Puffin (*Fratercula cirrhata*). *The Birds of North America* No. 708. doi:10.2173/bna.708
- Schoen, S. K., Piatt, J. F., Arimitsu, M. L., Heflin, B. M., Madison, E. N., Drew, G. S., ... DeGange, A. R. (2018). Avian predator buffers against variability in marine habitats with flexible foraging behavior. *Marine Biology*, 165(3). doi:10.1007/s00227-018-3304-4
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