

Grant Application

Jennifer Locklear



Email : jennifer.locklear@aquarium.org

Application ID : A45LJ102

Custom Ref. -

Application Start Date: 2023-02-02 23:31:26

Application Completed Date: 2023-02-09 20:28:11

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

yes

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

Dive Propulsion Vehicle (#21-26) and Video Camera (#19-30) for Dive Team research partnership.

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

yes

2.Y.1 What was the name of your project that was denied?

Rebreather Units for Aquarium Research Dive Team

3 Title of your proposed project

Nitrox Equipment for Aquarium Research Dive Team

4 Name of your organization

Oregon Coast Aquarium

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

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

N/A

6 Your name or the name of the Project Manager

Doug Batson, Aquarium Dive & Boat Safety Officer

7	organization mailing address
	Please enter full address with city, state & zip
	2820 SE Ferry Slip Rd, Newport, OR 97365
8	your phone number or that of the Project Manager
	541.283.1161
9	your email address or that of the Project Manager
	Doug.Batson@aquarium.org
10	a brief biographical statement about yourself or that of the Project Manager
	Doug Batson has been on the Aquarium's Dive Research team since 2014. He trains and oversees staff and dive volunteers for the Aquarium's exhibits. His team provides the boat and dive support on oceanic science research projects in collaboration with the Oregon Dept Fish & Wildlife, Oregon State University, University of Oregon, Partnership for the Interdisciplinary Studies of Coastal Oceans, Marine Reserves and Oregon Kelp Alliance (ORKA). He is a member of the ORKA's Scientific and Technical Advisory Committee.
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
	facebook.com/OregonCoastAquarium/, youtube.com/user/OrCoastAquarium, https://www.instagram.com/oregoncoastaquarium/, https://twitter.com/orcoastaquarium
12	are you are currently following Oregon Wildlife Foundation on its social media channels?
	- Facebook - Twitter
13	what is the total estimated cost of your project?
	9370.00
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.
	4685.00
15	what type of project are your 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?

Primarily nearshore species in Oregon Coast Marine Reserves and Kelp Forests.

17 what is the location of your proposed project?

Oregon Coast Marine Reserves

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

Depoe Bay Area COA ID 023; Cascade Head COA ID 019; Coos Bay COA ID 043

19 what is the anticipated start date of your project?

Day/Month/Year

09-03-2023

20 what is the anticipated end date of your project?

01-01-2025

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

yes

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

Lindsay Aylesworth (ODFW), Lindsay.X.Aylesworth@odfw.oregon.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

Purchase 12 Nitrox scuba cylinders, 6 Nitrox scuba regulators, and 2 Nitrox dive computers for nearshore dive research.

24 provide us a brief summary of your proposed project

The Oregon Coast Aquarium (OCAq) research dive team is contracted by the Oregon Department of Fish & Wildlife (ODFW) to perform ecological monitoring survey dives in Oregon's recently established marine reserves. Marine reserves are a conservation strategy to protect and replenish local nearshore kelp, invertebrates, and fish populations. The collaboration of the OCAq and the ODFW in performing long-term ecological monitoring in the marine reserves is entering its tenth year. The Oregon Kelp Alliance (ORKA) has been tasked with surveying the Oregon coast in order to create an inventory of kelp forest habitats, and also to develop and implement recovery strategies. Kelp forests constitute the Oregon coast's most biodiverse habitats, and have been disappearing at a rapid and alarming rate due to a number of coinciding threats. The OCAq is a partner of the ORKA and has been contracted to take part in this conservation research, beginning in 2023. Time at depth is a research diver's most precious and limited resource, and Nitrox breathing gas (which has decreased levels of nitrogen) offers a highly effective means of extending it. With Nitrox diving equipment, our team would be able to (1) complete more surveys on dives, (2) complete more survey dives in a day, (3) bring more cylinders to remote locations, enabling us to continue surveying for multiple days in a row, and (4) widen our safety margin when operating in remote locations by reducing the risk of decompression illness.

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.

Beneath the Surface: Diving for the Oregon Marine Reserves: <https://www.youtube.com/watch?v=k6qR5V6qv-8>

Kelp Survey with Oregon Coast Aquarium: <https://www.youtube.com/watch?v=qjwNNmQCI9Q>

Acoustic Receiver Deployment: <https://www.youtube.com/watch?v=bp-ysWntPbY>

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

3 Documents 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

Powered by **Submit.com**

— Grant Application

Jennifer Locklear

Application ID: **A45LJ102**



PROJECT NAME: Nitrox Equipment for the Aquarium Research Dive Team

CONTACTS:

Grant writer - Molly Dumas, Dir. of Development, 541.283.1106, c.801.943.2492,
molly.dumas@aquarium.org

Project Manager - Doug Batson, Dive and Boat Safety Officer, 541.283.1161

Department Supervisor - Jim Burke, Dir. of Animal Husbandry, 541.283.1160, jim.burke@aquarium.org

MISSION STATEMENT: Our mission is to create unique and engaging experiences that connect you to the Oregon coast and inspire ocean conservation.

SUMMARY: The Oregon Coast Aquarium (OCAq) seeks an Oregon Wildlife Foundation (OWF) \$4.6k matching grant for the purchase of Nitrox scuba diving equipment, which would be utilized by our research dive team to (1) conduct ecological surveys of the Oregon Marine Reserves in partnership with the Oregon Department of Fish & Wildlife (ODFW), and (2) complete kelp forest conservation surveys along the length of the Oregon coast in partnership with the Oregon Kelp Alliance (ORKA).

A marine reserve is an area of the nearshore coastline in which fishing and wildlife harvesting is entirely prohibited. This conservation strategy creates sanctuaries that protect a baseline population of local species and serve as a seedbank to other areas. Established between 2012 and 2016, Oregon's five marine reserves protect kelp forests, invertebrates, and fish.

Kelp forests along the Oregon coast form habitats for the nearshore's most biodiverse ecosystems. Due to a host of threats (detailed in Section I below) these undersea forests are vanishing at an alarming rate. Beginning in 2023, the ORKA and its partners have been tasked with surveying and inventorying the coast's remaining kelp beds to assess the extent and trends of kelp forest depletion. Once this critical data is in hand, kelp forest recovery plans can be designed and implemented.

While the ODFW is tasked with performing long-term monitoring of the reserves to assess the effects of fishing-pressure removal on the ecosystems within them, it lacks a scientific dive team of its own. In 2013, ODFW contracted the OCAq and Oregon State University (OSU) dive teams to perform these surveys. To date, the teams have logged 70 days, 771 dives and approximately 1,800 transects in the marine reserves.

Nitrox is a breathing gas with reduced levels of nitrogen and elevated levels of oxygen. Scuba cylinders, regulators and dive computers used with Nitrox must be specially designed and maintained to higher standards to accommodate the elevated levels of oxygen present. The acquisition of this equipment would enable our divers to (1) complete more surveys during dives, (2) achieve more survey dives in a single day, (3) bring more cylinders to remote locations for multiple-day survey trips, and (4) widen diver safety margins when operating in these locations by reducing the risk of decompression illness.

USE OF FUNDS: The budget for this grant includes twelve Nitrox scuba cylinders, six Nitrox-compatible scuba regulators, and two Nitrox-compatible dive computers to fully equip the OCAq research dive team for surveys. Nitrox diving equipment would be dedicated for field diving and research, greatly improving the dive team's capacity to meet the challenging scope of ORKA's survey work. This equipment would also be shared with the OSU team, who dive off the Aquarium's research vessel.

PURPOSE: The Oregon Coast Aquarium respectfully requests the Oregon Wildlife Foundation to continue its strong support of our mission. Previously, OWF funded an underwater camera that afforded us the means to capture footage of our research and field work as well as Diver Propulsion Vehicles (DPVs) to expand our dive team's geographic range. Below are tangible examples that demonstrate how Nitrox scuba diving equipment will be used to achieve our mission.

I. Conserving Kelp Forests

Oregon's kelp forest ecosystems are under immediate threat from sea urchin population booms (<https://www.oregonkelp.com/>). Urchins, once controlled in population size by seastar predation, feed on kelp. When seastar-wasting disease decimated seastar populations off the Oregon coast, this check on urchins sharply diminished. In turn, a dramatic increase in urchin populations has eradicated much of Oregon's kelp forest ecosystems. With this deforestation, much of the life dependent on seaweed for shelter or food also disappeared. These stretches of reef, once rich and biodiverse, are now urchin barrens stripped to bare rock. This alarming phenomenon is moving from south to north along the Pacific coast, in real time. The town of Newport, home of the OCAq, arguably sits at the present-day dividing line between decimated kelp forests to the south and healthy kelp forests to the north.

OCAq is a partner of the Oregon Kelp Alliance (ORKA), a consortium of universities, non-profits, government agencies, and citizen science groups, which has received \$990,000 in federal funding to: (1) create an inventory of kelp coverage on the Oregon coast, and (2) develop and implement restoration strategies. In collaboration with ORKA, the Aquarium is integrating its technological advantages into these surveys to do what other dive teams cannot. Using the DPV and camera-mount system supported by OWF, our team has already demonstrated proof-of-concept long-range video transects. By combining the extended distance DPVs offer with the extended time limits afforded by Nitrox equipment, our team could cover kilometers during a dive, not just meters. The ability to remain underwater for longer durations, travelling more quickly to span vast swaths of ground, is a game-changer in recording the Oregon coast's existing kelp coverage.

II. Inspiring Ocean Conservation and Advancing Ocean Literacy

People inherently struggle to value the preservation, management, and restoration of environments they cannot visit or see. Beneath Oregon's crashing waves lie spectacular ecosystems completely invisible to the everyday person. The vast majority of Oregonians, let alone Americans, will never personally visit these exotic habitats. Many go their entire lives without setting eyes on the ocean. Very few get the opportunity to travel the surface on a boat. Only a miniscule number will ever venture beneath the waves.

Combining state-of-the-art technology with Nitrox equipment, the Aquarium's dive program will help connect the public to the Oregon coast and foster a conservation mindset in two ways. First, by creating and sharing digital stories from footage gathered offshore; and second, providing resource content to accelerate the development of a more ocean literate world.

For those with physical, financial, or logistical hurdles which encumber them from visiting the Pacific Ocean, underwater video brings the wild, dynamic ecosystems of our coastal waters to the wider public. Children and adults alike learn the interdependence of species, the significance of their own decisions on the environment, their food sources, and the world in which they live.

Partnering with NOAA, ODFW's Marine Reserve Program and several Oregon colleges, we facilitate research opportunities and in-field learning experiences for students and interns interested in conservation, education, marine science, environmental impact, animal care and wildlife rehabilitation.

EXAMPLES OF EXPERIENCE: In June 2022, a brief weather-window presented at Port Orford in southern Oregon. This remote location has fewer calm-weather days than the rest of the state, and OCAq's dive team capitalized on the opportunity. In two-days of diving, we: (1) deployed a great white shark acoustic receiver instrument for OSU; (2) collected footage of the reef by mounting the OWF-camera to the OWF-DPVs; and (3) performed long-range kelp forest video transect surveys for the ORKA, a first of their kind in Oregon.

For each of these tasks, equipment provided with previous grants from OWF proved essential. With the DPVs, our team was able to reach the designated sites. The OWF camera was used to collect high quality footage incomparably superior to the GoPro alternative. Footage of staff performing kelp conservation research was turned into an educational video, and posted on social media (please see the attached *Kelp Survey with Oregon Coast Aquarium*).

A separate video was created for the great white shark research performed (please see the attached *Acoustic Receiver Deployment*). These are examples of the expansive use of information and video footage garnered by our dive team. With Nitrox equipment to extend dive time, we believe we can double or triple the amount of underwater data and footage.

COLLABORATING PARTNERS: The Aquarium's home location of Newport is, by luck, positioned at the geographical nexus-point of some of Oregon's richest subtidal habitats, and its research vessel, *Gracie Lynn*, is purpose-built to bring divers to the most challenging sites. From the central coast, staff may trailer the vessel from the northernmost point of Oregon to the southernmost with less than a week's notice. Alone among local aquariums, zoos, universities, government agencies, and citizen science groups, the OCAq is reliably able to take advantage of the Oregon coast's fleeting windows of calm weather, and make rapid deployments to conduct nearshore research. Our partnerships with organizations like Oregon State University, University of Oregon, Oregon Department of Fish & Wildlife, Partnership for Interdisciplinary Studies of Coastal Oceans, and Oregon Kelp Alliance frequently mean the difference between those groups being able to deploy oceanographic instruments and conduct scientific surveys, or staying on land.

The OCAq is an organizational member of the American Academy of Underwater Sciences (AAUS). This organization provides a safety and liability framework within which scientific diving institutions — predominately, aquariums, universities, and government agencies — may easily collaborate. Members may share divers, equipment, and research vessels to complete scientific research, providing higher level opportunities to work with other facilities that share the same technology and operate on the cutting edge of modern-day dive research and discovery.



Oregon

Tina Kotek, Governor

Marine Resources Program

Oregon Department of Fish and Wildlife
2040 SE Marine Science Drive
Newport, OR 97365
(541) 867-4741
FAX (541) 867-0311
www.dfw.state.or.us/MRP



February 3, 2023

To Whom It May Concern,

I am the Program Leader for the Oregon Department of Fish and Wildlife's (ODFW's) Marine Reserve Program, and the Oregon Coast Aquarium (OCAq) is a key collaborator and contributor to science and education in our community. ODFW is the lead agency responsible for overseeing the scientific monitoring and management of Oregon's five marine reserve sites that have been designated within the state's nearshore waters. OCAq has played a critical role in supporting the development of our long-term scientific monitoring program since 2013. Together we have successfully developed a scientifically rigorous, volunteer dive program to gather monitoring data on underwater habitats, invertebrates, and fish communities.

We rely on the Oregon Coast Aquarium to meet our legislative mandates for ecosystem-based monitoring at Oregon marine reserve sites. To date the dive program led by the OCAq has conducted over 750 monitoring dives for our program and trained close to 50 divers. They are the only dive program with facilities, professional staff and equipment located on the coast that meet our needs. The weather on the coast means that plans change last minute, and on good weather days, we need a team that can mobilize and accomplish our work on short notice. The OCAq has such a team and without the dedicated support from the OCAq we would be unable to have a dive program contributing such valuable data to the long-term monitoring of Oregon's Marine Reserves. They are the only team of divers with underwater experience at all of our sites, over multiple years. We rely on them to be our eyes underwater to document ocean changes that are critical to understanding how our coastal ecosystems respond to natural and man-made stressors. The commitment and contribution of the Oregon Coast Aquarium to our project is exemplary of their commitment and dedication to collaborating in cutting-edge science in the Pacific Northwest.

Furthermore, the Oregon Coast Aquarium is a master at turning science and fieldwork efforts into educational opportunities. As a partner with the ODFW Marine Reserves program, the Oregon Coast Aquarium has an educational kiosk about the marine reserves in their local sandy shores exhibit. Their educational programs and communication staff broaden the reach of our program to share key messages about

the science and creatures found in Oregon's waters. We value them as a partner and fully support their request for Nitrox equipment to support their research dive team.

Sincerely,

Lindsay Aylesworth

Lindsay Aylesworth, Ph.D
Program Leader
Marine Reserves Program
Oregon Department of Fish and Wildlife
Lindsay.x.aylesworth@odfw.oregon.gov



The Oregon Wildlife Foundation

901 SE Oak Street, Suite 103

Portland, OR 97214

Dear Oregon Wildlife Foundation Grant Reviewers,

I am writing on behalf of the Oregon Kelp Alliance to express our support for the proposal submitted by the Oregon Coast Aquarium. The Oregon Kelp Alliance is a community-based group representing diverse interests in kelp forest conservation and coastal sustainability across the Oregon coast, including scientists, fishermen, chefs, tourism operators, and more.

As a group that works for healthy coastal ecosystems and coastal livelihoods in Oregon, we have seen first hand the crucial work undertaken by the Oregon Coast Aquarium. For years now, the Aquarium has been one of the few groups regularly diving and assessing Oregon's nearshore waters. They have unique expertise in diving Oregon's challenging waters and have shared that expertise with ORKA for our conservation and restoration work. The Oregon Coast Aquarium diving team works with ORKA to help coordinate kelp forest monitoring work, provide key diving logistic support, share time, energy, and expertise, and plan for kelp forest restoration and protection up and down the coast. Both Doug Batson and Jim Burke volunteer their time as members of ORKA's Scientific and Technical Advisory Committee.

Oregon is an incredibly challenging place to conduct SCUBA-based scientific research and it hampers our ability to adequately understand, manage, and restore the nearshore ecosystems Oregon communities depend on. Limited diving infrastructure, wave exposure, seasonally poor visibility, and other factors mean that opportunities to dive are rare and unpredictable. As such, supporting the Oregon Coast Aquarium's development of Nitrox based diving would greatly multiply their ability to make the most of the limited windows of diveable weather available by extending the time divers could spend under water and the amount of surface time between dives. This would benefit the Aquarium's diving work, but also better support the crucial monitoring of Oregon's Marine Reserves and ORKA's kelp forest monitoring and restoration activities.

For these reasons, ORKA strongly supports this proposal and looks forward to continuing to work with the Oregon Coast Aquarium for years to come.

Thank you,

Tom Calvanese

Head of the Oregon Kelp Alliance

Sara Hamilton, Ph.D.

Oregon Kelp Alliance member and Head of the Scientific and Technical Committee



**Oregon State
University**

Scientific Diving and Small Boat Programs- Research Office

Oregon State University, B308P Kerr Administration Building, Corvallis, Oregon
97331-2140 Office 541-737-6893; Cell 541-740-4577; Fax 541-737-3093

<http://research.oregonstate.edu/diving> email: Diving.Safety@oregonstate.edu

14 December 2022

TO: Oregon Wildlife Foundation

FROM: Kevin Buch, Scientific Diving and Small Boat Administrator, Oregon State University (OSU)

SUBJECT: Support for Oregon Coast Aquarium (OCAq) grant proposal "*Nitrox Equipment for the Aquarium Research Dive Team*"

Greetings Oregon Wildlife Foundation,

OSU fully supports the OCAQ grant proposal to add dedicated nitrox cylinders and SCUBA regulators to the equipment inventories used in our work with the ODFW Marine Reserves Program, and the Oregon Kelp Alliance (ORKA).

As stated in the proposal, nitrox use by divers on these projects confers significant benefits, especially in the areas of safety and underwater efficiency. The OCAq has made major investments with the addition of nitrox production capability to their dive program, but there is still an important need for the nitrox-compatible equipment that will be used by the divers. The addition of dedicated nitrox cylinders and diver regulators is an important step necessary for the benefits of nitrox to be employed in the field.

As you know, funding for small non-profits like the OCAq is always a challenge. In this case, OWF support would have direct and measurable impacts both on the people involved and on the science being done on behalf of our coastal marine environments.

The scientific divers involved are trained and enthusiastic about the possibility of adding nitrox to these projects-they're just waiting on a little help!

Please feel free to contact me with any questions regarding OSU support and our involvement with the OCAq, and with these environmental projects.

Sincerely,

Kevin L. Buch
Scientific Diving and Small Boat Administrator
Oregon State University-Research Office
B308P Kerr Admin
Corvallis, OR 97331
work) 541-737-6893; cell) 541-740-4577; fax) 541-737-3093

<http://research.oregonstate.edu/diving>

<http://research.oregonstate.edu/boating>