

# Grant Application

Christina DeWitt



**Email :** christina.dewitt@oregonstate.edu

**Application ID :** A59DC128

**Custom Ref. -**

**Application Start Date:** 2023-07-25 18:52:27

**Application Completed Date:** 2023-08-14 17:31:18

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

no

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

no

3 Title of your proposed project

Safeguarding Coastal Ecosystems

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

N/A

6 Your name or the name of the Project Manager

Jennifer L. Creighton

7 organization mailing address

Please enter full address with city, state & zip

A312 Kerr Admin Bldg, Corvallis, OR 97331-2140

8 your phone number or that of the Project Manager

541-737-4933

9 your email address or that of the Project Manager

sponsored.programs@oregonstate.edu

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

Christina A. Mireles DeWitt graduated from Texas A&M University with a B.S. in Food Science & Technology. She completed both her master of science and doctoral thesis at Oregon State University. Her career started as an analytical food chemist for American Microbiological Services, Inc. which would be later acquired by Silliker Laboratories. As she worked her way from chemist, to supervisor, to operations manager she helped processors interpret and comply with the requirements of the Nutritional Labeling and Education Act of 1990. After obtaining her Ph.D. at Oregon State University, Dr. DeWitt spent 11 years as a Food Chemist at Oklahoma State University in the department of Animal Sciences and spent two of those years in the Robert M. Kerr Food & Agricultural Products Center. At Oklahoma State University her research was focused on muscle food protein functionality and by-product utilization. She taught Food Chemistry I, Food Chemistry II, Food Analysis, Processing Dairy Foods, and Introduction to Food Science. Dr. DeWitt joined the faculty at Oregon State University in 2011 and currently serves as the Director of the Seafood Research and Education Center in Astoria, OR and as professor in the department of Food Science & Technology. Dr. DeWitt's current research is focused on improving seafood quality, safety and processing by-product utilization. Dr. DeWitt research has included utilization of chitosan as a potential natural polymer to reduce organic loads in seafood processing wastewater. In addition, she has studied the potential of recovering valuable bioactive compounds from surimi seafood processing water. Dr. DeWitt has more recently helped support the seafood industry by co-developing and hosting the Seafood Waste Water Workshop. Dr. DeWitt serves on the seafood technical committee for the Alaska Seafood Marketing Institute and is co-editor-in-chief for the Journal of Aquatic Food Product Technology.

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

<https://www.instagram.com/oregonstate/>; <https://www.tiktok.com/@oregonstate>; <https://twitter.com/oregonstate>;  
<https://www.facebook.com/osubeavers>; <https://www.youtube.com/user/OregonStateUniv>;

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

- None of these channels

13 what is the total estimated cost of your project?

237454

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](mailto:tim@myowf.org) before submitting your application.

84921

15 what type of project are your proposing?

fish habitat restoration or improvement

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

yes

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

Oceans and wetlands

17 what is the location of your proposed project?

2001 Marine Drive, Astoria, 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

Ecoregion: nearshore, COA: 1 Clatsop Plains, 26 Yaquina Bay, 34 Suislaw, 43 COOS Bay, 48 Sixes River-Elk River, 52 Chetco River-Winchuck River Estuaries

19 what is the anticipated start date of your project?

Day/Month/Year

01-09-2023

20 what is the anticipated end date of your project?

01-09-2025

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

no

21.N.1 What is your plan for an external review of the project?

Stakeholders will be engaged from the outset of the proposal and provided the opportunity to participate and review outputs.

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](http://www.myowf.org/grants)

Labor to collect and analyze data and to conduct literature review, computer, statistical software, travel,

24 provide us a brief summary of your proposed project

The findings of this project will play a crucial role in identifying and promoting effective seafood processing water management practices. By improving seafood processing water management in the seafood industry, this research aims to significantly reduce its environmental impact on Oregon's waterways. The adoption of sustainable practices will enhance environmental protection and foster long-term sustainability in the seafood industry. Moreover, the study's recommendations can serve as a valuable resource for policymakers, industry stakeholders, and regulatory bodies seeking to implement responsible seafood processing water management strategies. Ultimately, these advancements will contribute to safeguarding the ecological health of coastal regions, supporting local ecosystems, and ensuring the continued economic viability of the seafood sector.

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](http://myowf.org/grants) for guidance.

1 Document Uploaded



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

Powered by **Submit.com**

— Grant Application

Christina DeWitt

Application ID: **A59DC128**

## **Safeguarding Coastal Ecosystems: Managing Seafood Processing Water Discharge in Oregon**

### **Statement of Problem:**

Seafood processing plays a crucial role in the economy of rural, coastal Oregon communities, with the state ranking second only to Alaska in west coast landings. These landings are double that of its nearest neighbors, Washington and California, collectively representing over 73% of the nation's commercial fishery landings. Oregon's total fishery effort ranks 4th in the nation, with two of the largest commercial food fisheries in the country harvesting 3.2 billion pounds of seafood, mainly Walleye pollock off Alaska and Pacific Whiting off Oregon.

Over the last two decades, Oregon's seafood processing industry has undergone a transformation from derby-style fishing to individual fishing quotas (IFQs), allowing processors to develop a unique system of multispecies processing. The rich and diverse array of fish and shellfish species in Oregon's coastal waters, thanks to unique oceanographic conditions and marine ecosystems, has led to processing facilities simultaneously handling various tasks like fish filleting, crab cracking, and shrimp cooking and peeling.

The evolution and increased stability in the seafood processing industry have brought numerous benefits, including improved conservation by reducing excessive fishing pressure during short fishing seasons, enhanced economic viability through sustainable and controlled fishing practices, stable year-round employment for coastal communities, and enhanced workforce professionalization. Furthermore, these advancements have reduced processing pressures, enabling quality and food safety enhancements that are critical for global competitiveness.

However, the benefits of multispecies seafood processing facilities also come with challenges. Unlike traditional animal food processing facilities, these plants face unique circumstances due to their rural locations with limited process water treatment infrastructure. Consequently, they operate under special permits from the Oregon Department of Environmental Quality, allowing direct discharge of treated process water into waterways, as local communities lack the capacity to accommodate their processing water discharge.

Single species animal processing facilities maintain strict control over harvest locations, timing, and schedules, resulting in consistent flow and homogenous composition of process water discharge. In contrast, multispecies seafood processing facilities experience sporadic and variable stream compositions due to the diversity of species involved and the unique harvesting conditions.

Regrettably, there is limited guidance available to manage such complex water streams. Therefore, the primary focus of this project is to conduct an intensive examination of processing water stream outputs from multi-species seafood plants and establish correlations between discharge outcomes and management practices. The ultimate goal is to enhance



sustainable processing principles for Oregon seafood processors, promoting more efficient and environmentally friendly operations.

**Potential Impact or Practical Application:** The findings of this project will play a crucial role in identifying and promoting effective seafood processing water management practices. By improving process water management in the seafood industry, this research aims to significantly reduce its environmental impact on Oregon's waterways. The adoption of sustainable practices will enhance environmental protection and foster long-term sustainability in the seafood industry. Moreover, the study's recommendations can serve as a valuable resource for policymakers, industry stakeholders, and regulatory bodies seeking to implement responsible process water management strategies. Ultimately, these advancements will contribute to safeguarding the ecological health of coastal regions, supporting local ecosystems, and ensuring the continued economic viability of the seafood sector.

## **Objectives**

1. Review scientific literature for seafood process water treatment
2. Survey multispecies seafood processing facilities
  - a. Collect at least 5 yr environmental compliance data (discharge monitoring report or DMRs) from Oregon DEQ.
  - b. Compile pollutant loads, flows and tonnage by type of daily operation.
  - c. Statistically evaluate data and correlate DMR data with processing water management strategies.
  - d. Develop Report

## **Methods**

**Literature Review.** A review of literature will be conducted to understand current state of the technology for management of seafood processing water treatment. An example of what the review could include follows:

### I. Introduction

- A. Overview of seafood processing industry
- B. Importance of seafood processing water and byproducts review
- C. Purpose and scope of the review

### II. Seafood Processing water: Sources and Composition

- A. Explanation of seafood processing activities
- B. Identification of process water generation points
- C. Composition of seafood processing water
- D. Variability in water characteristics based on species and processes

### III. Environmental Impacts of Seafood Processing Water

- A. Impact on water quality and aquatic ecosystems
- B. Effects on marine life and biodiversity
- C. Potential risks to human health and seafood safety

- IV. Current Process Water Treatment Practices
  - A. Overview of conventional treatment methods
  - B. Advantages and limitations of existing treatment technologies
  - C. Case studies on process water treatment in seafood processing plants
- V. Byproducts from Seafood Processing
  - A. Types of byproducts generated in seafood processing
  - B. Utilization of byproducts in various industries (e.g., food, pharmaceuticals, cosmetics)
  - C. Environmental and economic benefits of byproduct utilization
- VI. Challenges and Opportunities
  - A. Challenges in managing seafood processing water
  - B. Barriers to effective byproduct utilization
  - C. Potential opportunities for improvement and innovation
- VII. Regulatory Framework and Best Practices
  - A. Overview of process water discharge regulations for seafood processing plants
  - B. Comparison of different regional regulatory approaches
  - C. Identification of best practices for sustainable process water management
- VIII. Case Studies and Success Stories
  - A. Examples of successful process water treatment and byproduct utilization initiatives
  - B. Positive environmental and economic impacts achieved through innovative approaches
- IX. Future Directions and Research Needs
  - A. Potential areas for further research and development
  - B. Emerging technologies and their applicability to seafood processing process water treatment
  - C. Strategies for enhancing circular economy approaches in the seafood processing industry
- X. Conclusion
  - A. Summary of key findings
  - B. Importance of sustainable seafood processing practices
  - C. Call to action for promoting responsible process water management and byproduct utilization

### **Survey Seafood Processing Facilities.**

**Methodology for collecting survey data.** All multispecies seafood plants operating in Oregon will be identified and invited to participate in a survey to identify best practices for process water discharge management. We already have contact information for all the multispecies processors in Oregon.

**Stakeholder Engagement:** The active involvement of stakeholders is pivotal to the success and design of this survey. Recognizing the significance of their expertise and perspectives, participating facilities will be provided with a unique opportunity to contribute to the research process. Stakeholders will have the chance to provide valuable guidance and input on the specific information they consider essential to be collected and evaluated. By fostering this

collaborative approach, we aim to ensure that the survey outcomes align closely with the real-world challenges and requirements faced by seafood processing facilities. Such direct engagement will not only enhance the survey's accuracy and relevance but also establish a foundation for long-term partnerships, driving collective efforts towards sustainable seafood processing practices in Oregon's coastal communities.

Ideally, all processing facilities that conduct multispecies processing in Oregon will be surveyed. However, this will depend on processing facilities willingness to participate in the survey. We have established relationships with almost all of the major companies operating in Oregon. We are confident that we can at least obtain information from 3-4 plants operated by different companies that do multispecies seafood processing.

**Data Collected.** Information we anticipate being targeted for collection includes description of processing lines and process water discharge management practices. We also anticipate collecting the following information from the previous processing years (1-5), as available.

- Days processing including
  - type of species
  - gross weight landed for each species
  - gross weight food product shipped for each species
  - gross weight of byproduct shipped for each species
- Days process water compliance sample collected including
  - All data generated from compliance sample (DMR) including calculated pounds of pollutant, flows and tonnage by type of daily operation.

**Sampling methodology.** It is anticipated survey data will be collected by visiting plants in person for visual observation and also interviewing (in-person and/or remote) quality assurance personnel, processing line supervisors, and processing water discharge management personnel.

**Summary Report.** Survey results will be used to provide a summary report. The report will include a brief description of plant processing lines and process water discharge management practices in Oregon. In addition, the report will include a statistical evaluation of environmental compliance data correlated with processing water management strategies, species type, amount processed, and calculated pounds of pollutants. Data will be evaluated by plant and by aggregate. Results from the report will be used to highlight best management practices for processing water discharged from multispecies plants.

**Data availability.** The database generated from this study for statistical analysis will be made available. Data will be stored as excel file on the Seafood Network Information Center website ([seafood.oregonstate.edu](http://seafood.oregonstate.edu)).

**Timeline and Project Management:** The proposed timeline for the proposed project is two years. The first year will be spent hiring a post-doc, conducting the literature review, surveying processing facilities and collecting and analyzing data. It is anticipated this will take approximately 6-12 months to complete. Depending on the status of the data (electronic or

paper) we will either be able to immediately start evaluating data or, there will be a lag due to the need to manually input data into the database. Once data is inputted, it will be statistically evaluated and a report will be prepared from the evaluations. Report preparation, submission of reports as scientific papers and communication of reports at scientific conferences is anticipated to occur at the end of Year 1 and through Year 2.

**Sponsor Budget: \$86,421**

Budget is request to pay 1 Post-doctoral Scholar a salary of \$58,179 with \$14,242 in benefits (benefit rate = 24%). In addition, \$3,000 is requested to pay for a computer and monitors for the post-doctoral position. This a short-term project that is mainly focused on collecting electronic and paper data, entering large volumes of data into a computer, and evaluating that data using statistical software packages. The project will require purchase of a computer with large storage space, high ram and high processing speed. An additional \$1500 is requested to pay for software and licenses. Consulting services from a statistician is requested at \$2500 to review statistical approach for data evaluation. In order to insure published information has free access, we will pay publisher costs estimated at \$4000. Travel funds of \$3000 are requested to visit seafood processors in Oregon in order to collect processing manufacturing and process water management practices and to present information at scientific conferences (ex: Pacific Fisheries Technologist Conference, Institute of Food Technologist Conference). Estimated cost of attending one scientific conference is over \$2575. This includes registration fee (\$750), airfare (\$600), Lodging (\$226/night lodging or \$678), Per Diem (\$71/day or \$284), personal mileage for travel to airport from Astoria, OR (\$113) and incidentals (\$150). Incidentals include ground transportation, airport parking, taxes, etc. Additional travel funds will be used to reimburse personal mileage for travel to regional processors.

**Match Budget: \$87,824**

For match, one month of PI (Christina DeWitt) salary and benefits is used for each year of the study. Total is \$41,910 (salary \$15,224/mo; benefits \$5,367/mo). In addition, \$2000/yr travel to either domestic processors or conferences to present results is used each year. Finally, the value of the indirect costs based on modified total direct costs (\$41,914) that are exempted from being charged to the grant are used for match.



Office for Sponsored Research and Award Administration  
Oregon State University, 312 Kerr Administration Building, Corvallis, Oregon 97331-2140  
Tel 541-737-4933 | Fax 541-737-3093 | [sponsored.programs@oregonstate.edu](mailto:sponsored.programs@oregonstate.edu)

August 10, 2023

To Whom It May Concern,

Oregon State University is pleased to submit the proposal entitled “Safeguarding Coastal Ecosystems: Managing Seafood Processing Water Discharge in Oregon”. The appropriate programmatic and institutional officials have reviewed this proposal in the amount of \$174,245 for the project duration October 1, 2023 – September 30, 2025. Additionally, Oregon State University will provide matching to come from salary, fringe benefits, and F&A in the amount of \$87,824.

The authorized institutional official’s signature below indicates institutional approval for the proposed project.

Oregon State University has a Conflict of Interest policy that is compliant with the PHS Financial Conflict of Interest Regulations (42 CFR Part 50 Subpart F).

Oregon State University is prepared to perform the work as outlined in the proposal. Dr. Christine DeWitt will serve as Oregon State University’s Principal Investigator.

Legal Name: Oregon State University  
Authorized Signing Official: Jenifer L Creighton, Associate VP for Research Adm., Finance and Ops  
UEI Number: MZ4DYXE1SL98  
EIN Number: 61-1730890  
Payee Name: Oregon State University  
Remittance Address: Office for Sponsored Research and Award Administration, 312 Kerr Administration Building, Corvallis, OR 97331-2140  
Financial Representative: Heather Toro, [osraa.finance@oregonstate.edu](mailto:osraa.finance@oregonstate.edu)  
Contractual Representative: Jennifer L Creighton, [sponsored.programs@oregonstate.edu](mailto:sponsored.programs@oregonstate.edu)

Approved:

  
\_\_\_\_\_  
Proposal Analyst

Acting for:  
Jennifer L Creighton, Associate VP for Research Adm., Finance & Ops  
Institutional Authorizing Official



16797 SE 130th Ave. Clackamas, OR 97015  
Tel: (503) 905-4454 Fax: (503)905-4282

8/9/2023

Tim Greseth  
Executive Director  
Oregon Wildlife Foundation

Dear Mr. Greseth,

I am writing this letter to express my support for the project submitted by Dr. DeWitt, titled "Safeguarding Coastal Ecosystems: Managing Seafood Processing Water Discharge in Oregon." This project holds tremendous promise in addressing a critical issue faced by the seafood industry and coastal communities in Oregon.

The project's core objective, which is to evaluate and correlate data from individual seafood processing plants with processing water management practices, is both comprehensive and essential. As a manager in the seafood industry responsible for 8 processing facilities operating in Oregon, I truly understand the significance of understanding and implementing best practices to ensure the sustainable management of our valuable coastal ecosystems.

By providing seafood processors with valuable insights into their processing water discharge, this project will empower us to adapt and improve our practices. The collective effort to minimize the environmental impact on Oregon's coastal ecosystems aligns with the broader interest of our communities. Ensuring the well-being of our coastal environment is not only crucial for our industry's sustainability but also vital for the thriving of our coastal communities both economically and environmentally.

The potential impact of this project on the coastal environment in Oregon is undeniable. The data-driven approach and holistic evaluation it proposes will undoubtedly contribute to a more responsible and sustainable seafood processing industry. Moreover, the knowledge gained from this project will benefit not only the seafood industry in Oregon but also serve as a model for coastal communities worldwide.

I enthusiastically endorse this important project and the invaluable contribution it will make to safeguarding Oregon's coastal ecosystems. Dr. DeWitt's expertise and dedication to this cause inspire confidence that any support provided will be utilized effectively and responsibly to achieve the project's goals.

Should you require any additional information or if I can be of any assistance in supporting this cause further, please do not hesitate to reach out to me. I firmly believe that supporting this project is a step toward securing a sustainable and thriving coastal environment for future generations.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read 'John Lin', is written over a light blue horizontal line.

John Lin, Ph.D.

VP for Value Creation



Andrew Bornstein  
PO Box 58  
Astoria, OR 97103

August 11, 2023

Tim Greseth  
Executive Director  
Oregon Wildlife Foundation

Dear Mr. Greseth,

I am writing this letter to express my wholehearted support for the project submitted by Dr. DeWitt, Safeguarding Coastal Ecosystems: Managing Seafood Processing Water Discharge in Oregon. This project seeks to wholistically evaluate the data individual seafood processing plants generate and correlate this information with processing water management practices.

Information from this project can be used by managers, such as myself, to adapt and improve practices. Understanding best practices is in every seafood processors interest and in the interest of the communities with which they reside. This project will help processors collectively insure seafood processing water discharge has minimal impact on Oregon's coastal ecosystems.

I encourage you to consider my enthusiastic endorsement for this important project and the invaluable contribution it makes to the coastal environment in Oregon. I am confident that any support provided will be utilized effectively and responsibly to further their impactful efforts.

Please feel free to reach out to me if you require any additional information or if I can be of any assistance in supporting this cause further.

Thank you for your time and consideration.

Sincerely,

Andrew Bornstein



**Da Yang Seafood Inc.**

Seafood Processing & Trading

Chang Lee  
Da Yang Seafoods,  
45 Pier 2, Astoria, Oregon, 97103

changlee@dayangseafoods.com  
503-381-7596

Tim Greseth  
Executive Director  
Oregon Wildlife Foundation

Dear Mr. Greseth,

I am writing to express my strong support for Dr. DeWitt's project titled "Safeguarding Coastal Ecosystems: Managing Seafood Processing Water Discharge in Oregon." This project holds great promise in addressing a crucial issue facing the seafood industry and coastal communities in Oregon: how to achieve the best use of the harvested resource in an environmentally friendly manner.

The project's main goal is to assess and connect process water discharge data from seafood processing plants to their best management practices. By offering insights into processing water discharge, this project will help seafood processors enhance their methods with respect to resource use and minimize environmental impact, both of which align with our community's broader interests. Protecting our coastal environment is not only essential for seafood industry sustainability, but also for the well-being of our communities, economically and environmentally.

I wholeheartedly endorse this project and Dr. DeWitt's dedication to its success. If you need more information or assistance, please feel free to contact me. Supporting this project is a step toward ensuring a sustainable coastal environment for future generations.

Thank you for your consideration.

Thank you for your time and consideration.

Sincerely,

Chang Lee  
Plant Manager



There are no pre-project pictures for this application as it impacts multiple conservation opportunity areas.