



### 1. U.S. Environmental Protection Agency (EPA); Newport, OR

#### **Identifying the Causes and Impacts of Acidification in Estuarine Waters**

Increasing anthropogenic atmospheric carbon dioxide (CO<sub>2</sub>) levels are causing a decline in oceanic pH, which is impacting marine ecosystems. A key need for assessing acidification are tools to distinguish causes of acidification in coastal and estuarine waters and effects based research. The Scholar will contribute to field and lab based studies focused on identifying the causes and impacts of acidification in Pacific Northwest estuaries. We will be conducting field studies in Tillamook Estuary where we will be monitoring carbonate chemistry in situ and using stable isotopes of dissolved nitrogen and primary producers to tease out the roll of anthropogenic nutrients in influencing carbonate chemistry and dissolved oxygen levels. We are also using microbial source tracking combined with stable isotopes to identify sources of nutrients that may be influencing conditions in the bay. The Scholar will gain experience in field sampling, laboratory analysis, experimental design, usage of water quality instrumentation including in situ carbonate chemistry, and data analysis. Preferred qualifications include experience in freshwater/steam ecology, marine or estuarine biology, chemistry, and experience with macrophyte, field research, or laboratory methods (e.g., nutrient, chlorophyll a analysis, and stable isotopes). International students are **not** eligible to apply.

### 2. Oregon Sea Grant (OSG); Newport, OR

#### **Assessing Techniques for Sustainable Tourism Development**

Oregon coastal communities are heavily influenced both economically and socially by tourism. Social sustainability is not often factored into tourism development processes because assessing the wide range of sub-communities within a larger geographical community is often very difficult. The Scholar will be working with a blended research team to conduct a pilot project focused on creating and validating methods that may eventually lead to the creation of a process tool for communities wishing to balance development with social sustainability. The Scholar will be involved in three unique methods to determine the characteristics, behavior, resource use, and area use of both visitors and locals, while addressing additional concepts such as conflict between groups and seasonal visitation patterns. The three methods the Scholar will likely participate in are social media data mining, video observations of people at community intersections, and ethnographic interviews of individuals. Preferred qualifications include a social science, tourism studies, or cultural anthropology background, knowledge of or experience in data collection processes with human subjects, strong verbal communication skills, experience with data entry, data coding, and statistical analyses (e.g. SPSS, R), experience with video, and creative thinking skills. International students are eligible to apply.

### **3. Oregon Department of Fish and Wildlife (ODFW); Charleston, OR**

#### **Shellfish and Estuarine Habitat Assessments**

Shellfish and estuarine habitat assessments are used in Oregon to inform resource management decisions and to track changes in Oregon's estuaries and shellfish populations. The Scholar will work collaboratively to collect shellfish and estuarine habitat data in various intertidal regions of Coos Bay and conduct creel survey interviews of recreational harvesters. Tasks include participating in team meetings, preparing field gear, traversing intertidal flats and collecting environmental and biological data with a partner, extracting and measuring shellfish, and entering and analyzing data. As part of their own project, the Scholar will have the opportunity to collect data on pink shrimp size/age as an important part of managing the pink shrimp industry in southern Oregon. Additionally, the Scholar will support a new investigation of the use of unmanned aircraft systems (a.k.a. UAS, drones) for monitoring shellfish. There are also opportunities to participate in public outreach events as a representative of the Shellfish team. Preferred qualifications include a background in biology/ecology, being comfortable working independently and as a team, strong communication skills, statistics/data entry experience, and willingness to work in adverse field conditions. A driver's license is required. International students are **not** eligible to apply.

### **4. Department of Land Conservation and Development – Oregon Coastal Management Program (DLCD-OCMP); Newport, OR**

#### **Oregon King Tides Photo Project Data Management**

The Oregon King Tides Photo Project invites citizens to capture photos of their coastal environments during the highest high tides (known as "king tides") of the year. This purpose of this project is to capture change over time, potential impacts of sea level rise, and determine areas most vulnerable to erosion or flooding. Currently, it is difficult to view or search these 1,500+ photos by location, year, and/or photographer, and the photos are not being utilized to their full potential to address coastal management issues. To better address these organizational and data management flaws, the Scholar will organize these photos; brainstorm ways in which they could be presented, stored, and used in the coastal management community; and present a plan to Coastal Management staff with their findings and recommendations for next steps. In addition, the Scholar will take new photos of "normal" high tides for comparison and field verifying photos with limited or poor information. Preferred qualifications include strong organizational and research skills, interest or experience in data management, knowledge of natural resource management (especially in how policy and research inform regulation), ability to work independently, and creative thinking skills. A driver's license is required. International students are eligible to apply.

### 5. U.S. Environmental Protection Agency (EPA); Newport, OR

#### **Assessing Near-Coastal Species Climate Vulnerability**

The U.S. EPA and the USGS are developing an ecoinformatics framework to predict the vulnerability of near-coastal species to climate change. The approach is to assign vulnerability rankings based on a suite of natural history traits of each species (e.g., depth range, breeding strategy), species' regional abundance patterns, and environmental thresholds. The information for the analysis is based on data mining from a variety of sources, and then synthesizing that information in an online decision tool, the Coastal Biogeographic Risk Analysis Tool (CBRAT; <http://www.cbrat.org/>). The Scholar will advance this research by data mining information on high priority taxa, and then entering these data in the life history and environmental schema used in CBRAT. Additionally, the Scholar will likely review literature to help develop regional-scale thresholds for temperature increases, sea-level rise, and ocean acidification. If the Scholar has programming skills, it is possible that they could potentially assist in developing new functionalities in the web-based CBRAT. Preferred qualifications include the ability to interpret and summarize diverse types of information found in literature, attention to detail, the ability to ask questions, familiarity with MS Excel and Word, and basic experience with marine biology. International students are **not** eligible to apply.

### 6. Oregon Sea Grant (OSG); Newport, OR

#### **Implementing and Evaluating Direct Marketing Seafood Program**

Shop at the Dock is a program that educates the public on how to buy seafood directly from fishermen by having guided shopping tours to locations where fishermen are selling product. Currently, this program is occurring in Newport, OR. To improve and assess the event, the Scholar will work on evaluating the program from both the participants' perspective and the fishermen's perspective. The Scholar will expand and finalize the survey tool that captures fishermen's perspective, while implementing a pre-existing tool to evaluate participants' perspectives. The Scholar will also likely work on expanding the Shop at the Dock program into another community. Lastly, the Scholar may work on designing and implementing a survey tool at farmers markets to determine the interest in and need of local seafood at these markets. Specific tasks will include assisting with marketing, communication with groups such as the chamber of commerce, using social media to promote the program, and using participant evaluation tools. Preferred qualifications include experience working with the public and with educational programming, strong verbal and written communication skills, and creative thinking abilities. International students are eligible to apply.



### **7. Oregon Department of Fish and Wildlife (ODFW); Newport, OR**

#### **Ecological Monitoring of Oregon's Marine Reserves**

There are five state marine reserves located off the Oregon coast. Each reserve is ecologically monitored to assess species and habitat composition and potential change over time. The Scholar will primarily focus on collecting juvenile fishes and invertebrates using SMURFs (Standard Monitoring Unit for Recruitment of Fishes) and SCRUBs (Standard Collectors for Recruitment of Urchins above the Benthos). Specific tasks include skin diving (snorkeling) off research vessels to obtain samples; driving to Port Orford twice per month to obtain samples; sorting, identifying, and measuring rockfish, Cabezon, and urchin recruits; organizing and preparing samples for storage; and preparing and summarizing data for weekly reports on recruitment data. The Scholar will also assist with additional field work duties, including intertidal sea star surveys. Required qualifications include comfort at sea and using skin diving gear in the open ocean. Preferred qualifications include a desire to learn collection protocols and species identification, and good organization skills for a large quantity of specimens. A driver's license is required. International students are **not** eligible to apply.

### **8. Oregon State Marine Board (OSMB); Salem, OR**

#### **Determining Boat Density and Lower Willamette River Usage Patterns**

There has been conflict between homeowners and watersports boaters on the Lower Willamette River over the past ten years. Regulations were adopted in 2008, but due to continued conflict, a working group will be convened this fall to assess the current boating regulations. A key need for this working group to be able to make management decisions is accurate data of river usage patterns and boat density. The Scholar will help develop observation forms and methods for data collection, and will then independently collect these data from riverside dock locations. Following the data collection period, the Scholar will enter and analyze the data, and complete a meaningful report. Preferred qualifications include experience with statistical analysis, experience with sampling techniques, and the ability to summarize work in a report format. A driver's license and car are required. International students are eligible to apply.

### 9. Wild Rivers Coast Alliance (WRCA) and Oregon Sea Grant (OSG); Bandon, OR

#### Coastal Photo Project for Tourism

Tourism is an important component of the economic and social characteristics of Oregon coastal communities. The Scholar's main project will be establishing an online photo library using Flickr for use in coastal and marine life interpretation, tourist education, and sustainable tourism promotion. Images will likely be of coastal communities, natural features, and people engaged in outdoor recreation. The Scholar will be responsible for both taking photographs and soliciting images from other photographers and organizations. Using the photo library, the Scholar will help create interpretive and promotional documents, which may be used in training and support of coastal sustainable tour companies to improve their operations. The Scholar will also have the opportunity to help create training programs and public information dissemination campaigns. Preferred qualifications include being responsible, having attention to detail, acting professional, discrete and respectful in public, organizational skills, ability to multi-task, time management skills, proficiency in web based research, and experience with outdoor recreation and tourism. A driver's license and car are required. International students are eligible to apply.

### 10. South Slough National Estuarine Research Reserve (SSNERR); Charleston, OR

#### Monitoring Fish and Invasive Green Crab Populations

The invasive European green crabs (*Carcinus maenas*) were abundant in the South Slough of the Coos estuary in 2016 due to strong recruitment in the previous year, but more data are needed to assess inter-annual variability in species abundance and to characterize potential impacts of green crabs on native species. The Scholar will focus on understanding the distribution and relative abundance of green crab by trapping crabs at several locations throughout the estuary, collecting data on all crab species found, and analyzing project results. Data collected in this project will be important for informing future control efforts in the estuary. The Scholar will also work on a project focused on understanding temporal and spatial patterns of fish assemblages in South Slough. The project will involve monthly beach seining at six sites to measure the species diversity and richness of fish assemblages. Continuous water quality data collected through the Reserve's System-Wide Monitoring Program will be used to characterize the environmental conditions that influence species presence, absence, and abundance. Project results will be used to characterize long term trends in habitat use by fish, and will be important for assessing the effectiveness of past restoration projects. Specific tasks include beach seining, deploying and retrieving crab traps, laboratory/fieldwork associated with our water quality monitoring program, processing samples, data entry, and training/working with community volunteers. Preferred qualifications include a background and interest in marine science and resource management, willingness to work in adverse field conditions, a positive attitude, a strong work ethic, being detail oriented, experience with MS Excel and Word, and experience with statistical analysis. A driver's license and car are required. International students are **not** eligible to apply.

### 11. Oregon Department of Fish and Wildlife (ODFW); Newport, OR

#### **Assessing Fishermen's Adaptations to Oregon's Marine Reserves**

There are five state marine reserves located off the Oregon coast. Currently the socioeconomic impacts of marine reserve implementation are being monitored on multiple levels. The Scholar will primarily contribute to a study of how fishermen have adapted to the displacement of their fishing grounds caused by the marine reserves. This information will be gathered from fishermen through qualitative in-person interviews and quantitative survey instruments. Specific tasks include assisting with sample designs, developing data collection protocols, writing interview questionnaires, conducting field interviews, data entry, data analysis, and report writing. The Scholar may also participate in a pilot methodological project focused on assessing the efficacy of outreach and education programs conducted by ODFW and partners. Preferred qualifications include being comfortable with public speaking and interviews, being capable of critical and abstract reasoning, ability to multi-task, ability to work independently, excellent writing skills, knowledge of MS Excel, and familiarity with statistical analysis or qualitative content analysis. International students are **not** eligible to apply.

### 12. U.S. Environmental Protection Agency (EPA); Newport, OR

#### **Identifying the Causes and Impacts of Contaminants in Estuarine Waters**

Potential sources of nutrients and fecal bacteria often co-occur, are widespread, and may include human (wastewater treatment plant runoff, septic systems) and animal sources (runoff from dairy operations, wildlife). The research effort is aimed at understanding the sources of nutrients and fecal microbes into Tillamook Bay and potential effects of these contaminants on human health and water quality. Specifically, the Scholar will participate in several ongoing projects involving 1) water sampling efforts evaluating nutrient and fecal bacteria loading to the Tillamook Estuary from its watershed and 2) environmental sampling and laboratory-based efforts evaluating the role of environmental reservoirs in facilitating the long-term persistence of fecal microbes in an estuarine system. The Scholar will participate in field sampling, laboratory analysis, experimental design, usage of water quality instrumentation including in situ carbonate chemistry, and data analysis. Preferred qualifications include experience in marine or estuarine ecology, experience conducting field/lab research including but not limited to experience with microbiological laboratory methods (e.g. DNA extraction, PCR, aseptic techniques). International students are **not** eligible to apply.



### **13. Wild Rivers Coast Alliance (WRCA) and Oregon Sea Grant (OSG); Bandon, OR**

#### **Assessing Market Prices of Experiential Tourism**

Tourism is an important component of the economic and social characteristics of Oregon coastal communities. The Scholar will be conducting research on coastal tour experience pricing, amenities and impacts, assisting with local tourism entity needs assessments, and communicating with the public. The research will specifically address whale watching, kayaking, and recreational fishing. The Scholar will assist in collecting data, analyzing data, and compiling reports to communicate the findings to the tour operators, scientists, students, and community representatives. This data will help inform business managers as they manage and expand operations, help WRCA to conduct needs assessments in the future, and provide baseline data for future comparison. The Scholar will also have the opportunity to engage in the development of operator needs assessments, and compile case studies by visiting various coastal sites and operations and having direct interactions with company representatives. This may include participating in tour experience evaluations by acting as a tourist and using this experience to inform company needs assessments and data collection protocols of visitor experience and ocean knowledge. The Scholar will have the opportunity to help create training programs and public information dissemination campaigns. Preferred qualifications include being responsible, having attention to detail, acting professional, discrete and respectful in public, organizational skills, ability to multi-task, time management skills, proficiency in web based research, and experience with outdoor recreation and tourism. A driver's license and car are required. International students are eligible to apply.

### **14. U.S. Department of Agriculture – Agricultural Research Service (USDA-ARS); Newport, OR**

#### **Fish and Invertebrate Use of Estuarine Aquaculture Habitat**

Understanding species interactions in estuaries where shellfish aquaculture occurs is necessary to address regulatory issues faced by the industry and managers. The current project focus is directed primarily at comparing fish and invertebrate use of intertidal estuarine habitats where shellfish aquaculture occurs. We are using underwater video and traps to capture fish and invertebrates in oyster aquaculture, eelgrass, and open mudflat or edge habitats in Willapa Bay, Washington, Tillamook Bay, Oregon, and Humboldt Bay, California. We are also mapping these habitats to quantify this use at the estuarine landscape scale and designing experiments to test the function of these habitats by individual species. The Scholar will assist with field surveys and processing data (particularly video data). Preferred qualifications include experience with data entry and analysis, boating, fish and invertebrate capture, and video, ability to work well in a team, and willingness to work in adverse field conditions. International students are **not** eligible to apply.