

**Agency: Department of Environmental Quality (DEQ), Portland, OR**

**Position Title: Environmental Scientist- Stormwater monitoring analysis**

**Program Overview:**

The Department of Environmental Quality's Mission is *to be an active leader in restoring, maintaining and enhancing the quality of Oregon's air, water, and land*. DEQ pursues its mission through expressing the agency's values of environmental results, customer service, partnership, excellence and integrity, employee growth, teamwork, and diversity and working cooperatively with all Oregonians for a healthy sustainable environment.

**Project Scope:**

The fellow will work on projects that address both industrial and municipal stormwater concerns. The data generated from each of these sectors will be compiled into a single, uniform database for further analyses. A wide variety of questions can be addressed by coupling these data sets. For example, water quality data will be compared to existing criteria to identify "parameters of interest" and then examined in detail. Statistical techniques applied could include regression, correlation and cluster analyses. Day-to-day activities for the fellow may involve communication with local staff at various facilities, organizing quality assurance/quality control (QA/QC) data, researching new methods, writing summary reports on findings, and preparing presentations.

Industrial facilities across Oregon are required to sample stormwater runoff leaving their sites several times a year, and analyze them for a variety of contaminants. Concentrations are compared to target values, and if a target is exceeded, specific response actions are required. In 2011, Oregon used a simple mass-balance model and Monte Carlo simulations to develop industrial stormwater discharge concentration targets for copper, lead and zinc. The fellow will recreate this analysis using current data. In response to stakeholder concerns, Oregon also added monitoring of cadmium, nickel and chromium to the industrial stormwater monitoring program. The fellow will also examine data to assess the environmental impact of these parameters, and develop and implement a communication plan to staff, permittees and various stakeholders, which could include message development, Web page updates, presentations, and more.

In addition, water quality data from stormwater monitoring programs in municipal jurisdictions will be examined to identify "parameters of interest." The fellow will employ statistical methods to investigate the data.

**Skills Required and Preferred:**

- Self-motivated and well-organized
- Basic knowledge of stormwater rules and systems (ditches, culverts, outfalls, etc.)
- Ability to effectively communicate complex information to non-technical staff & stakeholders
- Skilled in QA/QC data
- Ability to organize and analyze large datasets, database management, statistical methods including: regression, correlations and cluster analyses
- Working knowledge of water quality assessment, including both biotic and abiotic parameters
- Efficient research skills to explore new methods, current data, and treatment technology
- Strong interpersonal skills and ability to interact with a variety of people and organizations
- Ability to prepare and present information that is effective at reaching a broad audience

**Opportunities and Benefits:**

- Experience a flexible and supportive working atmosphere located at DEQ Headquarters in Portland, OR; assist in program improvement.
- Gain experience with data organization, databases, data analysis, effective communications, stormwater pollutants, Oregon watersheds and topography.
- Improve knowledge of the Clean Water Act and the NPDES permitting program.
- Increase understanding of stormwater pollution and treatment (Low Impact Development, Green Infrastructure, proprietary systems).
- Job shadow with highly trained staff at other DEQ office locations (Including Hillsboro, Tillamook, Eugene, The Dalles, Bend and Salem).
- Travel to various cities and facilities in the Willamette Valley and across the state.
- Establish professional working relationships with various municipalities, industries, and State staff, including partnering organizations (such as USGS).

**Agency: Haystack Rock Awareness Program (HRAP), Cannon Beach, OR****Position Title:** Monitoring Specialist**Program Overview:**

The Haystack Rock Awareness Program (HRAP) is a stewardship and environmental education program whose mission is *to protect, through education, the intertidal and bird ecology of the Marine Garden and Oregon Islands National Wildlife Refuge at Haystack Rock*. With the goal of preventing ecosystem degradation, interpreters guide and educate visitors while they explore the tide pools and observe birds, and promote stewardship and community engagement through educational programs.

Haystack Rock supports a large nesting colony of seabirds, including the largest colony of tufted puffins on the Oregon Coast. Scientists and governmental agencies, like U.S Fish and Wildlife (USFW) and Oregon Department of Fish and Wildlife (ODFW), do not have the capacity to do long-term monitoring of coastal areas. Citizen science conducted through the Haystack Rock Awareness Program can be utilized effectively to collect baseline data and record changes in the intertidal ecosystem and nesting colony at Haystack Rock. Current monitoring programs for the tufted puffin and sea star populations are conducted through collaborative agency and citizen scientist efforts. HRAP staff and volunteer interpreters also record a number of anecdotal observations regarding the marine life and birds during each shift. These observations are currently used for social media, newsletters, and nature blog updates.

**Project Scope:**

The fellow's primary objective will be to develop scientifically sound monitoring protocols so that HRAP interpreters, citizens, and students can collect accurate and significant data during beach shifts. To accomplish this, the Monitoring Specialist will need to analyze observations and data recorded over the last 10 years, present a report, and provide protocols for the future. The fellow will work closely with HRAP, USFW, ODFW, and the scientific community. They will conduct monitoring activities during beach shifts, involving HRAP staff and volunteers as well as the general public. This position will also help the Education Coordinator integrate citizen science activities into our education curriculum for visiting school groups.

**Skills Required and Preferred:**

- Familiarity with establishing and maintaining field monitoring protocols
- Data management and analysis
- Good oral and written communication
- Enthusiasm for environmental education

**Opportunities and Benefits:**

- Strengthen skills in setting scientific protocols and analyzing data
- Gain skills in environmental education, inspiring stewardship, communication, and leadership
- Collaborate and network with local government, state and federal agencies, nongovernmental organizations, and the scientific community
- Contribute to and enhance the mission of a longstanding organization that is unique to the Oregon Coast

**Agency: South Slough National Estuarine Research Reserve (SSNERR), Charleston, OR****Position Title:** Coos Estuary Habitat Mapping Fellow**Program Overview:**

The South Slough National Estuarine Research Reserve (Reserve) is a 5,000 acre research natural area located in the Coos estuary. The Reserve was designated in 1974, and is protected and managed for the purposes of long-term research, education, and stewardship. In addition to its own science and education programs, designed to improve understanding of estuaries and coastal watersheds in our region, the Reserve facilitates the research and monitoring activities of visiting scientists and members of the public by providing research sites, facilities, and opportunities for collaboration with Reserve staff. A full description of the goals and objectives of the Reserve are contained in a management plan: <http://www.oregon.gov/dsl/SSNERR/docs/mngtplan.pdf>

**Project Scope:**

This fellow will collaborate with Reserve GIS staff to refine and validate the Coastal and Marine Ecological Classification Standard (CMECS) classification for the Coos estuary. The Reserve facilitated a community-driven effort (Partnership for Coastal Watersheds) to provide an environmental and socioeconomic data foundation for Coos County's revision of the Coos Bay Estuary Management Plan (CBEMP), guiding estuarine resource conservation and development decisions in the Coos estuary. Modernizing the plan requires a comprehensive inventory of the latest environmental and socioeconomic information in the Coos estuary and lower watersheds; addressed by the nearly complete Coos Estuary Inventory Project. A fundamental element of both the Inventory and the CBEMP revision is up-to-date habitat mapping, which Oregon's Department of Land Conservation and Development (DLCD) completed in 2014 by modifying a nationally standardized habitat classification scheme for Oregon estuaries - CMECS. For CMECS to be useful for the County's CBEMP revision, it needs to be refined and validated at the site scale.

**Office duties include:**

- Use GIS editing tools and supplemental information (i.e. imagery, existing spatial data, written material) to examine, validate, and refine the size, shape, and attributes of the CMECS polygons for the Coos estuary.
- Add modifiers to the CMECS codes for features needing more-detailed classification or description.
- Determine latitude/longitude coordinates for "ground-truthing" site visits.
- Create and edit GIS layers (raster and vector), databases, and cartographic maps, using appropriate data, tools, scales, projections, colors, and text.
- Link the resulting CMECS spatial data to the Coos Estuary Inventory Project data and assist in developing web-based maps.
- Participate in meetings/discussions with local staff, members of the Coos Estuary Inventory Project committee, and members of other agencies (Coos County, DLCD, NOAA, EPA) to resolve issues, provide progress reports, and provide technical advice.

**Field duties include:**

- Determine land ownership of "ground-truth" sites, and secure access permission either by phone or in person.
- Locate the "ground-truth" sites with a Global Positioning System (GPS) using appropriate transportation (vehicle, boat, foot) to document (via notes and photographs) the characteristics of the features in question, then update the information on the GIS layers back in the office.

**Skill Required and Preferred:**

Strong GIS skills are essential, as is an interest in combining field and office work. Prior experience/training with CMECS, Cowardin or National Wetland Inventory classification systems to understand CMECS habitat classification structure, codes and definitions, is preferred. Knowledge of, or interest in learning, characteristics associated with Pacific Northwest estuarine habitats is useful. Strong written and oral communication is required.

**Opportunities and Benefits:**

- Be a key part of the team whose work results in the first refined/validated CMECS classification, and the first revised estuary management plan in Oregon, providing other communities with a template
- Interact with federal, state and local agencies, and community stakeholders
- Work on a project where physical/biological data and accurate digital maps inform local land management planning
- Participate in other Reserve science and education projects

**Agency: Oregon Department of Fish and Wildlife (ODFW), Newport, OR****Position Title:** Marine Science Communication Fellow**Program Overview:**

The Oregon Department of Fish and Wildlife (ODFW) mission is *to protect and enhance Oregon's fish, wildlife, and their habitats for use and enjoyment by present and future generations*. The Marine Resources Program (MRP) assesses and manages Oregon's marine habitat, biological resources and fisheries that occur in the ocean and estuarine waters. In addition to direct responsibilities in state waters, the MRP shares co-management responsibility with state, federal, regional and international decision-makers who together develop management strategies that affect Oregon fish and shellfish stocks, fisheries, and marine habitats. The program's work focuses on 1) marine resource management (policy and regulation), 2) fisheries monitoring and sampling, and 3) research and assessment of species and habitats. The communications fellow would concentrate on the third category, developing communications that showcase the MRP's multiple research projects.

**Project Scope:**

Depending on the Fellow's interests, area of discipline, and skills, the fellowship will focus on one or more of the following projects:

**1) Video Coordination and Promotion:** The fellow will develop a coordination plan and protocol for all projects that generate underwater video, along with a system and protocols to streamline video production. They will also write a report on best practices for promoting YouTube channel and videos, market-research best science videos and possible pathways to video promoters (local and national), produce short videos that tell the science stories of MRP, train others in best practices for video content and production, and collaborate with scientific partners to expand potential science communication products .

**2) Develop Outreach Materials:** The fellow will help develop a theme that speaks to MRP mission and can be used across diverse platforms. They will also create new outreach and education materials pertaining to research and monitoring activities and results, including development of new marine fishing brochures. The fellow will coordinate with website managers to update MRP pages content and materials, and train others in use of listserv service (produce templates, set up automations). They will also research and create an evaluation system on select outreach products (communication metrics).

**3) Visual Assets Catalog:** The fellow will modify Marine Reserves Flickr protocols to apply to MRP, create and develop MRP Flickr site and link to other appropriate agencies, catalog visual assets, train others in the use of Flickr as a repository, and evaluate the potential use of social media platforms.

Other work may include assisting Program staff with developing outreach products in coordination with State Parks and Recreation Department as well as non-profit organizations, and developing reports for presentation to community groups, scientists, and the Oregon Legislature.

**Skills Required and Preferred:**

Required - Strong oral and written communication; training in natural resources, fisheries, marine science or other related field; teaching, communication or interpretation skills related to natural resources; experience working in large teams and related coordination and organizational skills.

Preferred - Proficiency working with visual media (photographs, video), including formatting, editing, cataloging and making media available through web interfaces; proficiency with web design; proficiency with science communication; experience developing public outreach strategies and plans.

**Opportunities and Benefits:**

- Work as part of and coordinate many different projects with an interdisciplinary team engaged in ecological research, human dimensions research, outreach and education, public/community engagement, and marine resource management and policy.
- Create contacts and working relationships with marine resource policy makers, managers, users, educators, and scientists.
- Opportunity to co-author or author state agency reports.
- Opportunity to learn about ODFW and marine resource management by working with various staff from different offices, attending Oregon Fish and Wildlife Commission meetings, and Pacific Fishery Management Council meetings.

**Agency: Oregon Department of Fish and Wildlife (ODFW), Newport, OR****Position Title:** Subtidal Shellfish Habitat Fellow**Program Overview:**

The Oregon Department of Fish and Wildlife's mission is to *protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations*. The ODFW Shellfish Program supports this mission by providing fishery-dependent and fishery-independent data for bay clam, crab, and other shellfish populations and estuarine habitats. Data are used by local, state, and federal agencies, and resource managers for stock assessments and to evaluate aquaculture, dredging and other development proposals and activities. The Shellfish Program also provides a suite of products such as clamming and crabbing maps and field identification cards for recreationally harvested species and areas.

Over the next year, the Shellfish Program will use hydroacoustic techniques and underwater video surveys to characterize subtidal habitats in Oregon's estuaries. The specific purpose of the project is to collect new spatial data, descriptive observations, and underwater images to characterize the ecological condition of subtidal habitats in the marine-dominated regions of estuaries. This information will be used to enhance the stock assessments for shellfish populations and help recognize the need for mitigative actions associated with damage to subtidal habitats by dredging activities.

**Project Scope:**

The fellow will work closely with Shellfish Program staff to develop and test survey methods, as well as data collection, analysis, summary, and application. Specific tasks will depend on project needs and the fellow's interests and skills. The fellow will:

- Conduct underwater surveys of subtidal habitats using a BioSonics MX echosounder, benthic video lander, and towed video sled deployed from a small boat to collect ecological data about estuarine subtidal habitats
- Analyze the hydroacoustic data and video images
- Collect shellfish and habitat data (on foot) in intertidal flats as part of "ground truthing"
- Generate ArcGIS maps of subtidal habitats, and conduct spatial analyses
- Assist report writing and information requests
- Participate in ongoing shellfish stock assessment work, program meetings, and other activities

**Skills Required and Preferred:**

The fellow must be comfortable working in a team as well as independently, and working in difficult and strenuous conditions (e.g. rain, wind, early mornings, working on mudflats). Small boat and ArcGIS experience and knowledge of invertebrate biology is preferred, but not required. Strong written communication and analytical skills are desired.

**Opportunities and Benefits:**

- Participate in an interdisciplinary project that collects essential data needed to fill an important information gap for natural resource management
- Gain first-hand experience and proficiency in the description of subtidal habitats in Oregon bays and estuaries valuable to resource managers and stakeholders
- Assist with development of agency perspectives and policy on the ecological value of subtidal habitat
- Establish professional working relationships within ODFW and other agencies

- Learn how technical information and scientific data are used for resource management
- Learn about marine and estuarine resource management issues by attending meetings and reviewing information requests
- Acquire skills and experience with ArcGIS, working on boats, and hydroacoustic and video hardware and software
- Opportunity for exposure to diverse field projects

**Agency: Lower Columbia Estuary Partnership (LCEP), Portland, OR****Position Title:** Hydrodynamic Modeling Fellow**Program Overview:**

In 1995 the LCEP was established by the governors of Washington and Oregon and the US Environmental Protection Agency (USEPA) when USEPA designated the lower Columbia River ‘an estuary of national significance’ under Section 320 of the Clean Water Act. The LCEP is one of 28 National Estuary Programs (NEP), and each NEP facilitates and coordinates a collaborative network of local, state, federal and tribal government, non-profit, academic and industry partners to develop and implement the actions within its Comprehensive Conservation and Management Plan (CCMP). Restoring biological integrity of the lower Columbia River and estuary is an ultimate goal of the LCEP; to achieve this goal LCEP is developing a regional restoration strategy including predicted impacts of climate change.

**Project Scope:**

The fellow will support the LCEP by developing a hydrodynamic model for the lower Columbia River and estuary. Once constructed and properly calibrated, such a tool will serve multiple purposes, including evaluation of candidate restoration sites to inform larger policy related issues such as predictions of sea level rise as a result of climate change. The LCEP possesses software tools required for model development, as well as the required data inputs (bathymetric and topographic elevation data). Previously developed smaller scope models can serve as a framework, if desired by the fellow. Upon completion of model development and verification, an additional desired task is to develop and run initial sea level rise scenarios for the lower Columbia River. Determination of regionally relevant climate change variables will rely on published literature from the University of Washington’s Climate Impacts Group, the National Research Council’s “Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future”, and NOAA’s “Global Sea Level Rise Scenarios for the United States National Climate Assessment”.

**Skills Required and Preferred:**

- Strong knowledge of coastal hydrodynamic modeling.
- Work in a team environment with understanding of roles and responsibilities of members.
- Provide adequate communication to members of the team and supervisors, including emerging issues and concerns.
- Strong interpersonal skills; ability to interact with a variety of people or organizations.
- Oral and written communication skills.

**Opportunities and Benefits:**

- Gain experience building and applying hydrodynamic models to inform critical issues in natural resources management.
- Gain experience working in a science-based, non-profit conservation organization.
- Establish professional working relationships with a variety of governmental, academic, and non-profit organizations focused on natural resources management.
- Contribute to products that will inform natural resources policy development in the Pacific Northwest as well as Columbia River restoration efforts.
- Publish results in a refereed publication.