2016 Summer Scholar Host Descriptions

1. **Oregon Department of Fish and Wildlife (ODFW) Newport, OR**

Recreational Ocean Dungeness Crab Fishery Effort and Gear Research
The recreational Dungeness crab fisheries in Oregon's estuaries and ocean waters can annually harvest over one million pounds of crab from an estimated 120,000 individual trips. The Oregon Department of Fish and Wildlife (ODFW) monitors the estuary and ocean fisheries with dockside sampling to collect data on effort and harvest, but there is a need for increased monitoring data. The Summer Scholar will work collaboratively with the Shellfish Program and the Oregon Recreational Boat Survey (ORBS) to develop a sampling protocol, collect data directly from recreational crabbers at boat access points, and provide a completed report on their findings. Specifically, this proposed project will collect data on the recreational ocean crab fishery effort, gear usage and loss, crab size frequency, and crab shell condition. The Scholar will keep track of the data collected by entering it into a database, performing summary statistics, and generating data reports. This project will be a hands-on interactive experience in marine resource management, and the Scholar will learn valuable field data collection and analysis techniques. Working in the field with Dungeness crab can be challenging and requires an ability to stay focused in sometimes adverse conditions. Additionally, the Scholar must possess good social skills and act in a professional manner when working with the public. A student with strong quantitative skills (and/or an interest in learning more) will benefit from the analysis of real-world datasets.

2. **U.S. Environmental Protection Agency (EPA), Newport, OR**

Nutrient Uptake as an Ecosystem Service of Estuarine Wetland Habitats
Research at US EPA seeks to quantify goods and services produced by estuarine habitats that are relevant to the well-being of coastal residents. The wetland nutrient study currently focuses on quantifying the transport and transformation of dissolved nitrogen as it travels in ground and surface water from adjacent uplands, through salt marsh landforms, and out to the adjacent estuary. The Summer Scholar's research will focus on measuring critical habitat characteristics that regulate the movement and retention of water and biogeochemical processes in multiple salt marshes so that we can assess the transferability of our nutrient removal models to those sites. The work will include field and lab work to collect and process samples, measure environmental parameters, and help analyze and interpret the data. The Scholar will be part of a research team and involved with planning and conducting experiments and sampling surveys in the field and subsequent analysis of the data. The Scholar will be trained by EPA staff on sampling and analysis methods, including quality assurance procedures. Desired but not required experience may include experience collecting water, sediment, or soil samples; operating water quality monitoring equipment or other aquatic ecology field instrumentation; freshwater, marine or estuarine ecology or biology; freshwater, marine or estuarine environmental chemistry or biochemistry; and field research. Aspects of the field work will be physically demanding, including walking through thick mud, working on a boat, and potentially working long hours under adverse conditions. Analytical, writing, and computer skills (such as familiarity with Word, Excel and Powerpoint) would be useful.

3. **Oregon Department of Fish and Wildlife (ODFW) Newport, OR**

Marine Reserves Ecological Monitoring and Scientific Communication

The ODFW Marine Reserves Program is tasked with the ecological monitoring of Oregon's five unique marine reserve sites. The Scholar will work directly with our research team in order to gain professional experiences and practical skills in the field of marine reserve science. The Scholar will have the opportunity to participate in activities ranging from at-sea field work, data collection, data entry, and communication of science to diverse audiences. Field work will include participating in collecting juvenile fish samples, deploying and retrieving remote-sensed instruments such as video landers, and potentially rocky intertidal sea star surveys. This work includes collaborating with commercial and recreational fishermen, as well as scientific SCUBA divers on marine reserves monitoring efforts. The Scholar will gain experience with data entry and scoring underwater video for various biological species groups (i.e. fish, invertebrate, and macroalgal communities). If the Scholar has previous statistical and/or Access database knowledge, he or she can be involved in data quality control and analysis. Finally, the Scholar will have the opportunity to assist in creating outreach and interpretive materials for Oregon's marine reserves by documenting field work using high-definition video and still images, creating short videos about ecological monitoring, and increasing the marine reserves online presence by creating content for blogs and social media sites. This Scholar should be responsible, detail oriented, able to work as part of a team, able and willing to participate in field work at-sea, and have a working knowledge of MS Excel.

4. **Oregon Department of Fish and Wildlife (ODFW) - Newport, OR**

Marine Reserves Human Dimensions Project

The Oregon Department of Fish and Wildlife (ODFW) Marine Reserves Program (MRP) has a mandate to conduct research to monitor the socioeconomic impacts of marine reserve implementation. To address this mandate, the ODFW Human Dimensions Project employs such research tools as regional economic impact analysis, community case studies, in person interviews, and large scale survey research. The Summer Scholar will gain professional exposure to marine social science research design, data collection and analysis. The Scholar will have the opportunity to participate in a broad range of projects including social research focused on community resilience and study of fishing effort shift at various spatial locations related to marine reserves. Field work may include conducting actual interviews; office work may include assistance with data entry, literature reviews and related activities. The Scholar may also have the opportunity to assist research report writing and may be listed as co-author on agency reports. The Scholar will gain valuable experience in social science data collection, stakeholder interaction, data management, data coding, and project planning and management. If the Scholar has previous statistical knowledge, he or she can be involved in data analysis. The ideal candidate should possess strong social skills and be comfortable with conducting public interviews, enjoy outdoor experiences, and be capable of critical and abstract reasoning. The Scholar will need to be able to multi-task and must be self-directed. The willingness to participate in field work at various coastal communities, and the associated travel, is required. Excellent writing skills and a working knowledge of MS Excel and/or SPSS are highly desirable.

5. **Oregon Sea Grant - OSU Lincoln County Extension Office – Newport, OR**

Assessing Impacts of Direct Marketing Programs

The Scholar would be working both with OSU Lincoln County Extension fisheries extension and Lincoln County Economic Development Alliance to capture impacts to businesses from direct marketing programs that happen during the summer of 2016. These programs include "Shop at the Dock," buying workshops, and other programs that may be developed to "help marine businesses of Yaquina Bay." The Scholar will capture the economic and business impacts that these programs provide. The Scholar will design the tool (with assistance) used to capture these impacts and will be responsible for having the businesses that participate in these programs fill out the tool. The Scholar is expected to spend 20% of their time providing general support for educational programming, such as assisting at events and preparing materials, 50% of their time developing and using a tool for assessing economic and business impacts of programming in Yaquina Bay, 20% of their time building crucial relationships with commercial fishing businesses, and 10% of their time on data analysis and writing reports. The Scholar chosen for this position needs to be able to work independently; while tasks will be directed and guidance given, the Scholar must be able to complete these tasks on their own. The Scholar should be an extrovert with strong social skills, this is essential for both assisting in the educational programming, building relationships, and implementing the survey tool.

6. **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, including temperature increases, sea level rise, and ocean acidification. 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 – finding, interpreting, and extracting key species information and thresholds from a variety of sources, including the literature and agency reports and databases. The species information is then synthesized in an online decision tool, the Coastal Biogeographic Risk Analysis Tool (CBRAT; http://www.cbrat.org/). The Scholar could assist in advancing the research in several possible ways, depending in part on their skills and interests. One opportunity is to synthesize information on high priority taxa, including interpretation of often somewhat opaque reports. This would involve data mining (finding and extracting information) and then entering the data in the life history and environmental schema used in CBRAT. A second idea would be to help review the literature to 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. The most important skill for the Scholar to have is the ability to interpret and summarize diverse types of information found in the literature. Familiarity and an interest in programming are preferred, but not required. Attention to detail, the ability to ask questions, and familiarity with MS Word and MS Excel are also important skills.

7. **Wild Rivers Coast Alliance (WRCA) – Bandon, OR**

Regional Tourism Development on the Oregon Coast

Travel Oregon conducted a Rural Tourism Studio program on the Wild Rivers Coast. Now the region is working to coordinate tourism efforts and create a multi-year regional tourism development plan for the South Coast of Oregon. The Tourism Studio assisted rural communities with the development of their tourism industry in a way that will help stimulate the local economy, protect and enhance local natural and cultural resources, and foster pride amongst participants. The Scholar will assist in organizing the regional steering committee and action teams while working with participants and coordinating product development. Other initiatives include working on the Wild Rivers Coast farm trail or Oregon's Whale Trail in coordination with an OSU researcher. Additionally, the Scholar would work with WRCA and Washed Ashore on producing communication about showcasing Washed Ashore as being the first ever art exhibition in the National Smithsonian Zoo. Washed Ashore is a program where community members clean up the beaches and use the marine debris to construct magnificent sculptures. The Scholar needs to be responsible, independent, attentive to details, professional in public, discrete, and respectful. Great social skills and experience with or excitement about project management are necessary for this position. The Scholar should also possess good multi-tasking and time-management skills, and should have a research background and proficiency in web-based research.

8. **South Slough National Estuarine Research Reserve (SSNERR) – Charleston, OR**

Recruitment Patters of Oysters and Temporal/Spatial Patterns of Fish

The Summer Scholar will work with South Slough Reserve staff and interns on two biological monitoring projects. The first project focuses on understanding recruitment patterns of native oysters (*Ostrea lurida)* throughout the Coos estuary. The Scholar will be directly involved in monitoring recruitment of juvenile oysters at several locations throughout the estuary to determine the recruitment and restoration potential of different locations. The second project relates to understanding temporal and spatial patterns of fish assemblages in South Slough. This project will involve monthly beach seining at six sites to measure the species diversity and richness of fish assemblages. The Scholar will become an important part of our research team and be directly involved in all aspects of both projects, including beach seining, deploying and retrieving oyster settlement plates, microscopy work in the lab, data entry, contributing to reports, and laboratory and fieldwork associated with our water quality monitoring program. The Scholar will also be expected to train and work with community volunteers that participate in fieldwork. The fieldwork schedule is determined by the tide and therefore some work will take place early in the morning and often at odd hours. The ideal Scholar will be independent, have a background and/or interest in marine science and resource management, and be unafraid of getting muddy or wet. The Scholar should have a positive attitude, a strong work ethic, be detail-oriented, and have familiarity with MS Word, MS Excel, and basic statistical analyses.

9. **Oregon Department of Fish and Wildlife, (ODFW) - Newport, OR**

Shellfish Assessment using Unmanned Aerial Vehicles (UAVs)
The Oregon Department of Fish and Wildlife (ODFW) Shellfish Program is mandated to conduct shellfish and habitat assessments for each estuary in Oregon. These assessments are used to inform resource management decisions and to track changes in estuaries. The Scholar will aid the ODFW Shellfish and Estuarine Assessment of Coastal Oregon (SEACOR) team in exploring the use of Unmanned Aerial Vehicles (UAVs) for surveying estuaries. The Scholar will work collaboratively to test UAV platforms and sensors and develop a pilot study evaluating the utility of this technology for sampling estuarine habitats. The Scholar will also be engaged in evaluating different sampling methods to characterize populations of Oregon's largest recreationally and commercially targeted clam species, the gaper clam (*Tresus capax*), and actively participate in Shellfish Program outreach events. The primary roles of the Scholar will be collecting field and laboratory data, and working with ODFW and collaborators to analyze data from experiments. The Scholar will gain valuable technical, analytical, and field skills, gain direct experience with how a resource agency operates, and improve her/his understanding of the role of research in resource management decisions. The Scholar may also have the opportunity to gain experience in field biology, shallow water boat use, database management, stock assessment, communicating science and management to the public, and learning how the shellfish program makes decisions on shellfish resources. The Scholar should have a basic background in biology and ecology, be comfortable to work independently and as a member of a team, and willing to work outdoors in all weather conditions including walking on unstable substrates (e.g. walking on intertidal flats where they may sink up to knee deep).

10. **U.S. Environmental Protection Agency (EPA), Newport, OR**

Identifying the Causes and Impacts of Acidification in PNW Estuaries
Increasing anthropogenic atmospheric carbon dioxide (CO2) levels are causing a decline in oceanic pH, which impacts marine ecosystems. In coastal and estuarine waters, this acidification may be exacerbated by local processes such as atmospheric emissions, and point and nonpoint nutrient inputs. Climate scenarios also predict major changes in precipitation, extreme weather events, and periods of low flow, having consequences on the fate and transport of pathogens in coastal waters. The Scholar will contribute to field and lab-based studies focused on both identifying the causes and impacts of acidification in Pacific Northwest estuaries and relating climate-altered flow regimes to the distribution and fate of pathogens and fecal indicator bacteria. During the summer, we will initiate mesocosm experiments where we will manipulate residence time and nutrient levels and look at the effect on carbonate chemistry. In addition, we will conduct field studies in Tillamook Estuary where we will monitor 1) carbonate chemistry in situ and using stable isotopes of dissolved nitrogen and primary producers to tease out the role of anthropogenic nutrients in influencing carbonate chemistry and dissolved oxygen levels, and 2) pathogens, microbial source tracking markers, and fecal indicator bacteria in sediment and water samples to better understand the distribution and sources of pathogens and fecal indicator bacteria to the Tillamook Estuary. The Scholar would gain experience in field sampling, laboratory analysis, experimental design, usage of water quality instrumentation including in

situ carbonate chemistry, DNA extraction, enumeration of fecal indicator bacteria with IDEXX techniques, and data analysis. Aspects of the field work may be physically demanding including walking through mud, working on a boat, and possibly long-field days. Desirable skills are experience in freshwater/steam ecology, marine or estuarine biology, chemistry, experience with macrophytes, experience working with DNA or other microbiological/molecular techniques or field/lab research.