

# **Developing a Shoreline Assessment Curriculum**

Washington State  
Department of Ecology  
*Shorelands and Environmental Assistance Program*

**Proposal for  
NOAA Coastal Services Center  
Coastal Management Fellowship**

## Introduction

Washington's Department of Ecology is seeking a Coastal Services Center Coastal Management Fellow to help develop a shoreline assessment curriculum for integrating scientific information into the next generation of shoreline management plans.

## Background

The Department of Ecology (Ecology), Washington's Coastal Zone Management Agency, is responsible for overseeing shoreline planning and land use decisions across fifteen counties and 150 cities with more than 15,000 miles of marine and freshwater shoreline under jurisdiction. The core of the state's federally approved Coastal Zone Management Program (CZMP) is the Shoreline Management Act (SMA), which requires these local governments to implement Shoreline Master Programs (SMPs) that protect ecological functions while encouraging public access and water-dependent development. These SMPs include mapped shoreline environment designations that delineate areas under shoreline jurisdiction. Use regulations for these designations are based on the specific biophysical limitations and the goals and aspirations of local citizens. Each locally developed SMP must be reviewed and approved by Ecology prior to being legally effective. Local governments and Ecology enforce the provision of adopted programs through a permit system. Ecology chief function in advancing the state's CZMP goals is to provide assistance to local governments to insure compliance with the policy and provisions of local master programs.

The State shoreline program is poised at a critical turning point:

- Washington's coast is among the most rapidly developing in the nation. The state's chief land use law (the Growth Management Act) requires that all cities and counties plan for expected population increases while protecting critical areas. Comprehensive plans and local zoning must be integrated with SMPs. Jurisdictions must use "the best available science in developing policies and development regulations to protect the functions and values of critical areas."
- Several species of salmon are now listed as threatened under the Endangered Species Act in Washington's core population center. The decline of these culturally and economically significant species is driving state and local agencies to carefully analyze the condition of our shoreline, to assess the potential impacts of land use decisions on salmon habitat, and to develop plans and policies to protect this habitat.
- Most existing SMPs are more than twenty years old and are incapable of addressing the task of balancing appropriate growth and protecting critical resources. The State Legislature has acknowledged this and has required Ecology to develop new rules to guide updated SMP development. These new rules will explicitly detail the ecological processes that must be protected and establish criteria for use of scientific information. The foundation of the local process is preparing shoreline inventories and assessments.

Over the past several years, Washington State has invested significantly in a variety of efforts to address these challenges. Resource agencies, universities and local governments are collecting data, developing ecosystem assessment models, and preparing habitat evaluation reports.

Local governments have told Ecology they want accessible data and pragmatic guidance on how to extract and synthesize relevant information for coastal planning.

To address these needs the Coastal Program created a Guidance Outreach Assistance Team (GOAT). Led by a previous Coastal Services Center Coastal Fellow, the team has developed an interactive mapping internet site to display key data and information, developed digital data and made it accessible to local governments, and conducted initial training workshops.

The project will advance the efforts of the GOAT. Newly established deadlines have increased the number of jurisdictions updating their SMPs and consequently there is an urgent demand for cogent guidance.

## Goals and Objectives

The overall goal of this project is to develop a guidance curriculum for local shoreline assessments. The guidance will:

- explain what data and information to use
- point to appropriate sources of information
- explain how to interpret and use existing information effectively.
- offer illustrated examples of useful characterizations.
- build technical capacity in local governments.
- include feedback mechanisms for improvement over time.

The project requires a talented individual who can work with the team to develop clear pragmatic guidance.

## Project Description, Milestones and Outcomes

Below is a description of the overall curriculum project, with general milestones and outcomes. The fellow will be integrated into an interdisciplinary team to complete this multifaceted project. The fellow will be involved in each of these tasks but where they focus their time will depend on the skills and abilities they bring to the team. Note that some of these tasks will be accomplished concurrently.

### ***Orientation***

The Coastal Fellow will be introduced to staff and management of the Shorelands and Environmental Assistance Program and partner agencies. [*A pre-fellowship planning visit will be scheduled before the fellowship begins*]. The fellow will review background information regarding Washington's major coastal issues and participate with program staff in field visits, interagency meetings, and outreach activities.

*Outcomes:*

- Familiarity with staff, operations, and resources of state coastal program (Year 1, Qtr 1)
- Integration into Guidance Outreach Assistance Team and clarification of role in project (Year 1, Qtr 1)

***Research existing information***

The Coastal Fellow will research and evaluate existing data sources, ecosystem modeling efforts, and analysis reports. Much of this information was developed for purposes other than shoreline planning and is not often readily transferable to shoreline assessments. However, excellent assessments can be prepared if the relevant information is extracted and appropriately synthesized.

Along with local jurisdictions, GOAT has identified the core information sources the fellow will be working with. These include the following:

*Data collection:*

Ecology's oblique aerial photography, net shore drift and unstable slopes maps.  
The Department of Natural Resources' geographically explicit nearshore inventory including both natural and anthropogenic features (Shorezone).  
The Department of Fish and Wildlife maps of listed species and priority habitats, including presence of anadromous fish and forage fish spawning sites.  
The Department of Health's shellfish monitoring data.  
The Puget Sound Action Team's long-term ambient monitoring data.  
Nearshore bathymetric LiDAR data gathered by a federal/state/local consortium.

*Ecosystem modeling:*

Ecology water quality studies (such as TMDLs, nonpoint pollution studies, and stormwater runoff models) and wetland function assessment models.  
Department of Transportation and local government build-out assessments (Alternative Futures and Smart Growth).  
University of Washington land use change model (Urban Sim).

*Analysis reports:*

State Conservation Commission salmon "limiting factors" analysis reports at a watershed scale for areas with listed salmon species.  
Local government shoreline inventories and flood hazard management plans.

Outcomes:

- Review and evaluate existing shoreline inventory data sources (Year 1, Qtrs 1 - 2)
- Review existing assessment methods and approaches (Year 1, Qtrs 1 - 2)
- Develop familiarity with Ecology's existing guidance documents, case studies and web development tools (Year 1, Qtrs 1-2)
- Develop a categorized list that discriminates priority information sources based on applicability to shoreline planning (Year 1, Qtr 2-3)

### ***Guidance document***

The Coastal Fellow, together with the GOAT, will prepare a guidance document for conducting local shoreline assessments. The document will explore how to overlay data at appropriate scales, what questions to ask of the data, how the necessary information can be extracted from reports to answer these questions, and what pieces of modeling output can be usefully integrated into shoreline characterizations. The guidance will be informed and illustrated by case examples, including maps and images.

#### Outcomes:

- Draft guidance document (Year 1, Qtr 3-4)
- Circulate draft documents internally and to local governments for comments, including workshops (Year 2, Qtr 1)
- Summary of feedback and recommended modifications (Year 2, Qtrs 2)
- Prepare final guidance document based on feedback (Year 2, Qtr 2)
- Present work at national meetings (Coastal Society or Coastal Zone)

### ***On-line tutorial***

Drawing from the guidance document, the Fellow will develop an on-line step-by-step tutorial that demonstrates how to use available data for shoreline assessments. This Web site will include case examples of a variety of shorelines representing a range of jurisdiction size and stages of development. The resource manager will select the example(s) that most closely resembles their shoreline and review these case study assessments from start-to-finish. The tutorial will incorporate maps and data sets from the Digital Coastal Atlas with suggestions for how to integrate the information into developing local SMPs.

#### Outcomes:

- Post draft Web site on intranet for internal review (Year 2, Qtr 2-3)
- Incorporate suggested modifications (Year 2, Qtr 3)
- Post final Web site on internet and conduct training workshops (Year 2, Qtrs 3-4)
- Present work at national meetings (Coastal Society or Coastal Zone)

## **Fellow Mentoring**

The Coastal Fellow will be mentored by Brian Lynn, a biologist and coastal planner. Brian is manager of Ecology's Guidance Outreach and Assistance Team, the group of employees that will work with the Fellow day-to-day. Brian will be the primary point of contact for administrative questions and project guidance. The Team is actively involved with other key staff in areas of web publication, GIS, and other coastal specialties. The team will meet regularly to review timelines and evaluate progress.

The Fellow will be considered part of our Coastal and Shorelands Section and will be expected to attend staff meetings and participate in program discussions. They will be provided opportunities to join staff on field visits, in internal and external meetings, and at a range of regional coastal events. The Fellow will have ample opportunities to meet coastal specialists with all levels of government, with nonprofit groups, and with academic institutions. This project will provide an exciting opportunity to learn about all aspects of a state coastal program and a wide range of coastal management issues.

The Fellow will receive assistance in identifying key individuals to meet with, important sources of background information, and will be provided with the necessary technical resources and training to carry out the project.

The Fellow will be encouraged to present their work both at regional and national meetings and to publish whatever aspects of their work they deem most significant.

## **Project Partners**

Ecology will actively work with other agency staff, watershed organizations, state agencies, universities, and non-governmental organizations to fully make use of available information and to ensure that Ecology's guidance is technically sound and compatible with other approaches.

Potential partners include:

### Internal

Guidance Outreach Assistance Team  
Information Services and GIS team  
Padilla Bay National Estuarine Research Reserve  
Watershed Planning Units  
Non-Point Source Pollution Section

### External

Washington Department of Natural Resources  
Washington Department of Fish and Wildlife  
Washington Department of Community, Trade, and Economic Development

Washington Department of Health  
Washington Sea Grant  
Puget Sound Water Quality Action Team  
Environmental Protection Agency  
NOAA/NOS Pacific Coast Program  
University of Washington

## Cost Sharing

Fellows will have all the amenities and services of agency staff including office space and equipment, personal computer, and telephone, remote calling card, fax, and e-mail access. Use of agency vehicles will be permitted. In addition, funds will be provided for administrative travel, technical training opportunities, and purchases of data products, supplies, and software.

Funding for cost sharing (\$5,000 in year 1, \$10,000 in year 2) has been budgeted for the Fellow and included in the Department of Ecology budget plan for the next two years.

Office administrative support is available, as well as networked computers, a GIS and cartography center, and Internet capabilities. The Department has an anonymous ftp server. Computer capacities include 9 Unix Sun Sparc workstations, HP 9000 minicomputer, Data General workstation, Altek 9600 Datalab digitizer, 2 Calcomp 9500 digitizers, and a HP DesignJet 650C plotter, and a Horizon Ultra color scanner. A state printer and copy center is located in the Ecology headquarters building in Olympia with large format and color copy capabilities.