

# COASTAL PROTECTION FUND 2004

“Woodard Bay Oyster Restoration”

- proposal submitted November 30, 2004

## Project Sponsor:

The Nature Conservancy  
217 Pine St., Suite 1100  
Seattle WA 98101  
(206) 343-4345 tel.  
(206) 343-5608 fax

## Primary Contact/Project Manager:

Betsy Lyons  
[blyons@tnc.org](mailto:blyons@tnc.org)  
(206) 232-4345 ext. 340

## Authorized Signature:

---

David Weekes, Washington State Director



---

## SITE DESCRIPTION:

The project area is located in Woodard Bay, one of two small bays in Henderson Inlet of South Puget Sound, Washington. Woodard Bay is one of two places identified as a suitable location for our proposed shellfish restoration project. The tidelands and adjacent uplands are owned by the Department of Natural Resources and managed as the Woodard Bay Natural Resource Conservation Area. Previously, the site was owned by Weyerhaeuser Corporation and was home to the South Bay Log Dump. The adjacent, sub-tidal lands are also owned by the Department and available for lease.

The site is Essential Fish habitat for Puget Sound Chinook (Fed. Threatened, State Candidate), and designated critical habitat for Olympia Oysters (State Candidate). It is home to a large population of harbor seals and provides important nursery habitat for Dungeness crab and forage fish.

## PROJECT DESCRIPTION:

This proposal combines three types of conservation actions that have broad potential for application throughout Puget Sound: 1) submerged lands conservation leasing, 2) restoration of abandoned log storage sites, and 3) native oyster restoration. The Nature Conservancy proposes to lease approximately 10 acres of submerged land from Washington Department of Natural Resources (DNR) and implement a pilot oyster restoration effort. Restoration activities are focused on demonstrating the ability to restore suitable substrate for natural recruitment by native Olympia oysters (*Ostrea conchaphila*). Restoration will include monitoring the pilot site to determine current levels of native oyster recruitment and experiments to determine the best places to restore shellfish beds. A critical aspect of the restoration project is to conduct a sediment survey to assess the amount, distribution and type of wood debris on site and develop recommendations for its removal or restoration. Wood debris will be removed as necessary from the subtidal and intertidal areas and oyster cultch will be placed in strategic locations to provide substrate for oyster colonization.

## GOALS:

1. Restore subtidal habitat to enhance recruitment and survival of native shellfish
2. Develop methods for native oyster restoration in anticipation of a long-term native shellfish restoration program for south Puget Sound (by conducting oyster recruitment and survival studies).
3. Actively restore adult and juvenile oysters to a portion of the site where oysters were historically found
4. Pilot the use of a new Conservation Lease Program developed by DNR's Aquatic Lands program

## OBJECTIVES:

1. Scope and implement sediment restoration activities
  - Conduct biological and sediment surveys
  - Remove excess wood debris from the subtidal and intertidal habitats as necessary
2. Conduct natural recruitment studies
  - Install cultch plates and carry out oyster spat settling experiments to help determine the best location for cultch placement for restored shellfish beds.
3. Conduct oyster survival studies
  - Place juvenile and adult native oysters in and around the pilot restoration area to examine the impacts of predation, disease and sediment condition on survival to help determine the best location for large scale cultch placement for restored shellfish beds.

## BENEFITS TO PUBLIC NATURAL RESOURCES:

### **Population enhancement of the nearly extirpated native Olympia oyster (State candidate)**

Both native Olympia (*Ostrea conchaphila*) and non-native Pacific oysters (*Crassostrea gigas*) are present at the site. There are also clams of various species present including horse clams (*Tresus nuttalli*) and native soft shell clams. The small population of native oysters appears to be sustaining itself in tidal channels inside the NRCA, while the few large Pacific oysters in the area appear to be older relics from either direct plantings, or sporadically successful natural sets of spat from commercial beds in Henderson Inlet. These findings indicate that while the site is disturbed, the critical ecosystem processes needed to support shellfish are still somewhat intact and could benefit greatly from the proposed sediment restoration. We anticipate increased spat recruitment as a result of the wood waste removal and re-introduction of appropriate substrate (oyster shell cultch).

### **Restoration of aquatic habitat and the benthic invertebrate community**

We predict that this project will also benefit other benthic invertebrates such as worms and crustaceans, which are an important food source for crabs, oysters and multiple fish species including flounder, sole, and juvenile salmonids. As oyster populations increase we also anticipate long-term benefits to water quality since oysters are filter feeders and concentrate many of the pollutants and pathogens from their surroundings.

### **Development of restoration methodology**

This site and its problems are not unique. Much of the marine environment in Washington has suffered from past land uses and the impacts of commercial activity including log storage. DNR has been working to determine the best way to address wood waste problems at multiple sites. If the proposed pilot project is successful at restoring benthic communities and enhancing native oyster survival at the site, we can expand restoration actions to several thousand feet of shoreline adjacent to DNR's upland Natural Resource Conservation Area (NRCA) and to other sites altogether. This action will lead to what is essentially an integrated terrestrial, intertidal and submerged nearshore reserve. Extensive monitoring should also provide much needed information about the site that will help inform future restoration actions as well as management decisions about the NRCA.

### **Community support for restoration efforts on public lands and waters**

We intend to involve local community groups in understanding the benefits of native oyster reintroduction and ultimately enlist their help in restoration (putting cultch down, introducing adult oysters and native

oyster spat), and monitoring and stewardship of restored habitats to ensure the success of the reintroduction program.

### **Conservation Lease program development-NEW**

This project will be the first test case of DNR's new Conservation Lease Program. This new tool will provide a way for public and private entities to gain access to state aquatic land for restoration and enhancement purposes. Through this program there is a tremendous potential for future restoration that will significantly enhance public aquatic resources statewide.

### MEASURES of SUCCESS:

1. Conservation lease agreement signed
2. Amount of cultch placed\*
2. Number of new oysters\*
3. Number of viable native oyster populations established\*
4. Increased benthic diversity and/or abundance

*\* Once baseline data is collected and the size of the existing oyster population established, specific numeric goals will be set for measuring success.*

### UNCERTAINTIES:

Uncertainties exist with regard to the extent of wood debris at the site and the extent to which it needs to be removed for effective oyster restoration. (In some instances covering wood debris may be appropriate). To address such uncertainties and inform future efforts, we are proposing an experimental design for implementation that will help determine the most effective methodology to restore habitat for native Olympia oysters. We are seeking the expertise of consultants experienced in sediment/wood waste analysis and restoration to conduct the sediment/wood waste survey and work with us and the Department of Natural Resources to identify the most appropriate restoration options. Pre- and post-restoration monitoring in control and experimental plots will examine the benthic environment and oyster recruitment and survival to determine which restoration techniques are most effective.

### PERMIT NEEDS/STATUS:

We have not submitted permit applications yet. We are in the process of identifying a contractor to complete the survey of sediments and wood debris and to assist us with permit applications. We are also in the process of hiring a contractor to complete baseline biological monitoring. Until these baseline surveys are completed (late winter), specific restoration actions identified (e.g. removal and/ covering of wood debris) and a restoration plan completed, we will not have the necessary information for the permit applications. Staff from DNR's Natural Areas program will also provide technical assistance with permit applications.

### MONITORING and MAINTENANCE:

Over the next 3 years, pre (1 yr) and post-restoration (2 yrs) monitoring will be done by our contract shellfish biologist with technical oversight from Dr. Alan Trimble (University of Washington). Once our initial experiments are complete we plan to work with Conservancy volunteers and the Puget Sound Restoration fund for longer-term monitoring and stewardship. Aside from the monitoring, we do not anticipate any on-going maintenance needs. We also intend to coordinate with DNR's site stewards at Woodard Bay to monitor human use.

### SUPPORTING ORGANIZATIONS:

Washington Department of Natural Resources  
Natural Areas Program - shellfish restoration and monitoring  
Aquatic Lands Division - development of the Conservation Lease Program

University of Washington – technical support for shellfish research and monitoring

Squaxin Tribe – technical advice on shellfish surveys and monitoring

NOAA's Community Based Restoration Program - funding and technical support

Puget Sound Restoration Fund – restoration planning and development of long-term monitoring plan

Russell Family Foundation- project funding

#### PROJECT BUDGET

<b>PERSONNEL (benefits and salaries)</b>	<b>Requested CPF grant funds</b>	<b>3rd Party Match NOAA-CRP</b>	<b>Conservancy Match</b>	<b>TOTAL PROJECT COST</b>
Marine Program manager	\$ 3,652		\$ 29,120	\$ 32,772
Project manager	\$ 1,998		\$ 28,380	\$ 30,378
GIS staff			\$ 3,500	\$ 3,500
<b>TOTAL PERSONNEL</b>	<b>\$ 5,650</b>	<b>\$ -</b>	<b>\$ 61,000</b>	<b>\$ 66,650</b>

#### **TRAVEL**

<b>TOTAL TRAVEL</b>	<b>\$ 2,700</b>	<b>\$ -</b>	<b>\$ 990</b>	<b>\$ 3,690</b>
---------------------	-----------------	-------------	---------------	-----------------

#### **SUPPLIES**

<b>TOTAL SUPPLIES</b>	<b>\$ 2,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,000</b>
-----------------------	-----------------	-------------	-------------	-----------------

#### **CONTRACTUAL**

Marine survey- wood waste	\$ 16,000	\$ 18,000	\$ -	\$ 34,000
Boundary survey	\$ -	\$ -	\$ 9,000	\$ 9,000
Biological survey and monitoring	\$ 2,000	\$ 13,000	\$ -	\$ 15,000
Wood waste removal and substrate placement	\$ 16,400	\$ 58,000	\$ 10,000	\$ 84,400
<b>TOTAL CONTRACTUAL</b>	<b>\$ 34,400</b>	<b>\$ 89,000</b>	<b>\$ 19,000</b>	<b>\$ 142,400</b>

#### **OTHER**

<b>TOTAL OTHER</b>	<b>\$ 5,250</b>	<b>\$ -</b>	<b>\$ 1,600</b>	<b>\$ 6,850</b>
--------------------	-----------------	-------------	-----------------	-----------------

<b>GRAND TOTAL</b>	<b>\$ 50,000</b>	<b>\$ 89,000</b>	<b>\$ 82,590</b>	<b>\$ 221,590</b>
--------------------	------------------	------------------	------------------	-------------------

## SCOPE of WORK:

### **Sediment/Wood Debris Survey (Jan-March 05)**

*An independent contractor will be hired for the components of the project listed below. We have posted an RFP and are in the process of contractor selection.*

- Develop a phased sediment sampling and analysis plan for an approximately 20-acre area. Quantify the amount, type, distribution, and if necessary chemical composition of wood/sediment debris. The sampling and analysis plan will be submitted to the Department of Natural Resources for approval prior to being implemented.
- Complete sediment and wood debris survey and provide:
  - Data on sediment quality
  - Map of wood distribution and quantity
  - Restoration alternative(s) for restoring sediments prior to placement of cultch for oyster restoration.

### **Biological surveys and oyster restoration experiments (Jan 05- Sept 06)**

*An independent contractor (shellfish biologist) will be hired for components of the project listed below. We have selected a contractor for this work and are in the contract preparation stage. Technical guidance will be provided by Alan Trimble, University of Washington Research Scientist.*

- Establish baseline conditions for restoration and lease liability purposes. Baseline data on sediment quality and invertebrate communities throughout the 20 acre study area will be needed to monitor effectiveness of the restoration and to document the pre-lease site condition.
  - Benthic invertebrate communities
  - Conduct baseline shellfish surveys of native oysters, geoduck and other shellfish.
  - Pre-restoration spat settling experiments (to determine potential levels of recruitment for native oysters onto newly placed substrate)
  - Pre-restoration survival studies

### **Conservation lease (June 05)**

*Conservancy staff, using input and data from contractors, will be responsible for ensuring a conservation lease is obtained.*

- Define boundaries of the 10-acre area to be leased. The exact boundaries of the leased area will depend upon the results of an assessment of wood debris/sediments. The leased area boundaries will be defined to include the area with the lowest concentration of wood debris that also meets other requirements of the project (e.g. appropriate depth, outside NRCA boundary, doesn't conflict with tribal or commercial shellfish harvesting, is suitable habitat for native oysters etc.).
  - Hire contractor to do legal boundary survey
- Develop conservation plan based on results of sediment and wood debris assessment and biological surveys. Conservation plan to include:
  - Preferred restoration alternative for sediment removal or remediation as well as a monitoring and stewardship plan for the site
  - Restoration plan (developed by contractor)
  - Monitoring plan
- Obtain Conservation Lease from Dept. of Natural Resources

### **Wood waste removal (Sept 05- Jan 06)**

*An independent contractor will be hired for the components of the project listed below. This may be the same contractor as the sediment/wood debris survey.*

- Prepare restoration plan for the preferred sediment restoration alternative
- Assist with permit applications
- Implement sediment restoration efforts (e.g. wood removal and/or covering)

#### **Post-restoration monitoring (Mar 06- Apr 07)<sup>1</sup>**

The contractor hired to do the baseline surveys and experimental set-up will also do two years of post-restoration monitoring. This will include survival studies of juvenile and adult oysters as well as analysis of the benthic community and shellfish diversity at various restoration and control sites.

- We anticipate using Conservancy volunteers and the Puget Sound Restoration Fund for longer-term monitoring

---

<sup>1</sup> Post-restoration monitoring is beyond the scope of this project, but this section included for informational purposes.