

**SOUTH SLOUGH RESERVE MANAGEMENT COMMISSION**

**AGENDA**

South Slough National Estuarine Research Reserve  
South Slough Interpretive Center  
61907 Seven Devils Road - Charleston, Oregon

**November 20th, 2008**

**124<sup>th</sup> REGULAR MEETING – 1:00-4:00 P.M.**

- I. Call-to-Order
- II. Introductions
- III. Approval of the 123<sup>rd</sup> regular meeting minutes
- IV. Public Input\*
- V. Old Business
  - A. Progress on acquisition projects
  - B. State 2009-2011 and FY 2009 Federal budget developments
- VI. New Business
  - A. Road vacation inquiry
  - B. Unauthorized use by Off Highway Vehicles
  - C. NOAA FY 09 Construction and Acquisition Proposals
  - D. Other
- VII. Informational
  - A. Administration
  - B. Education
  - C. Stewardship
  - D. Research
- VIII. Informational presentation: Graduate Research Fellow Report  
Margot Hessing-Lewis
- IX. Adjourn

This meeting is being held in a facility that is accessible for persons with disabilities. If you need some form of assistance to participate in this meeting due to a disability, please notify Robin Elledge at 541-888-5558 ext. 23 at least two working days prior to the meeting.

\*Limited to 5 minutes each unless arranged in advance of the meeting.



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**SOUTH SLOUGH NATIONAL ESTUARINE RESEARCH RESERVE  
MANAGEMENT COMMISSION**

South Slough Reserve Interpretive Center  
Charleston, Oregon

**DRAFT** Minutes of the 123rd Regular Meeting  
July 24, 2008  
1:00 – 4:00 pm

**Commission members present:**

Richard Hamel  
Craig Young  
Bob Emmett  
Louise Solliday, Chair

Ron Stuntzner  
George Boehlert

**Commission members not present:**

Mark Ingersoll  
James Fereday

**South Slough NERR staff present:**

Mike Graybill  
Pam Wilson  
Steve Rumrill  
Ali Helms  
Robin Elledge  
Tom Gaskill

Kathy Andreasen  
Tom Elledge  
Craig Cornu  
Jake Robinson  
Hans Klausner  
John Bragg

**Others present:**

Norma Van Natta, FOSS  
Paul Van Natta, FOSS  
Rheannon Arvidson, COSEE

Kevin Cellura, MHS  
Kathy Wall, OIPCB

**The meeting was called to order at 1:08 p.m. by the Chair of the Commission, Louise Solliday. She announced that Commissioners Boehlert and Emmett would be participating via teleconference.**

**INTRODUCTIONS**

Everyone present introduced themselves.

## **APPROVAL OF THE MINUTES OF THE PREVIOUS MEETING**

Chair Solliday asked if there was a motion to approve the minutes of the previous meeting. **Commissioner Young moved to approve the minutes of the previous meeting and Commissioner Hamel seconded the motion. The minutes were approved.**

## **PUBLIC INPUT**

Chair Solliday asked if there was any public input. There were no comments.

## **OLD BUSINESS**

### **Acquisition of Property**

Mike Graybill informed the Commission about a .75 acre parcel of land recently offered for sale and answered questions regarding the parcel. The property is located on a ridge top at the headwaters of the Reserve's most popular hiking trail. It has a house with water and power presently available to it. Acquisition of the site would provide road access to Reserve property and would require that NOAA make only a minor boundary adjustment to the administrative boundaries of the Reserve.

In response to a question from Commissioner Stuntzner regarding the Reserve's prior acquisition of the Perkins' property, Mr. Graybill said that staff had hired Marineau & Associates to do an appraisal of that property. Chair Solliday added that the Department of State Lands has its own licensed appraisers on staff to conduct appraisal reviews.

**Chair Solliday asked if there was a motion to approve the recommendation to authorize staff to negotiate for the purchase of the .75 acre parcel of land located at the Hidden Creek headwaters by increasing the pending request to expend funds from the Gustafson estate in an amount sufficient to cover the additional costs associated with the purchase of the .75 acre parcel.**

**Commissioner Hamel moved and Commissioner Young seconded the motion to approve. The motion carried with all in favor.**

## **State Budget Development 2009-2011**

Louise Solliday and Mike Graybill informed the Commission on the continued planning for the 2009-2011 Department of State Lands biennial budget.

With input from managers and staff of the agency, the DSL Executive Team prioritized the agency's Program Option Packages (POPs). The POPs are in final draft form. Several POP concepts for the South Slough Reserve have been included in the agency request. Should these POPs remain in the budget request as part of the Governor's Recommended Budget, the Legislature will consider them in the January 2009 session. If the requests are incorporated into the Legislatively Adopted Budget (LAB), the implementation date will be July 1, 2009. The following Department of State Lands POPs relate to the SSNERR:

*Program Option Package 102:* Will continue eight limited duration positions at the South Slough Reserve. The request will retain the positions through the next biennium, should funding be sustained.

*Program Option Package 101:* This package regards seven positions within the agency, six of which are not associated with the Reserve. This package proposes to move the Reserve's Chief Technologist position (Information Systems Specialist 4) from limited duration to permanent status and fund it using Common School Funds as part of the agency's IT team. The position will remain stationed at the Reserve.

*Program Option Package 108:* Will establish one seasonal laborer and two seasonal interpretive services/visitor services positions. Federal funds will be used to support the salary costs. Additionally, funds to create a building maintenance account will enable the Reserve to implement a building maintenance program to support ongoing costs such as painting, regular repair and replacement of equipment, fixtures and furnishings.

*Program Option Package 109:* The agency-wide information systems replacement and upgrade package includes funding for the technology implementation plan at the Reserve.

## **NEW BUSINESS**

### **Forest Restoration**

The Reserve's administrative boundaries include approximately 4,000 acres of forested habitat. One of the objectives of the stewardship program outlined in the SSNERR management plan is to develop and implement a resource management plan for forested habitats within the Reserve. The plan will be developed with the assistance of Forest Management Plan Advisory Group.

Mike Graybill introduced Jake Robinson, the Reserve's Forest Science Coordinator. Mr. Robinson explained the goals and objectives outlined in the South Slough NERR's Forest Management Plan as developed by staff with assistance from the Forest Management Advisory Group. Some of the goals are to guide the restoration of forested habitats to a mature forest condition, reduce fuels and associated fire risk, and possibly generate revenue from restoration stewardship activities.

Mr. Robinson summarized his meetings with landowners and timber managers throughout the South Slough watershed where he solicited their advice on the goals and trajectory of the forest management program. Chair Solliday asked if anyone from the private sector was represented on the core advisory group. Craig Cornu replied that private land owners will be included in the larger advisory group meetings.

Commissioner Stuntzner suggested that contacting some of the tribal foresters would also be very helpful. He added that he had experience working with Port Orford cedar and offered his assistance to the Reserve.

Mr. Graybill asked for input from the Commission on several activities likely to be associated with implementing the forest management plan: 1) the potential of selling both timber and small diameter wood products produced as by-products of management activities; and 2) the re-commissioning of roads within the Reserve to support forest management activities. The Commission discussed the matter and seemed generally in favor of the concept. Commissioner Young commented that SSNERR should proceed with caution and be aware of public perception in the matter. He pointed out that some of the forest management activities of the Reserve could be viewed as competing with the private sector. Chair Solliday replied that the South Slough NERR exists as an asset of the state's Common School Fund as stewardship lands and a case could be made for deriving revenue from them. She added that it was likely that the private sector would be involved in SSNERR's forest management activities, such as thinning, milling and etc.

**Chair Solliday asked if there was a motion to accept the draft goals and objectives of the SSNERR Forest Management Plan. Commissioner Hamel moved to accept and Commissioner Stuntzner seconded the motion. The motion carried with all in favor.**

### **Informational**

Mike Graybill distributed copies of correspondence dated March 18, 2008 from 16 members of the US Congress directed to the Chairman and Ranking Member of the Subcommittee on Commerce, Justice, Science and Related Agencies, Committee on Appropriations urging full support of the NERR system. A request to keep funding for the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) separate from the NERRS budget was also included in the letter, as the President's proposal to incorporate the CICEET budget with the NERRS budget makes it appear that there is a dramatic increase in NERRS funding where there is none.

### MANAGEMENT AND ADMINISTRATION

#### STAFF PROGRAM UPDATES

These were included in the briefing packet sent to the Commission.

### **PRESENTATION**

Dr. Steve Rumrill, lead investigator and Kevin Cellura, Rheannon Arvidson and Hans Klausner gave an informational presentation on the Native Oyster Restoration project.

### **ADJOURNMENT**

Chair Solliday adjourned the meeting at 4:30 p.m.



## **Old Business**

### **Subject:**

Acquisition of property for inclusion into the SSNERR

### **Issue:**

Progress report on the acquisition of two small parcels adjacent to the Northwestern boundary of the Reserve

### **Background:**

Purchase and sale agreements drafted by Paul Weddle of the Oregon Department of Justice, have been signed for two parcels adjacent to the Reserve that were discussed and approved by the Commission in March and July of 2008. An offer to purchase a third .75 acre parcel, which was authorized by the Management Commission in July was not accepted by the seller. Staff have discontinued efforts to purchase this parcel.

Louise Solliday presented the Commission's request to purchase these properties to the Legislative Emergency Board and State Land Board. Both bodies approved the transactions.

SSNERR staff have worked with the sellers, state attorneys, and local title and escrow agents to complete these purchases. The purchase of the 2.4 acre parcel on Salal Lane was finalized 20 October 2008. The acquisition of the 2.5 acre parcel on Seven Devils road is moving through escrow services.

### **Staff recommendation**

No Commission action is requested at this time.



**Subject:**

Funding allocations for the National Estuarine Research Reserve program

**Issue:**

This is an update on recent Congressional action on the FY 2008 budget for NOAA and the National Estuarine Research Reserve system.

**Background:**

In late June 2008, the Senate Appropriations Committee approved \$4.45 billion for NOAA for fiscal year 2009 in the Commerce, Justice and Science appropriations bill. The appropriations mark is \$550 million above the \$3.9 billion allocated annually since fiscal year 2005 and \$280 million more than recommended by President Bush. The bill provides \$516 million to the National Ocean Service, \$403 million for Oceanic and Atmospheric Research, and \$777 million for the National Marine Fisheries Service (NMFS).

Also in late June 2008 the House Appropriations Subcommittee on Commerce, Justice and Science provided \$4.3 billion for NOAA, which is \$180 million more than President Bush's budget request and \$380 million more than NOAA's 2008 enacted levels. The full Committee markup was postponed and has yet to be rescheduled.

A conference committee meeting has not been re-scheduled.

In August, Congress enacted a continuing resolution that will be in effect through March 6<sup>th</sup> of 2009. The resolution sets appropriations at 2008 levels until other action is taken on the FY 09 budget. The newly elected Congress will also need to deliberate the FY 2010 budget this coming spring and may not have time to finalize the FY 2009 budget. There is a reasonable chance that Congress will extend the current continuing resolution for the remainder of fiscal year 2009.

<b>Program</b>	<b>FY '08 Appropriations</b>	<b>FY '09 Senate</b>	<b>FY '09 House</b>
CZM Grants (\$306/306A/309)	\$64.4 million	\$70 million	\$65.146 million
Coastal Nonpoint Pollution	\$3.9 million	\$4 million	\$2.5 million
NERRS	\$16.4 million	\$22.326 million	\$22.326 million

<b>Program</b>	<b>FY '08 Appropriations</b>	<b>FY '09 Senate</b>	<b>FY '09 House</b>
NERRS Construction	\$7 million	\$6.890 million	\$13.780 million
OCRM Administration	\$6.7 million	\$8.155 million	\$8.155 million
National Marine Sanctuaries	\$46.8 million	\$47.378 million	\$45.8 million
Marine Protected Areas	\$1.4 million	\$2.128 million	\$2.9 million
Coastal Services Center	\$23.4 million <sup>1</sup>	\$20.254 million	\$23.4 million
Coral Reef Conservation	\$29.3 million	\$28 million	\$27.997 million
CICEET	\$6.5 million	\$0	\$0
Sea Grant	\$57.1 million	\$57.1 million	\$59.997 million
Coastal and Estuarine Land Protection Act	\$8 million <sup>2</sup>	\$15 million <sup>2</sup>	\$18.325 million

1. Appropriations amount listed for all Coastal Services Centers.
2. Competitive funds that include no more than 3% for program administration.

**Staff Recommendation**

No Commission action is requested at this time.

**Subject:**

Request by an adjacent land owner to change the status of a Coos County highway right of way along the northwestern boundary of the SSNERR

**Issue:**

Shall the SSNERR Management Commission support a proposal by an adjacent property owner to vacate the county road way right of way on the portion of Salal Lane that extends beyond the current end of County maintenance?

**Background:**

Jerry and Jannie Roby, residents of 62146 Salal Lane, approached Reserve staff earlier this year to express their interest in vacating a section of Salal Lane. The Robys seek the support of the Reserve in their effort to petition Coos County to vacate the portion of the County road right of way that extends beyond the end of county maintenance.

Maintenance of Salal Lane by the Coos County road department currently ends at the Roby's property but the Salal Lane road right of way bisects the Roby's property. A single lane gravel road follows the right of way across the Roby's property and provides access to SSNERR property and several other privately owned properties. Property owners to the north and east of the Roby property periodically use the Salal Lane right of way to access their land, to haul logs, and to transport logging equipment.

In the late 1980's the SSNERR Management Commission submitted a petition to vacate the portion of the Salal Lane right of way that extended past the end of county maintenance. That request was not successful.

As of 4 November 2008, the Coos County road department had not received a petition to vacate the right of way on Salal Lane.

**Staff Recommendation**

The Commission should express a willingness to consider a proposal to vacate a portion of the Salal Lane right of way that extends beyond the end of County maintenance.

In the event that the county receives a road vacation petition, the Commission should direct staff to review the proposal and evaluate the potential impact of the proposal on the management objectives of the Reserve.



**Subject:**

Enforcement of administrative rules regarding public uses of the Reserve

**Issue:**

There is substantial evidence of unauthorized Off Highway Vehicle use in the eastern and southern portions of the SSNERR. These activities may be compromising attainment of stewardship objectives. Commission action to address unauthorized uses is requested.

**Background:**

During the field survey work associated with the SSNERR Forest Management Plan, staff observed significant evidence of Off Highway Vehicle (OHV) use throughout the eastern portion of the Reserve. Public OHV use within the Reserve is addressed in South Slough NERR's administrative rules which state: "*Motorized off-road vehicles are prohibited except on designated county-maintained roads or driveways approved by the Commission*" (OAR 142-010-0005, Restricted Activity #22). Although no actual OHV use was observed during the forest surveys, recently cleared trails, fresh tire tracks, and a limited amount of garbage have been observed. Most unauthorized OHV activity is taking place on the network of historic skid roads and access roads that were established prior to the designation of the Reserve in 1974. Although the roads in the eastern and southern portions of the Reserve have not been maintained or used by Reserve personnel, a number of these roads are still evident on maps and GIS layers. Unauthorized use of these abandoned roads is evident by the fact that many routes are readily identifiable on the ground. Some are readily evident on recent air photos.

SSNERR's boundary was surveyed and marked in the late 1980s but the boundary was not always well marked at historic road and trail crossings. In contrast to the western portion of the Reserve, there is no highway frontage along the eastern or southern portions of the Reserve. The roads and trails leading into the Reserve's eastern and southern boundaries connect to roads and trails on adjoining industrial timber lands. Several of the industrial timber companies adjacent to the Reserve also prohibit OHV use. In order to access substantial portions of SSNERR's boundary, OHV users must first illegally traverse the private lands adjoining the Reserve. Coos County permits OHV use on a well defined trail system in the County forest. The OHV trail route on the County forest comes close to the Reserve's southern boundary but does not cross it.

Until recently, SSNERR rules and regulations have not been posted at remote boundary access locations. SSNERR staff recently developed and installed boundary notice markers at key locations where evidence

indicates that unauthorized OHVs are entering the Reserve. The 8.5” x 11” notices identify SSNERR’s boundary and summarize uses outlined in SSNERR’s administrative rules. The newly installed plastic laminated paper signs highlight restricted activities, including OHV use.

As an additional attempt to communicate SSNERR’s policies to OHV users, SSNERR stewardship program coordinator Hans Klausner attended the October 2008 meeting of the Coos Regional Trails Partnership. Hans discussed SSNERR’s OHV use policies with a representative of the OHV group that developed the trail network in the Coos County Forest.

OHV use and other unauthorized activities on the Reserve hold significant potential to keep the Management Commission from attaining the stewardship objectives of the Reserve. These objectives include controlling the spread of diseases and introduced species such as Port Orford cedar root disease. However, the remote location of SSNERR’s eastern and southern boundaries combined with the poorly characterized transitory nature of unauthorized activities, and pose significant enforcement and monitoring challenges. Marking SSNERR’s boundaries may help to diminish the level of unauthorized uses but these measures are not likely to stop unauthorized uses. More active measures will likely be necessary to attain a higher level of compliance.

**Staff recommendation:**

1. The Commission should authorize staff to barricade closed roads at boundary points in remote portions of the Reserve by installing gates or felling selected live trees across road routes.
2. The Commission should authorize staff to institute a surveillance program to better characterize the types, locations and frequency of unauthorized uses; and
3. The Commission should direct staff to institute a more active public outreach program to communicate and reinforce the Reserve’s policies on OHV and other regulated public activities.

**Subject:**

Construction and acquisition priorities at South Slough NERR

**Issue:**

Shall the SSNERR Management Commission submit one or more proposals in response to NOAA's FY 2009 construction and acquisition funding opportunity announcement?

**Background:**

NOAA provides funding to reserves for acquiring additional property interests and for construction projects to strengthen protection of key land and water areas, to enhance long-term protection of the areas for research and education; and provide for facility and exhibit construction.

Subject to availability of funding, NOAA recently issued a funding opportunity announcement stating that approximately \$6.89 million may be available for fiscal year 2009. NOAA anticipates that 5 to 23 total projects may be funded. Awards will be issued as competitive grants with awards running for up to two years. In the past, funding for land acquisition/construction awards has ranged in amount from approximately \$50,000 to \$3 million.

Completed grant applications must be submitted by 5 p.m. Eastern Standard Time, November 30, 2008. Applicants may submit applications covering a 12 to 36 month period with anticipated start dates as early as July 1, 2009 or late as November 1, 2009.

In response to a request from NOAA's Estuarine Reserves Division, SSNERR staff submitted three preliminary project concepts in time for a 17 October preliminary project concept deadline. The project concepts were solicited in order to facilitate a discussion of this program at the fall 2008 NERRS meeting in California. Additional information about this program will be available at the Commission meeting.

The preliminary concepts submitted to NOAA on 17 October are outlined below:

FY 2009 Construction and Acquisition project concept #1  
South Slough Wireless Network Project – Phase II  
Funding Requested: \$75,000

This proposal will support Phase II construction of facilities necessary to create a high performance wireless wide area telecommunications network for the South Slough NERR in Oregon. Phase II involves three tasks: Task #1 will connect remaining Reserve facilities, maintenance yard and Spruce Ranch visiting investigator house, to the high speed

backbone which is being constructed in Phase I. Task #2 will provide additional Internet capacity at the Estuarine and Coastal Science Laboratory (ECOS Lab) in Charleston to accommodate the increased load placed on the network due to the construction of the Phase I high speed backbone. Task #3 will establish a series of autonomous solar/wind and line powered telecommunications sites to expand the "wireless bubble" to remote areas of the Reserve to support real-time data acquisition sensors, voice communications, Internet streaming of education programs and high speed Internet access throughout the Reserve.

Phase I is being constructed with a FY07 Construction grant from ERD. Work continues on Phase I construction with completion expected in the fall of 2008. Phase I work includes the establishment of a high speed wireless "backbone" connecting the Interpretive Center and the ECOS Lab via an off-grid relay tower station located on County property adjacent to the Reserve. Permits and approvals associated with the relay tower have been secured. A construction contract was awarded in June of 2008; we expect construction of the relay tower to be completed before the end of 2008. Phase I also provides funding for the purchase of directional radios and wireless access points for both the Interpretive Center and ECOS Lab, and an outdoor access point at the Interpretive Center for staff use.

Other field-based research natural areas of similar size and topography to the South Slough NERR have developed and currently operate wireless wide area networks. The South Slough wireless network is being modeled after the Santa Margarita Ecological Reserve's Real-Time Ecological Monitoring Observatory (REMO) and the High Performance Wireless Research and Education Network (HPWREN) operated by San Diego State University. The budget and cost estimates for this proposal have been developed in consultation with professionals involved in the design, construction, and operation of the HPWREN and REMO wireless telecommunications systems.

Consultation with personnel familiar with the design and operation of the HPWREN and REMO systems suggest that the South Slough wireless network will require the construction of three (tier-one) line tied Ethernet based nodes (Phase I) that will be augmented by 5 or 6 tier-two nodes (Phase II) that relay signals between the signal sources and the tier-one nodes.

Tower, antenna and radio transmitter specifications will be determined in the final design process. Preliminary designs call for 10 meter tall towers. The final locations of the towers will be determined using a GIS based line of sight topographic analysis. The actual number of tier-two nodes to be constructed by this project will be driven by factors linked to

the location, orientation and conditions at the sites selected for the nodes.

The facilities to be constructed by this project are expected to be sufficient to cover between 60% and 90% of the total area of the Reserve. The emphasis of this project will prioritize universal coverage in the western region of the Reserve, the location of most of the current research and educational activities. The system is designed to be scalable. The tier-one nodes being built as Phase I are configured to accept inputs from additional tier-two nodes that will be located and constructed in Phase II.

Match required for this proposal is \$32,150. South Slough Reserve staff proposes to meet that requirement through project oversight by staff at the Reserve as well as staff at the Department of State Lands. Those staff members include the Reserve Manager, Operations Manager, Facilities Supervisor, and Department of State Lands Assistant Director for Finance and Administration, Fiscal Manager, and Information Systems Team Leader.

FY 2009 Construction and Acquisition Proposal Concept #2  
Hinch Road Access and Security Improvements:  
Funding Requested \$70K

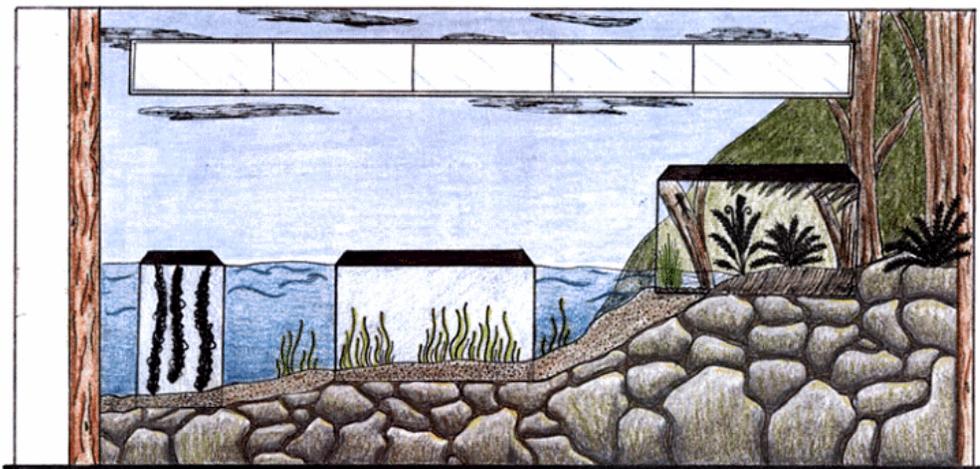
SSNERR has been working since the late 1980s to secure ownership and management of Hinch Road, a one mile long, single lane gravel surfaced, County owned right-of-way that is the primary vehicle access route to the core area of the Reserve. Activities associated with this road are linked to numerous management and stewardship issues at South Slough. Hinch Road is a hot spot of violations of SSNERR's administrative rules. Stewardship issues in the areas this road services include sediment runoff, vandalism, non-native species invasions, theft, poaching, and unauthorized burning, hunting and dumping.

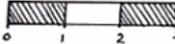
This project will enable SSNERR to finally secure management responsibility for this important right-of-way. It will also improve the structural condition of the road way thereby reducing sediment inputs to adjacent creeks and wetlands due to run-off. Specific improvements will include: approximately 1.2 miles of high grade gravel spreading and rolling; resurfacing and weatherproofing an existing bridge deck and associated approaches; improving sight-lines at hazardous corners and intersections; installation of cross-drains; and creating a new trailhead parking area, entrance gate, and updated signage.

The Coos County Board of Commissioners has previously supported the vacation of Hinch Road in response to a request submitted by SSNERR. In order to complete the transfer, we need funding for making the necessary improvements and maintenance plans. We request federal FY09 Land Acquisition and Construction Program funds in order to complete this transfer.

Match will be provided by SSNERR personnel in the form of project management, gate fabrication and trailhead design.

FY 2009 Construction and Acquisition Proposal Concept #3  
Aquaria Display For Interpretive Center  
Funding Requested \$20,000



SCALE 1"=2'-0" 

This request will support the development of an exhibit for the SSNERR Interpretive Center. The exhibit will be designed to display and interpret some of the aquatic resources within the South Slough NERR.

The display will include three aquatic habitats: #1) a **terrarium** will display freshwater marsh and riparian plants, and amphibians indicative of the region including Rough-skinned Newt, Pacific Salamander, and Red Legged Frog; #2) a **fresh water aquarium** will display several freshwater and brackish water fishes of the South Slough, including Prickly Sculpin, Three Spine Stickleback, Green Sturgeon, Bay Gobi, and

Starry Flounder; #3) a **marine aquarium** will contain representative fish and invertebrates from South Slough estuary including commercially harvested oysters, Bay Pipefish, High cockscomb, Tubesnout, and Saddleback gunnel.

Preliminary aquarium designs have been developed by an aquarium science student at the Oregon Coast Community College. Staff secured a preliminary construction cost estimate from a professional exhibit contractor of \$35,500. This total includes design development, a mural, land and rock-forms that conform to the aquaria, three drawers; and two trees that are 1/2 to 3/4 trunk size with two or three branches each.

The Friends of South Slough Reserve, Inc. have committed \$2,000 of cash to this project as of August 2008. The FOSS Board has also committed to seek funding for the remainder of the match from the grassroots grant program of the Meyer Memorial Trust.

**Staff recommendations:**

1. The Commission should review and comment on the proposals outlined above.
2. The Commission should identify other priority areas for NOAA FY 2009 Construction and Acquisition activities that were not included on the preliminary staff proposal list.
3. The Commission should direct staff to develop full proposals for projects of their choosing in time for the November 30, 2008 proposal submission deadline.



## **Management and Administration**

### Human Resources

All positions are filled at this time – currently 17. Nine of the positions are permanent status with the remaining eight classified as limited duration. Recruitment will be undertaken shortly for a limited duration, project specific Natural Resource Specialist 2. This new position will support the “Early Detection and Determination of the Breeding Population Size for Non-Indigenous Gastropods in Coos Bay, Oregon” grant project.

### Financial Reports

The spreadsheets following this report represent Federal Funds and Other Funds expenditure limitation balances for the Reserve for the 2007-2009 biennium. Adjustments will be made in the coming month to the Personal Services section for COLA increases. Reports associated with individual grants will be issued from DSL Fiscal Services shortly. An informational table of open awards also follows this report.

### Safety

Recently, OR-OSHA conducted an informational and educational walk-through of Reserve operations. Staff are working to adopt many of the suggestions in the report issued. In the coming months, more suggestions will be implemented, such as training in the use of respirators for staff who use them in the laboratory at OIMB. Facilities staff will have baseline hearing tests taken as they work with loud equipment at times. Appropriate hearing protection is used by staff, and will continue to be provided for the sound levels identified.

### Staff Team Building Activity

On October 8, Reserve staff participated in a wellness activity. Before the Interpretive Center opened to the public, staff took a walk/hike near Hinch Bridge. The interpretive tour allowed staff to enjoy a healthy activity that also provided interesting and unique insights to the Reserve. Remnants of an original South Slough schoolhouse were located, as were pieces of the cabin occupied by one of the schoolmistresses. Further along the trail, a patch of *Darlingtonia* was viewed. The wellness walk ended back at the Reserve in time for staff meeting, the regular monthly safety video viewing, and a potluck healthy lunch.

### Building Permit and Contract for Construction of Wi Fi Tower

On October 27<sup>th</sup> South Slough NERR received a building permit for the Mid-Tower Relay Site Tower located on Coos County property at the Joe Ney solid waste disposal facility. A contract for construction of the tower with Day Wireless Systems of Roseburg, Oregon is in place. Construction of the tower is expected in early November. The Mid-Tower

Relay Site is a key element in the Reserve telecommunications infrastructure and will facilitate linking the Interpretive Center with the ECOS lab in Charleston and to the Department of State Lands network in Salem.

Agreement with Confederated Tribes of Coos Lower Umpqua and Siuslaw  
A task order between the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians was signed on 22 October 2008. The agreement sets out the terms of cooperation between the parties on a \$100,000 research project to investigate the status of a tiny non-native snail (*Assiminea parasitologica*) that was detected in 2007 for the first time in the Coos Estuary.

## **NEW BUSINESS**

### **Input on Staff Activities**

#### **EDUCATION PROGRAM UPDATE**

June 21 through October 22, 2008

The summer and early fall 2008 educational programming at South Slough was popular and kept staff and volunteers fully engaged with a variety of offerings. One of the highlights was the development of a new class, “Sharing Nature with Young Children” offered for community college students studying early childhood development through Southwestern Oregon Community College.

Participation in several festivals and other types of outreach activities continues to build community awareness and provide a forum for sharing information about the purpose and activities of the Reserve. The Coos County Fairgrounds Museum provided space for an installation of the exhibit “People of the South Slough Valley” which was featured at the South Slough Interpretive Center prior to the development of the current exhibits. Partnerships with other organizations in the local community continue to play a very important role in expanding the capacity and effectiveness of the South Slough’s programs.

#### **EDUCATION PROGRAM TOTALS**

A total of 107 educational activities were conducted during this period for 3,766 participants. 377 contact hours and 123 hours of preparation were recorded. These totals include all types of education, interpretation, training, and outreach. A more detailed explanation of each sub-category is included in subsequent sections of this report.

#### **VISITATION AND VISITOR SERVICES**

During this period, 2,731 visitors to the South Slough Interpretive Center were recorded for an average of 21 visitors per day. Summer hours of operation (June, July, and August) for the center are 10am to 4:30pm daily. The center is open to the public Tuesday through Saturday from September to May.

During the first year after installation, the new exhibits continue to evoke interest from visitors. A review by the education coordinator and a representative of Interpretive Exhibits Inc., the fabricators, revealed a few minor items requiring attention. No warranty issues were identified; however, a temperature probe on the weather station failed and had to be replaced. This was not a warranty repair although the part was deemed defective and replaced at cost.

As a part of the Friends of South Slough “Explore Your Estuary” project funded through a grant from Trust Management Services, a desktop computer was purchased and installed in the naturalist desk exhibit. The flat screen monitor currently displays a variety of slide shows that highlight various activities of the Reserve. This exhibit will be

periodically updated with student work and visitor images collected as a part of the “Explore Your Estuary” program activities.

Several interpretive hikes were conducted during the summer to pilot the contents of loaner activity packs being developed to help participants collect scientific data as a part of their visit to South Slough.

### **FORMAL EDUCATION & TRAINING**

During the period from June 21 – October 22, 24 formal education programs were offered for 514 participants. A total of 77 contact hours and 20 hours of preparation time were recorded. Additionally, 6 volunteer trainings were conducted for 67 participants. 10 hours of preparation time were recorded and the events included 18 hours of contact with trainees.

The two sub-categories of educational activity reported here include formal education and training. Formal education programs are considered to be structured educational activities with defined learning objectives and a formalized relationship to an educational entity. Training activities, typically offered to volunteers and teachers, are focused on enhancement of program delivery capacity and quality. Content may also include education about the natural and cultural history of the South Slough and associated topics.

In previous commission reports, the sub-category of outreach has also been included in this section. Outreach will now be included with interpretive program data since many of the contacts at outreach events are of a shorter, more informal duration than typical formal education and training activities.

#### **Sunset Middle School – Empire District project**

In early September, South Slough education staff resumed planning efforts with the faculty at Sunset Middle School in Empire on the development of a year-long service learning-based project for 7<sup>th</sup> grade students. This concept grew out of activities conducted over the past two years to support a locally focused component of the school’s outdoor school program. The project team has developed a goal statement and a thematic objective supported by the school’s principal. Currently, faculty members are designing an implementation plan which will incorporate aspects of science, language arts, math, and social studies.

#### **Watershed Technical Science Education and Training (WTSET) proposal**

In collaboration with the Coos Watershed Association, South Slough NERR participated in the development of a \$36,495 proposal submitted to the Oregon Watershed Enhancement Board’s – Education and Outreach grant program. This project is a companion to a technical assistance proposal developed by the South Slough Stewardship program.

The WTSET project is comprised of three different and interrelated types of educational activities based upon the demonstrated needs of three target audiences: landowners in the

South Slough and adjacent coastal watersheds; middle and high school teachers, and their students; and South Slough summer science camp participants.

While the approaches to meet the needs are distinctly different, the overall purpose of the activities is to provide a consistent and accurate picture of the existing and desired conditions of the South Slough and outer coast watersheds based on the best available science. By engaging the identified audiences in meaningful activities and providing access to relevant datasets and resources, this project increases participant awareness and knowledge of the ways in which watershed science informs decision-making and provides a critical body of information as a basis for restoring watershed health.

#### Landowner Watershed Education

The Coos Watershed Association will take the lead on the development of outreach for landowners in the project area by employing their successful program of coffee klatches. These community-based meetings are small gatherings of individuals with interest in learning about how watershed restoration activities are conducted. Participants are encouraged to provide feedback on concerns and interests as a part of the process. Ultimately, the watershed association seeks project sites and sponsors to support restoration activities.

#### Teacher Training

During the first year, a leadership team of three teachers will be recruited to participate in a three-day workshop introducing the use of field-based watershed assessment techniques, GIS and remote sensing, and pedagogical approaches to watershed education. The teachers will then be provided with release time during the school year to support incorporation of watershed based curriculum and activities into their classes. As the leadership team pilots the activities they have developed for their classes, they will document their work and then share their experiences with their colleagues. South Slough NERR and CWA staff will provide support to the leadership team through the acquisition of appropriate curriculum resources, data products, instructional and technical assistance.

In the second year of the proposed project, a teacher training workshop will be offered for up to twelve additional middle and high school teachers providing an opportunity for the leadership team to share lessons learned and assist with the field and lab activities during the training. This type of peer-to-peer exchange is a proven method for developing successful classroom implementation and providing the highest quality teacher training experiences. Teachers participating in the second year workshop will also receive the same training in field-based watershed assessment techniques, GIS and remote sensing, and pedagogical approaches to watershed education offered to the leadership team in year one with the added benefit of the collective experience of the leadership team.

#### Summer Science Camps

Beginning in 2004, South Slough NERR began to focus summer program offerings to include more intensive summer science day camps as a means of fostering a deeper understanding and exploration of estuaries and related watershed and ocean

environments. The response by the community has been extremely favorable. These camps are modeled on field studies conducted by researchers at the Reserve and often incorporate some of the same science techniques used to collect and interpret data. Furthermore, the participation of scientists at key points during the programs has helped to reinforce the potential career options for students and the educational pathways they need to consider as prospective natural resource professionals.

The WTSET project proposes to build on the success of these camps and incorporate watershed education and stewardship as essential components of all levels of camp curriculum. The proposed Watershed Education Specialist will provide coordination with South Slough NERR and CWA staff working closely with the Reserve's Education Specialist to build on the experiences and evaluation results of past camps. Recruitment of this position will be sought in coordination with colleges and universities that provide environmental studies and science education majors such as Southern Oregon University Environmental Education Program and the University of Oregon's Environmental Leadership Program. South Slough NERR has experience working with undergraduates and graduates of these programs and the potential to provide practical experience for these students in a resource rich and naturally diverse field setting such as the South Slough and outer coast watersheds is a strong draw.

Specifically, the project will focus on the upper level "Summer Science Institute", offered for 12-15 year old students. Currently, this camp involves four consecutive six hour days including orientation, field studies, and development of a final public presentation reflecting the student's investigations and experiences. Through the WTSET project, the institute would be expanded to a two week program incorporating training as the foundation for the subsequent conduct of a field study based on watershed assessment techniques. The student data collected will be compared with professionally collected data for the same locations to demonstrate the importance of accuracy and precision while giving the participants an opportunity to contribute to our understanding of the watershed.

A community outreach event will be held at the conclusion of the project to bring attention to the assessment findings, highlight opportunities for watershed restoration, and display student work.

Project awards will be announced in mid-March 2009 with implementation beginning in May, 2009.

### **INTERPRETIVE & OUTREACH ACTIVITIES**

Summer and fall interpretive programs continue to be offered for a diverse public audience of children, adults, and families. A total of 68 interpretive programs were offered and 1,016 people attended activities ranging from guided walks and paddle trips to summer camps. 146 hours of contact and 68 hours of preparation were recorded.

Additionally, 9 outreach events yielded 2,169 participants. While 136 hours of contact were reported, the typical contact time at these events ranges from 10 to 20 minutes. The total contact hours represents staff and volunteer time at the booth or outreach table. 25 hours of preparation time were recorded.

Exhibits for these events typically include display panels developed to highlight the various aspects of the Reserve including research, stewardship, education, public involvement and the coastal training program. Hands-on activities are also commonly included as a part of the booth to engage the public and highlight a particular topic or theme. For example, the popular Café Estuary exhibit that was originally displayed at the South Slough Interpretive Center has been redesigned and is now called “Estuary Eddie’s Seafood Shack”. This exhibit highlights the diversity of estuaries and the links between estuaries and commercially harvested seafood.

### ***COASTAL TRAINING PROGRAM***

The coastal training coordinator has spent much of the summer on a project to photodocument the removal of the wreck of the New Carissa from the beach at North Spit. The project has produced video and still photographs of the work by Titan Salvage to remove the wreckage. Pictures of the removal have been regularly posted on the Department of State Lands Website and will be added to the state archive in Salem. The wreckage was gone as of Oct. 24, 2008. The photographs will become part of an archive of New Carissa events.

The CTP coordinator and several of SSNERR staff will travel Nov. 2-7 to Elkhorn Slough NERR, California, to attend the 2008 NERRA-NEERS annual meeting to discuss national issues related to decision maker training and outreach. The agenda for CTP will include discussion of an external review conducted last month of coastal training effectiveness throughout the NERRS. Information from this discussion will be used to determine what changes might be incorporated to fine-tune SSNERR’s training program.

### **PUBLIC INVOLVEMENT ACTIVITIES**

#### Volunteers

As of September 31, 2008 South Slough has earned approximately 3,035 volunteer hours valued at about \$56,967. Over 1,900 of these hours were attributed to the Oregon Youth Conservation Corp who spent time working on trails and assisting with research and stewardship projects. As a result of the generosity of both the Friends of South Slough and Joe Neil, the crew was able to canoe the slough and remove a creosote log off sensitive marsh plants at Valino Island and take out scotch broom along a remnant dike.

Another huge contribution to the high number of volunteer hours this summer came from volunteer interns at the ECOS Lab, Jill Alexander, Rhiannon Arvidson, Kevin Cellura and Stephen Lebsek.

### Outreach

From May-September, Cape Arago Audubon Society (CAAS) and SSNERR shared an informational booth at the Coos Bay Farmers Market on Wednesdays from 9-3. We had about 521 visitors this season.

On the weekend of August 16-17, South Slough participated in the Charleston Seafood Festival with an education/information booth. We had about 900 visitors over both days and a portion of those visitors then made the trip to the Interpretive Center as a result.

We assisted with the bulk mailing and promotional efforts for the annual Shorebird Festival the last weekend in August.

On September 13, with the help of Rich Hamel, we participated with a float in the Bandon Cranberry Festival Parade.

On September 25, we had an information booth at Southwestern Oregon Community College during their new student orientation. Throughout the two hour period, we had about 50 visitors to our booth.

The public involvement program coordinator has continued to participate in the following organization meetings: Bay Area Tourism Committee; Charleston Merchants Association; Charleston Community Enhancement Corporation; and, more recently, Bay Area Community Collaborations.

### Friends of South Slough, Inc. (FOSS)

On Wednesday, September 10<sup>th</sup> the Friends of South Slough held an Advisory meeting in which to gain ideas for future fundraising and project goals. The group met at the Charleston Marina RV Park. About 16 people were in attendance. Wide arrays of ideas were presented and the FOSS board is considering some for current projects and others for future goals of the organization.

The Friends of South Slough (FOSS) have a new website: [www.friendsofsouthslough.org](http://www.friendsofsouthslough.org). Currently there are six subject tabs available: *Welcome*; *FOSS Board*; *Bookstore*; *Volunteer*; *Memberships & Donations*; and *Events*. Soon FOSS will have the capability for users to make an online contribution but for now the site contains information about types of memberships and where to mail forms and dues. Eventually more specifics will be added to the *Volunteer* and *Events* sections as well. Bookstore inventory lists and photos of current items will be updated regularly.

At the most recent board meeting, Patricia McKillip was voted in as a new member. Patricia was born in Salem, Oregon and received a M.A. in English Literature from San Jose State University in California, and has been a writer since then. She is primarily known for her fantasy writing, and she has published novels both for adults and young adults. Many of her novels have won awards including, *Something Rich and Strange*, which received a Mythopoeic Award, and *Ombria in Shadow*, which won both the Mythopoeic and the World Fantasy Award. She has also written a number of short stories through the years for adults and young adults. They were recently published in a collection titled *Harrowing the Dragon*. Her latest published novel is *Solstice Wood*, a contemporary sequel to *Winter Rose*. She lives in Oregon with her husband, the poet and FOSS Bookstore manager, David Lunde.



## Stewardship Program Update

Quarterly Stewardship Program Activities – August through November 2008

### I. Habitat Restoration

A. Native Oyster Re-establishment Project: Local adaptation of the native oyster *Ostrea conchaphila* from the Coos estuary could be a factor in considering broodstock sources for future restoration efforts. To determine this, *O. conchaphila* cultch (larvae attached to adult shell) collected from Willapa Bay, WA will be raised side-by-side with naturally settled cultch collected in the Coos estuary. Both broodstocks will be monitored to determine survivorship, growth rates, onset of reproduction, reproductive output; and susceptibility to predation, overgrowth competition, and sedimentation. Willapa Bay oysters are currently available in large quantities from a commercial shellfish hatchery in Netarts Bay, but the possibility of parasites or pathogens currently precludes hatchery production of Coos Bay larvae. For the purposes of this experiment, Coos Bay cultch will be produced through natural settlement.

Hans Klausner has been contributing to the collection of broodstock for this project. He assisted in obtaining 22 bags of Willapa Bay cultch from the Nature Conservancy in Netarts Bay and helped transport them to a staging area at the Charleston Small Boat Harbor. He constructed PVC racks in the shape of a table 3' x 2' x 2' for transplanting the cultch. The racks are constructed to minimize mortality linked to burial by sediments and to reduce predation of transplanted cultch. H. Klausner and Steve Rumrill deployed these racks in South Slough at Younker Point. The PVC legs were driven in the sediment and anchored to metal rods inserted through the legs to prevent the racks from shifting in the current. Four to five bags of the transplanted cultch were tied to each rack. Two racks were placed at a tidal elevation of approximately 0 feet and three others at approximately -1 foot elevation. Similar racks will be deployed at Younker Point for the naturally settled cultch when they are transplanted from the upper bay into South Slough.

The oyster team also deployed 200 bags of oyster shell among four areas in the upper portion of the Coos estuary where larval settlement and recruitment have been high. The shells were packaged in mesh bags to ensure sufficient water flow and are intended to provide a surface for native oyster to settle upon. Bags are suspended above the sediment surface using wire rope to minimize mortality linked to sedimentation and predation. Bags will remain in place until

sufficient recruitment densities are achieved, at which time they will be relocated to South Slough for outgrowth and comparison with Willapa Bay cultch. A preliminary investigation of one shell bag has shown promising recruitment.

- B. Upland Forest Management Plan: In April of 2008 Jake Robinson was hired as the SSNERR Forest Science Coordinator. A project update was provided at the July 2008 Management Commission meeting. Since July, J. Robinson has conducted an extensive literature review in support of the SSNERR Forest Management plan, contacted and met with public and private timberland owners surrounding the Reserve, formed a Forest Plan Advisory Committee (FPAC), and worked on forest stand delineation using on the ground Lidar and GIS applications. Jake has completed the forest survey fieldwork using a protocol developed with guidance from the FPAC. The data collected from this survey work is being analyzed using Excel spreadsheets and the Landscape Management System (LMS) 2.1, a stand visualization and growth and harvest-modeling program. The analysis will provide information to make treatment recommendations for all forest stand types. All data is being linked to SSNERR's Geographic Information System for future analysis. A reference site has been established in the Cummins Creek Wilderness, Siuslaw National Forest. The SSNERR survey protocol has been used at Cummins Creek to provide comparison data for forested habitats in the Reserve.

In addition to completing an inventory of the forests within the Reserve, Jake has worked to establish partnerships with several related programs including the NW Lichenologists and Southern Oregon University. The aim of these outreach efforts is to encourage additional investigators to use the SSNERR forest database as a backdrop for special studies and class work. These projects will provide SSNERR research and management staff with more information.

The first FPAC meeting established a forest habitat inventory protocol which identified potential forest research topics. The next FPAC meeting is scheduled for November 3. A meeting of the full advisory group is planned for the first two weeks in February to be held at SSNERR. A partial list of invitees has been created and Commissioners are encouraged to recommend additional participants. Invitations will be distributed the second week of November 2008.

A field trip to the Ellsworth Creek Nature Conservancy Reserve has been scheduled for November 18. This trip will highlight the forestry practices at a large reserve with a similar forest types and goals.

SSNERR staff is evaluating the possible sale of carbon offset credits as a potential funding source for SSNERR forest restoration projects. The Landscape Management System software being used will enable staff to estimate potential carbon sequestration totals for various management treatments. Staff is also looking into the possibility of using goods for services type contracts as a mechanism to finance forest stewardship projects.

## II. Restoration Monitoring

- A. Tidal wetland reference site monitoring project #1: This is a summary of progress on a two year (2007-08) \$213K project to characterize a network of coastal wetlands in Oregon to be used as reference wetlands for restoration and mitigation projects in Oregon's estuaries. The project is funded by the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET). Another goal of the project is to test a new method of measuring tidal inundation periods and water levels in estuarine wetlands.

The latest progress report was submitted to CICEET in September 2008. The report outlines tasks undertaken by the project's technical lead, Laura Brophy, as well as OSU graduate student Julie Custer, SSNERR's Craig Cornu, and other project partners.

In the next six months, project site data summaries and data including tidal inundation period, soils, soil and surface water salinity, vegetation and macroinvertebrate communities will be posted on the Oregon Institute for Natural Resources "Oregon Explorer" web site. This will enable restoration practitioners and researchers to use this data for restoration project planning and effectiveness monitoring. The data from the project's forested and scrub shrub intertidal wetland sites will be particularly useful since little information is available about these rare habitats.

### Project task summaries

- Elevation bench marks have been established at all sites including tidal swamp sites. In the summer of 2007 a National Geodetic Survey (NGS) crew surveyed the project's salt marsh sites but was unable to survey the project's forested and scrub-shrub swamp sites because tall woody vegetation inhibits the use of GPS topographic surveying equipment. Swamp sites were surveyed in early spring of 2008 when the vegetation had the fewest leaves.
- Vertical control has been established at two new NOAA- National Geodetic Survey elevation benchmarks in the South Slough Reserve. In 2007 the NGS crew established two benchmarks in the Reserve: one in Hidden Creek marsh on South Slough's Winchester

- arm and the other in Talbot Creek marsh on South Slough's Sengstacken arm. At that time, the crew was only able to establish the elevation (vertical control) for the Hidden Creek marsh benchmark. The 2008 crew established vertical control at the Talbot Creek Benchmark. These benchmarks add significantly to the Reserve's topographic benchmark network (10 benchmarks) previously established in South Slough marshes.
- The project team has partnered with NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) and NOAA NGS to calculate tidal datums for all project sites. Accuracy in measuring tidal inundation frequency and duration is dependant on the use of site-specific tide elevations. Personnel from NOAA CO-OPS and NOAA NGS have been very helpful in using tidal elevation data (collected with Onset HOBO water level loggers and/or YSI data sondes) to calculate local tidal datums for each site. They have also provided preliminary analyses of tidal inundation regimes for summer months using marsh elevation data collected by the NOAA NGS crews. River flow is a major influence on inundation regimes in mid to upper estuarine marshes. Additional work with NOAA CO-OPS will include calculating the influence of river flow on tidal datums for forested and scrub shrub swamp sites.
  - 2007 vegetation, soils, and macroinvertebrate community sampling data has been analyzed and summarized. Plant summaries included percent cover for both herbaceous and woody species and stem counts for woody species. Soil summaries included organic matter content, soil salinity, texture, and pH. Dr. Ayesha Gray of Cramer Fish Sciences is coordinating this project's macroinvertebrate sampling. Summaries included invertebrate community taxonomic richness and abundance.
  - The project team has summarized results from winter/spring 2008 deployment of water level, temperature and conductivity data collectors and has provided feedback to sonde manufacturer. Alpha Omega (AO) delivered wired sensor arrays that were deployed in February 2008 and retrieved from April to June 2008. With assistance from SSNERR staff, Alicia Helms, Adam DeMarzo, and Tom Elledge, YSI sondes were deployed alongside the AO units to provide independent verification of the AO data. The SSNERR team provided setup, calibration, and field installation of the YSI sondes at the project's various field sites.
  - Conducted summer 2008 vegetation and macroinvertebrate sampling. Vegetation sampling was completed in herbaceous marsh sites but not in the forested and scrub shrub sites because those plant communities are more susceptible to damage from

- sampling. Invertebrate community sampling was completed using the optimum number of samples per site determined by analysis of the 2007 data. Non-native New Zealand mudsnails were conspicuous on the tidal channel bottom at the Coal Creek site.
- Postponed summer 2008 deployment and testing of Alpha Omega equipment. AO failed to deliver the wireless prototypes for testing as promised. It appears the organization may not be capable of producing these units in time for testing. We are considering our options for addressing AO's failure to deliver.
  - Initiated web portal planning and development. The project team has started to work with the Oregon State University's Institute for Natural Resources (INR), specifically the Information Program and the INR web portal, Oregon Explorer. It appears the program would provide an ideal host for the reference site data.
  - Analysis of tidal inundation period data. This task will be completed in the coming months.

B. Tidal wetland reference site monitoring project #2: This is a summary of progress on a three year (2008-2011), \$75K pilot project that initiates monitoring at two pairs of reference and restoration project sites in South Slough and Yaquina Bay. The project is funded by the NOAA Restoration Center. Estuarine marsh habitats at South Slough's Danger Point reference marsh and Kunz restoration marsh and estuarine scrub-shrub and forested wetlands at Yaquina Bay's "Y-28" reference marsh and "Y-27" restoration marshes are being evaluated. Groundwater fluctuation, soils, soil salinity, and vegetation communities are being monitored at all four locations.

This summer SSNERR staff members A. Helms, A. DeMarzo, and C. Cornu completed the installation of groundwater wells at all four sites. With the assistance of volunteers Dennis Philips, Karen Sparks Valerie Cooley, Steve Lebseck and Rheannon Arvidson, vegetation sampling was completed at all four sites. A point-intercept vegetation sampling method was tested at all four sites. The main advantage of this method is that it quantifies percent cover estimates for vegetation species. Previously the Reserve has visually estimated percent cover using cover classes (Braun-Blanquet: 1-5%, 6-25%, 26-50%, 51-75%, >75%) to help reduce error between the varying visual estimates of field observers. When we compared estimates of the same plots using visual percent cover and point-intercept methods, we found that almost 28% of the visual estimates disagreed with the estimates quantified using the point-intercept method. Our visual cover estimates were consistently greater than the point-intercept estimates. The point-intercept method appears to be preferable for us

considering the number of observers we usually have helping to complete vegetation surveys. The disadvantage of the point-intercept method is that it requires considerable time and effort to collect the data in marshes with highly diverse vegetation communities. In the highly diverse Yaquina reference site, it took an entire day to collect vegetation data using the point-intercept method along a single transect. The evaluation of sampling methods resulted in a longer than usual time period to collect the vegetation data. The extra time will enable us to detect finer scale changes than we could have previously.

We tested *Onset* temperature/pressure (water level) loggers and *In-Situ* temp-pressure-conductivity loggers at the Reserve restoration and reference sites and have determined that the *Onset* loggers require protection from salt water immersion. Salt water-resistant titanium loggers are available but are nearly twice as costly. We are testing various ways to seal the loggers in bags filled with fresh water. If effectively sealed in fresh water, the low cost loggers seem to operate appropriately.

Data loggers are deployed in wells over 2-4 week periods to track the frequency and duration marsh soil saturation and record changes in interstitial water salinity and temperature over spring and neap tidal cycles. Over the course of the three year project, we hope to establish a range of reference values for this “starter” set of attributes at the reference sites which we will compare using data from project restoration sites. The ultimate objective is to compare reference site data with data from other restoration projects implemented in similar habitat classes. Data summaries will be posted on the NOAA Restoration Portal web site. Raw data and data summaries will be posted on the Oregon Explorer web site mentioned in the CICEET update above.

Note: since the Restoration Center funded reference site project is working towards the same goals as the CICEET-funded reference site project, we anticipate combining the two projects into an eight site reference network for tidal wetlands in Oregon from which we would like to work with partners to build a regional network to include tidal wetland reference sites in northern California and Washington.

A progress report for this project is scheduled to be submitted to the NOAA Restoration Center by the end of October.

- C. Field project tracking system: The ECOS lab team is working to devise a method to keep track of the research and monitoring projects taking

place in the Reserve. One goal of the system is to reduce or eliminate the potential for visiting investigators or other SSNERR staff to interfere with the sampling infrastructure associated with active field research and monitoring projects. We have initiated efforts to: 1) identify active field research and monitoring projects occurring in the Reserve; 2) develop one page project briefs for each project to be on file at the ECOS lab and at the Interpretive Center; 3) develop and maintain GIS shapefiles identifying the locations of the sampling infrastructure in the Reserve; 4) label all sampling infrastructure with a project title, contact information for project leader, expected lifespan of the project and other pertinent information; and 5) remove sampling infrastructure no longer in use. We intend to ask visiting researchers, including OIMB students to help us identify and keep track of the sampling infrastructure they place in the field.

- D. Status and Trends monitoring program planning: The ECOS lab team has begun planning an expansion of existing status and trends monitoring programs in the South Slough watershed. The idea is to characterize the natural variability of a suite of estuarine and watershed attributes which can be used to track the ecological status of the watershed. This status and trends data, to be used in conjunction with data collected by the Reserve's System Wide Monitoring Program and ODFW's life cycle monitoring of coho salmon, would be useful in a variety of ways. Reserve staff and the SSNERR Management Commission would have long term trend data to use in defining and prioritizing management actions in the Reserve. Additionally, decisions about zoning and development proposals for lands within the watershed would be better informed; visiting researchers would have valuable system-scale ecological and physical processes data to work with in their research; habitat and population-scale effects of climate change could potentially be detected, providing an early warning for mobilizing appropriate responses; and data would provide opportunities for outreach and interpretation for local and other coastal communities.

This effort is driven by the need for watershed-scale status and trends monitoring as outlined in the Framework for Watershed Stewardship referenced in the current SSNERR Management Plan; and by the goals established for the ECOS lab outlined in the South Slough NERR Research and Monitoring Framework.

SSNERR staff members are preparing a proposal in response to a recently issued RFP from the Cooperative Institute for Coastal and Estuarine Environmental Technologies (CICEET) that requests proposals for innovative projects to address the "challenges related to the dual forces of climate change and land use change". Five page

pre-proposals are due by November 17. The proposal is being developed with the Coos Watershed Association as partners, and requests support for the early planning stages of the Framework for Watershed Stewardship as specified in the stewardship section of the current SSNERR Management Plan. The project proposal will: 1) convene “coffee klatch” meetings with stakeholders in the South Slough Watershed to develop a coherent vision for the watershed including goals for land use, habitat restoration and conservation; 2) organize a technical advisory group to help the Reserve shape an expanded status and trends monitoring network for the watershed (described above) and identify the suite of environmental indicators that will be monitored; 3) link management actions in the watershed to changes detected by the monitoring through restoration, invasive species and acquisition plans; and 4) post summaries of on-going watershed monitoring and management actions on a watershed web site as outreach for stakeholders and watershed residents.

### **III. Watershed Activities**

- A. Oregon Youth Conservation Corps Crew: In partnership with the SWOYA Boys and Girls Club, SSNERR hosted a crew of eight Oregon Youth Conservation Corps members this summer. The OYCC crew began work on June 23<sup>rd</sup> and worked at the Reserve until August 7<sup>th</sup>. The mostly high school aged crew worked with Reserve staff members on a variety of projects. They helped build and improve trails, repair the geotextile cell dividers at the Kunz Marsh restoration area, remove invasive plant species, map Port Orford cedar root rot infestations, build waterbars on old logging roads, and construct and deploy oyster larvae settlement bags for the Olympia oyster re-establishment project. Through these efforts they identified and eradicated one new invasive plant species (spotted knapweed), began an experimental gorse eradication project, constructed and helped plan more than a mile of new hiking trails, transported and spread over 5 yards of gravel on walking surfaces, returned an intermittent stream to its natural banks, and helped to distribute over 200 oyster shell bags throughout Coos Bay. They played a very important part in our stewardship efforts this summer and their hard work was certainly appreciated.
- B. Invasive Snail Research project. *Assiminea parasitologica* is a peppercorn-sized estuarine snail known to Asian waters and identified for the first time in Coos Bay last year. Mike Graybill has been coordinating with our project partner (the Confederated Tribes of Coos, Lower Umpqua & Siuslaw Indians) to define the structure of a thorough survey of Coos Bay for *A. parasitologica*. This survey will be

conducted in the summer of 2009. Both SSNERR and the Confederated Tribes recognize the strengths each partner brings to this effort, and responsibilities to meet this goal have been divided accordingly. This winter SSNERR will hire a limited duration NRS-2 to lead the survey. This person will develop a plan and methods for the survey work that he/she will complete with the assistance of Tribal personnel and a part time Experimental Biological Aide hired by SSNERR in the spring of 2009. Utilizing existing staff, the Confederated Tribes will lead the effort of determining the reproductive status of *A. parasitologica*, and will provide technical support for the entire effort through their highly experienced GIS staff.

- C. Secretive Marsh Bird Surveys: Planning and scheduling for 2009 Secretive Marsh Bird surveys are currently underway. With one season of surveys completed in the spring of this year, staff are looking forward to following it up with autumn surveys. The SMBs suspected to occur in our region are the Virginia Rail, Sora Rail, American Bittern and Pied-billed Grebe. Surveys follow a protocol being used throughout the U.S., and are conducted in early mornings or late evenings and consist of broadcasting recorded calls and documenting responses. The spring surveys of South Slough wetlands revealed several Virginia rails and unofficial accounts of American Bitterns have been noted. This element of the NERRS biomonitoring program will emphasize volunteer involvement.
- D. Agreement with Methane Energy Corporation (MEC) ends - Company files for Bankruptcy and Assets are offered for sale  
The Cooperative agreement between MEC and SSNERR ended September 30, 2008. Some of the terms of the agreement have been accomplished. SSNERR staff are working to identify other sources of non-federal cost share for the FY 07 NOAA construction grant for energy improvements.

MEC filed for bankruptcy in the spring of 2008 and is presently preparing documents to sell the business and all of its assets. The most likely buyer will be a gas development company. Prospective buyers will likely be interested moving MEC's holdings into production which, if implemented, will likely involve drilling hundreds of additional wells in a variety of locations.

One key method to stimulate a coal bed methane well to produce gas is to de-water the coal seam. Methane Energy Corp. de-watered a few of its wells to demonstrate the production potential of the Coos Bay coalfield. These well tests produced about 200 or so barrels of water

per well per day. MEC has a permit to discharge about 2,000 barrels of water per day into Davis Slough, roughly enough for ten wells.

If a gas development company purchases Methane Energy Corp.'s assets and begins production on this coal field, the new owner will need to identify a place to dispose of water produced from wells that exceeds the volume of MEC's 2,000 barrel per day NPDS discharge permit at Davis Slough. Sources at MEC suggest that the Oregon Department of Environmental Quality is not likely to approve an increase in the discharge allowance into Davis Slough. The remaining options are to inject the produced water into the ground or to identify another, larger water body and secure additional water discharge permits from DEQ.

#### **IV. Meetings / Presentations**

South Slough NERR Stewardship Program Coordinator, Hans Klausner:

- July 2008 DSL Sustainability Committee Meeting – The initial meeting of DSL representatives to revise the agency's Sustainability Plan. The group met with Director Louise Solliday and developed an outline and vision for the plan. Members were assigned research and writing tasks for the initial draft.
- August 2008 DSL Sustainability Committee Meeting – Committee members met via teleconference to discuss the first draft. Suggestions were noted and new assignments were made.
- August 2008 Trimble GPS Training – A one-day hands-on training for our Trimble GeoXT GPS and its interface with Terrasync software was provided at ECOS lab. Specific topics included how to: 1) create a Data Dictionary (or tailored menu for data collection); 2) download specific Data Dictionaries and Background Maps onto the Trimble unit, set coordinate systems, and export data from the unit.
- September 2008 DSL Sustainability Committee Meeting – The committee again met via teleconference to review edits and the second draft of the plan. Additional fine tuning on the draft plan was assigned.
- September 2008 Coos Watershed Association – Met with CoosWA to discuss partnering on stream habitat and road sediment surveys in the South Slough watershed. It was agreed that an OWEB proposal would be written to seek funding for this endeavor.

- September 2008 NHD Training – Attended a free USGS training on the National Hydrography Dataset. This is a national waterways data clearinghouse that functions as a hub for water data from multiple agencies.

South Slough NERR Coordinator of Monitoring Programs, Craig Cornu:

- August 2008 Trimble GPS Training – Participated in the one-day GPS training mentioned above.
- September 2008 – Participated as a member of the Coos Watershed Association’s Tidal Wetlands Advisory Committee helping to guide their implementation of an OWEB Technical Assistance grant to evaluate two estuarine wetland assessment protocols.
- October 2008 – Participated at the Restore America’s Estuaries conference in Providence Rhode Island and delivered a talk titled, “Piloting a Regional Reference Site Network Designed to Improve Tidal Wetland Restoration Planning and Monitoring”.
- October 2008 – Met with the Coos Watershed Association to discuss partnering on a proposal to be submitted in response to a Cooperative Institute for Coastal and Estuarine Environmental Technologies RFP. The proposal, described in the restoration monitoring section above, will seek funding to support the implementation of several key elements of the SSNERR Framework for Watershed Stewardship outlined in the stewardship section of the Reserve’s (2006-11) Management Plan.



## **INPUT ON STAFF ACTIVITIES**

### **RESEARCH AND MONITORING PROGRAM UPDATE**

During the period from 30 June to 22 October 2008 South Slough NERR staff members continued work associated with several ongoing research and monitoring projects. Progress is described below:

#### **I. NERRS System-Wide Monitoring Program (SWMP):**

During the summer and fall, Steve Rumrill, Ali Helms, and Adam DeMarzo continued to conduct duties and responsibilities associated with operation of the NERR System-Wide Monitoring Program within the South Slough estuary. These activities are summarized below:

A. Ambient Estuarine Water Quality: Staff worked to retrieve, download, recalibrate, and redeploy water quality dataloggers at the four long-term estuarine monitoring stations on July 16 & 24, August 15, September 2, 15, 26, and October 23 & 27, 2008. Fouling organisms were dislodged on a monthly basis from the SWMP stations. The South Slough NERR water quality data and metadata for 2007 have been submitted to the Central Data Management Office in South Carolina where they are currently under final data review. Data for July – September 2008 are currently being prepared for submission to the CDMO for final review by November 1, 2008.

The South Slough NERR has acquired two new sets of satellite telemetry equipment. The additional telemetry equipment allows incorporation of the Sengstacken and Winchester Creek SWMP stations as remote telemetry sites. In July 2008, with the help of several summer research interns, a 20 ft. stainless steel water quality monitoring piece of equipment was installed in the deepest part of the Sengstacken Arm across from the mouth of Elliot Creek. Most of the newly acquired telemetry equipment has been mounted on the Winchester Creek tower. Complete installation of the new Winchester and Sengstacken stations is scheduled for winter 2008 when the sondes will be moved to the new tower sites.

Two datasondes and several sensors were sent to YSI for repair. Corroded eye-bolts holding the bail suspension on the sondes preempted deployment of the sondes. Two older turbidity sensors and one chlorophyll sensor were not operating properly.

South Slough NERR is a participant in the NOAA/NERRS project to install and operate real-time telemetry equipment as part of the national backbone of the U.S. Integrated Coastal Ocean Observing System. The electronic satellite telemetry equipment at the Charleston Bridge and Valino stations is not currently transmitting measurements of estuarine water parameters recorded by the water quality datasondes. The datasondes have been collecting continuous data; however, the data have not been transmitted via satellite due to corrosion of the antennas. New stainless steel Yagi antennas designed to

withstand and operate in marine weather conditions will be installed to replace the corroded antennae.

**B. Local Weather Conditions:** The South Slough NERR SWMP Weather Station has operated continuously with recordings of air temperature, relative humidity, barometric pressure, wind speed and direction, precipitation, and solar radiation every five seconds. Monthly maintenance checks were completed for all the meteorological station sensors and solar panel, and data was retrieved from the CR1000 on August 1, September 2 & 30, and October 27, 2008. A GOES satellite transmission system has been installed on the South Slough NERR SWMP meteorological station that automatically sends data from the datalogger to the NERR Centralized Data Management Office (CDMO) in South Carolina.

The near real-time measurements and historical data generated by the SSNERR SWMP meteorological station are now available on the NERR CDMO website (<http://cdmo.baruch.sc.edu>). The meteorological data, monthly log sheets and metadata for 2007 were submitted and the quarterly datasets for July– October 2008 are currently being processed for submission to the CDMO.

**C. Estuarine Nutrients:**

Monthly water column nutrient samples were collected from each of the four SWMP nutrient sampling locations in South Slough. Subsamples were sent to the University of Washington's Marine Chemistry Laboratory for dissolved inorganic nutrient analysis. Subsamples were analyzed for Chl-a and Pheopigment content at ECOS by the SWMP team. Year 2007 nutrient data was compiled and submitted to the CDMO for final QA/QC review.

**D. Availability of SWMP Real-Time Data / Data Products for Shellfish Growers:** South Slough NERR is a participant in a pilot project to make estuarine water quality information available on a real-time basis. The measurements of estuarine water parameters are now available on several websites: ([http://nerrs.noaa.gov/ioos/realtime\\_map.html](http://nerrs.noaa.gov/ioos/realtime_map.html); <http://cdmo.baruch.sc.edu>; <http://www.weather.gov/oh/hads/>; <http://www.nws.noaa.gov/oh/hads/>; <http://www.nanoos.org>). A website specifically designed to deliver real-time water quality data and data products to shellfish growers has been operating since 3 July 2007 (<http://www.nanoos-shellfish.org>). The website provides information about water quality conditions for shellfish growers in Oregon, Washington, and Alaska. The project was developed through cooperation between the South Slough, Padilla Bay, and Kachemak Bay NERRS and Mindfly Web Development and serves as a data delivery element of the US Integrated Ocean Observing System. The website reconfigures data from the NERRS Centralized Data Management Office and develops new data products that meet the specific needs of oyster growers.

Three new sites were installed this summer in Washington state: Squaxin passage/Carolyn Beach; Manchester/Clam Bay; and Willapa Bay/Bay Center. Another

site in Washington, Padilla Bay, was moved to a more desirable location. Using the results from an online survey from the primary users of the site-shellfish growers, many changes were implemented to the website. These changes include: new and improved data graphs; expansion of the time-series capability to three months; the availability of raw data for direct downloading; the addition of weather data to all sites; links to maps for site locations; and the elimination of empty data fields.

E. SWMP Data Management and Oversight Committees: Steve Rumrill continued to serve over the summer and fall as a member of the NERR SWMP Data Management Committee and the SWMP Oversight Committee. These committees work to ensure consistency and compliance with SWMP protocols and to provide guidance and direction to the SWMP Centralized Data Management Office (CDMO). The Data Management Committee met on 7-10 September at the Baruch Marine Laboratory in Georgetown, SC to: discuss changes in the QA/QC protocols; refine the flagging codes used to identify outlier data; specify programming needs; develop statements of personnel needs; oversee the annual budget for the CDMO; evaluate web-based access and products for user-groups; and review the merits of possible changes to the logistic structure of the NERR SWMP database. The SWMP Oversight Committee also met in September and continued their use of email discussions to review field based operations and to identify and develop solutions for site-specific problems linked to the operation of the NERR SWMP. Dr. Rumrill and other members of the committee have contributed to the development of solutions to ongoing technical issues associated with program advancements and human resource issues within the NERRS CDMO, and have helped solve problems at several of the NERR sites.

## **II. Research Program**

A. Manuscripts from Previous Research: Steve Rumrill and former SSNERR staff member Derek Sowers published a manuscript titled “*Concurrent assessment of eelgrass beds (Zostera marina) and salt marshes along the estuarine gradient of the South Slough, Oregon*” in the Journal of Coastal Research. The manuscript describes seasonal changes and spatial variability in the eelgrass and salt marsh communities in a series of study sites located in the marine-dominated, polyhaline, and riverine regions of the estuary. The manuscript also summarizes differences in physical parameters and water column nutrients along the estuarine gradient. The research was completed in 2006 as one of several NERR SWMP Biomonitoring pilot projects that explored application of standardized operation procedures for the characterization and monitoring of submerged aquatic vegetation and emergent vegetation within the NERRS.

Scott Groth, Oregon Department of Fish and Wildlife shellfish biologist and Steve Rumrill completed the revisions to a manuscript titled “*History of native Olympia oysters (Ostrea conchaphila) in Oregon estuaries, with a description of a recovering population in Coos Bay.*” The manuscript was submitted in October 2008 to the Journal of Shellfish Research for inclusion in a special volume that is dedicated to the biology, ecology, and

restoration of Olympia oysters (*Ostrea conchaphila*) along the Pacific coast of North America.

Steve Rumrill contributed as a co-author with Brett Dumbauld (USDA) and Jennifer Reusink of the University of Washington to prepare a manuscript titled “*The ecological role and potential impacts of oyster and clam mariculture in Pacific coast estuaries.*” The manuscript was submitted to the National Academy of Sciences and Ocean Studies Board in September 2008 as part of their review of the ecological impacts of commercial oyster culture operations in Drakes Estero, CA. The manuscript will also be submitted to the Aquaculture journal for consideration as a review article.

Steve Rumrill, Ali Helms, and Adam DeMarzo continued their collaboration with Tim O’Higgins (USEPA) to produce a manuscript entitled “*Seasonal and long term patterns of physico-chemical parameters in South Slough, Oregon: eutrophication or ocean-estuary coupling.*” The paper will summarize time-series data generated by the NERR/SWMP within the South Slough estuary over the period of 2000-06. The manuscript will be submitted to the journal Coasts and Estuaries sometime during the winter of 2009.

**B. Investigation of Estuarine Bacterial Contaminants:** As part of the monthly water quality monitoring program, South Slough staff members continued to monitor Fecal Indicator Bacterial (FIB) including total coliform, *Escherichia coli*, and *Enterococcus sp.* in tidal waters of the South Slough. The measurements of FIB are of interest to the Oregon Department of Environmental Quality as they work to develop Total Maximum Daily Load (TMDL) standards for fecal bacteria in the Coos Bay estuary. South Slough NERR will continue to provide data and technical support to ODEQ and will offer assistance with extension of the detailed information on bacteria for the South Slough estuary into the more expansive regions of the Coos Estuary.

South Slough NERR staff members also continued to provide technical and logistic support for the research activities conducted by visiting investigator Dr. Elize Granek and graduate students from Portland State University who are working to describe the mechanisms of bacterial transport into the surf zone for several small coastal streams located along the southern Oregon coast. In addition, volunteers from the Surfrider Foundation continued to use South Slough NERR lab facilities and equipment for their routine monitoring of bacterial contamination at local beaches.

**C. Conservation and Transplant of Eelgrass Beds:** Steve Rumrill continued to work with the Oregon Department of Transportation (ODOT) on the conservation and mitigation planning for eelgrass (*Zostera marina*) beds that will be impacted by new highway improvement and bridge construction activities. At the North Fork of the Siuslaw River site, South Slough NERR staff members have transplanted about 4,500 plants. The eelgrass plants have become established at the new locations immediately upstream and downstream from the new bridge.

Steve Rumrill visited the Lint Slough in Alsea Bay on 7 July and the Millport Slough on the Siletz River estuary on 14 July to consult with ODOT representatives Irene Ulm and

Ron Francis. The consultation helped identify potential damage to eelgrass beds linked to proposed highway construction activities. ODOT is interested in developing an Intergovernmental Agreement between ODOT and ODSL/SSNERR that will allow South Slough NERR personnel to conduct eelgrass surveys, salvage work, and monitoring. It is estimated that the planning, site surveys, and eelgrass transplant work will require about 4-5 days for the Millport Slough project. However, the planning, characterization, transplant, and follow-up work will require a substantially larger effort at the Lint Slough site due to the larger size of the eelgrass bed, enlargement of the tidal basin, and alteration of tidal hydrodynamics in the area beneath the new bridge.

Steve Rumrill presented a seminar titled “*Experimental Transplant of a Small Eelgrass (Zostera marina) Bed within the Siuslaw River Estuary, Oregon*” during the Restoration of Coastal Habitats short-course taught at the Oregon Institute of Marine Biology in July 2008.

D. Pacific Coast Regional Marine Research Plan: Steve Rumrill continued to work as a co-principal investigator on the project titled “*Developing a Research and Information Plan for the California Current Large Marine Ecosystem of Coastal Washington, Oregon, and California.*” The project is administered by Oregon Sea Grant, and supported by a \$500,000 grant from the National Sea Grant Program over the period of 2006-2008. The project management team is composed of the four directors of the state Sea Grant programs: Penny Dalton, WA-UW; Jay Rassmussen, OR-OSU; Russ Moll, CA-SIO; Linda Dugay, CA-USC; and Steve Rumrill, South Slough NERR. The project team completed their organization, review, and consolidation of over 5,000 comments and suggestions that were received from stakeholders as the database for input into the tri-state plan. Steve Rumrill was the lead author for the Ecosystem Structure and Function chapter of the plan, and he developed a draft chapter that summarizes the background information, the current state of knowledge, and the identified priorities for ongoing and new research along the coastline of Washington State, Oregon, and California. The draft report titled “*Stakeholders Speak: West Coast Marine Research and Information Needs for the 21<sup>st</sup> Century*” is currently under review by the project management team and the state Sea Grant programs. The project management team met with representatives from the natural resource staff to the Governors of California, Oregon, and Washington in October 2008 to further coordinate development of the research planning document with the West Coast Governors Agreement and Action Plan. The tri-state research plan has been identified as an integral component of the West Coast Governors’ Agreement on Ocean Health.

E. NOAA – Integrated Ecosystem Assessment: Steve Rumrill continued to participate as a member of the Pacific coast working group on Integrated Ecosystem Assessments (IEA). The IEA effort is lead by NOAA’s Coastal Data Development Center, and Dr. Rumrill is a member of the working group that is conducting scoping meetings for the California Current Ecosystem Data Management Project. The working group discussions are focused on refining the goals and objectives of the California Current IEA, and on coordination of the NOAA efforts with the ongoing work of the Regional Associations of the Integrated Ocean Observing Systems (*i.e.*, NANOOS, CenCOOS, SCOOS), the

Pacific Coastal Ocean Observing System (PACOOS), the West Coast Regional Marine Research and Information Plan, and other ongoing regional efforts (*i.e.* CEMAP, PISCO). At the request of the Oregon Governor's office, Dr. Rumrill has been invited to serve as the Oregon representative to the governing council of PACOOS. Dr. Rumrill was also recently selected as the Chairman of the West Coast IEA working group.

F. Restoration of Native Olympia Oysters: South Slough NERR continued to work this summer and fall on the experimental out-planting of native Olympia oysters (*Ostrea conchaphila*) in the South Slough estuary. The grant-supported research project originally included a reciprocal transplant approach (or common garden experiment) where juvenile oysters (cultch) from two different sources of broodstock, Willapa Bay and Coos Bay, were to be placed side-by-side into the tideflats of the South Slough, and the oysters were to be monitored for survivorship, growth, onset of reproduction, and susceptibility to predation, overgrowth competition, and sedimentation.

Sub-samples of adult Olympia oysters were collected from Coos Bay in June and July 2008 and sent to the regional shellfish pathologist Dr. Ralph Elston at AquaTechnics, Inc. for a histological investigation of potential pathogens and parasites. Results indicate that the Coos Bay populations are free from a standard series of potentially harmful organisms. However, about 12-17% of the oysters from Coos Bay contained cells that exhibited potential bio-contaminants and evidence of nuclear degeneration. The cause of the cellular degradation is not known, and it is recommended that the Coos Bay population be isolated during all hatchery operations to generate cultch. Based on these results, the South Slough NERR application for an Oregon Department of Fish and Wildlife – Oyster Transfer Permit was denied. Consequently, it was not possible to conduct the hatchery work required to generate bags of juvenile cultch from the Coos Bay oysters.

Despite this setback, an alternative field experiment was initiated where juvenile cultch developed from Willapa Bay broodstock were deployed in the South Slough in July 2008, and spat collector bags (containing Pacific oyster shell) were deployed at several locations in Coos Bay to obtain juvenile oysters from the local Coos Bay broodstock. Steve Rumrill, Kevin Cellura, and Hans Klausner traveled to the Whiskey Creek Shellfish Hatchery in Netarts Bay on 25 July, and they obtained 22 bags of Olympia oyster cultch from Willapa Bay broodstock that were donated by The Nature Conservancy from their ongoing project in Netarts Bay. In addition, South Slough NERR staff members Hans Klausner and Don Smith worked with the Oregon Youth Conservation Corps to prepare 180 bags of oyster shell. The oyster bags were then deployed in August from docks, pilings, and a floating barge in Coos Bay in an effort to provide substrata that will be attractive to settlement of Olympia oyster larvae derived from the local Coos Bay population. In the event that the spat collector bags in Coos Bay are colonized by juvenile Olympia oysters, the bags will be transported into the South Slough in the spring of 2009 where they will be placed side-by-side with the cultch bags which contain juvenile oysters from Willapa Bay.

Steve Rumrill, Kevin Cellura (Marshfield High School), and Rheannon Arvidson (Portland Community College) traveled to Willapa Bay in July 2008 to collect and transport about 200 adult specimens of *Ostrea conchaphila*. Additional adult oysters were collected from various sites in Coos Bay to provide specimens for comparative measurements of shell sizes and weights, and for summer research projects to investigate susceptibility to predation, overgrowth competition, and hydrodynamic modification by successive generations of growing oysters. In particular, Kevin Cellura initiated a series of laboratory experiments to document the differential susceptibility of adult oysters to predation by crabs (i.e., *Cancer magister*, *C. productus*, *C. attenarius*, *Carcinus maenus*). Rheannon Arvidson prepared numerous specimens of single, double, and triple-stack oysters to represent the successive generations of adults that contribute to clusters in the field, and she worked in a laboratory flow-tank to investigate the alteration of water pathways as they flow around the oysters in moving fluid. Steve, Kevin, and Rheannon worked together to use adhesives to attach living oysters to ABS plates, to take measurements and photos of the specimens, and to deploy the oysters plates in the field from floating docks. The oyster plates will be monitored to assess the susceptibility of the adults to overgrowth competition by colonial tunicates.

G. Short-course on Restoration of Coastal Habitats. Steve Rumrill, Craig Cornu, Jan Hodder (OIMB), and Don Croll (Univ. CA at Santa Cruz) served as co-instructors for a short-course taught at the Oregon Institute of Marine Biology in July and August 2008. The course included a series of lectures, laboratories, demonstrations, and field trips that focused on habitat alterations and the planning and implementation steps that can be taken to enhance and restore lost ecosystem structures and functions. The course was taken by a group of 15 undergraduate and graduate students from the University of Oregon, as well as visiting summer students from other institutions.

H. National Academy of Sciences / Ocean Studies Board: Steve Rumrill was invited by the National Academy of Sciences / Ocean Studies Board to participate in a committee and panel discussion that focuses on the ecological role and potential impacts of commercial oyster mariculture operations in Drake's Estero, CA. The committee met in Mill Valley, CA on 3-5 September 2008, and Dr. Rumrill presented a seminar to describe the results of previous grant-supported work to evaluate the ecological impacts and to develop best management practices for commercial oyster long-line mariculture in Humboldt Bay, CA. Drake's Estero is managed by the National Park Service (NPS) as a component of the Point Reyes National Seashore, and the NPS is seeking advice on how to best proceed with restoration of the estuarine habitats when the oyster mariculture lease expires in 2012. Steve Rumrill also contributed as a co-author with Brett Dumbauld (USDA) and Jennifer Reusink of the University of Washington to prepare a manuscript titled "*The ecological role and potential impacts of oyster and clam mariculture in Pacific coast estuaries.*" The manuscript was submitted to the National Academy of Sciences / Ocean Studies Board in September 2008 as part of their review.

I. PICES / North Pacific Marine Science Organization: Steve Rumrill serves as a U.S. delegate to the Marine Environmental Quality (MEQ) committee of the North Pacific Marine Science Organization. The international organization is the temperate Pacific

component of the Pacific Intergovernmental Commission on Exploration of the Seas (PICES), and membership includes scientists, marine resource managers, and committee delegates from Japan, Korea, China, Russia, Canada, and the United States. The PICES XVII conference will be held in Dalian, China from October 23 – November 2, 2008, and travel funds have been provided by a grant from the National Science Foundation administered by Oregon State University. Steve Rumrill will participate in the MEQ committee meetings and workshops that focus on coastal water quality, aquatic invasive species, mariculture, harmful algal blooms, coastal climate change, and marine ecosystem-based management, and he will present a seminar titled “*Interactions with non-indigenous aquatic species pose an impediment to recovery of native Olympia oyster (Ostrea conchaphila) populations in Coos Bay, Oregon, USA.*”

### **III. Research Studentships and Internships**

**A. Summer Interns** Two summer research interns continued their work at the South Slough NERR Estuarine and Coastal Science Laboratory to investigate ecological aspects of the early recovery of Olympia oysters. Kevin Cellura, a science teacher at Marshfield High School, is studying the potential differences in survival, growth, and susceptibility to predation and overgrowth competition between populations of oysters from Coos Bay and Willapa Bay. Kevin hopes to determine whether the local populations have become better adapted to the ecological conditions in the Coos estuary. Rheannon Arvidson (COSEE student from Portland Community College) is investigating water flow and turbulence created by single, double, and triple clusters of oysters that recruit and grow in successive generations.

A third summer research intern, Jill Alexander, an undergraduate student in Biological Engineering at Oregon State University, worked at the Estuarine and Coastal Science Laboratory to compile time-series measurements generated by the South Slough NERR System-Wide Monitoring Program (SWMP). Jill used the SWMP database and Surfer (ver. 8) software to assemble a set of maps designed to illustrate seasonal and tidal changes in the characteristics of water in the South Slough estuary.

**B. NERR Graduate Research Fellows:** Two NERR Graduate Research Fellows continued their graduate thesis work within the South Slough over the summer and fall. The NERR GRFs are Tim Davidson (Ph.D. candidate; Portland State University) and Margot Hessing-Lewis (Ph.D. candidate; Oregon State University). Tim’s investigation focuses on “*Dispersal, burrow creation, and competition in the invasive Australasian burrowing isopod Sphaeroma quoianum in the South Slough and other Pacific coast estuaries.*” Tim continued to collect information to describe the rate and extent of burrow formation in a variety of different substrata. In addition, Tim completed an experiment to determine whether the presence of living isopods of both sexes, crushed conspecifics, and/or burrowed substrata influences the rates of isopod settlement. Tim also conducted preliminary work to measure rates of sediment erosion at various locations within the South Slough and Coos Bay.

Margot Hessing-Lewis' graduate thesis project is focused on "*Measuring Eelgrass-Macroalgae Interaction Strength in Upwelling Influenced Estuaries in Oregon.*" Margot continued her seasonal monitoring of eelgrass habitats over the summer and fall at four study sites in the South Slough. Field work included monthly assessments of eelgrass and macroalgae biomass, density, and percent cover, and the profiling water column conditions including temperature, salinity, dissolved oxygen, and nutrients. In addition, Margot completed the second year of her field experiment to investigate the responses of eelgrass to the addition and removal of macroalgae. Margot's work will help describe how marine-derived subsidies function as drivers of macroalgae blooms, and will evaluate the potential for macroalgae abundance to serve as an ecological indicator of nutrient loading in the South Slough and Coos Estuary.

C. Graduate Student Thesis Advisory Committees: Steve Rumrill continued to serve as a member of several graduate student thesis advisory committees. These students investigate a variety of marine and estuarine ecological problems and coastal management issues. The student thesis work takes place primarily in the South Slough NERR, the Coos Estuary, and other regions of the southern Oregon coastal zone.

Ongoing Thesis Work:

Lisa Turnbull	PhD University of Oregon
Margot Hessing	PhD OSU / Zoology
Holly Keammerer	PhD Oregon Institute of Marine Biology
Heather Austin	MSc Oregon Institute of Marine Biology
Sarah Matthews	MSc Oregon Institute of Marine Biology
Erin Morgan	MSc Oregon Institute of marine Biology

Thesis work completed:

Pamela Archer	MSc OSU / Marine Resource Management
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