

SOUTH SLOUGH RESERVE MANAGEMENT COMMISSION

AGENDA

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

March 17, 2016

145th REGULAR MEETING 1:00-4:00 P.M.

- I. Call-to-Order**
- II. Introductions**
- III. Review of the 144th regular meeting minutes**
- IV. Public Input***
- V. Old Business**
- VI. New Business**
 - 1. Management Plan Revision update - Hannah
 - 2. Use of Herbicides on South Slough – Discussion Only - Gary
- VII. Presentations**

- VIII. Information Reports**
 - 1. Administration/Facilities
 - 2. Education
 - 3. Science
- IX. Adjourn**

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

** 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 Rebecca Muse at 541-888-5558 ext. 134 at least two working days prior to the meeting.

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

Oregon Institute of Marine Biology
Charleston, Oregon

Minutes of the 144th Regular Meeting
November 19, 2015

Commission members present:

Stephanie Hallock, Chair

Lonne Mays

Trent Hatfield

Toni Ann Brend

David Kronsteiner

Kris Wall

Dr. Alan Shanks

South Slough NERR staff and others present:

Gary Cooper, Manager

Cyndi Wickham, DSL

Pam Wilson

Bree Yednock

Deborah Rudd

Hannah McDonald

Ed Oswald

John Bragg

Kathy Andreasen

Don Smith

Jenni Schmitt

Ali Helms

Laura Mays, FOSS

Mike Allman

Eric Dean

Joy Tally

The meeting was called to order at 1:05 p.m. by Stephanie Hallock Cummins, Interim Director of the Department of State Lands and Chair of the Commission.

INTRODUCTIONS

Everyone present at the meeting introduced themselves. Chair Hallock thanked the members of the Management Commission for their service.

APPROVAL OF THE MINUTES OF THE PREVIOUS MEETING

Chair Hallock asked if there was a motion to approve the minutes of the previous meeting. Commissioner Kronsteiner moved to approve and Commissioner Mays seconded. The motion carried with all in favor.

PUBLIC INPUT

There was no public input.

OLD BUSINESS

Revised Fee Schedule

Manager Gary Cooper introduced the revised and simplified fee schedule he compiled for the South Slough NERR. The Commission concurred that the revised schedule was an improvement over the previous document. **Upon request, the Commission moved to adopt the new fee schedule effective to date. Commissioner Mays moved for approval of the revised fee schedule and Commissioner Kronsteiner seconded the motion. The motion carried with all in favor.**

Management Plan

Hannah McDonald reported that NOAA has sent the draft review back with guidance for staff on the completion of the plan. Staff has completed a strategic plan for the Reserve for the next five years. When the present draft is approved sometime in March 2016, it will be posted on-line and hard copies will be distributed.

Approval of Minutes

Approval of the minutes of the 142nd meeting was postponed until present due to the lack of a quorum at the July meeting.

Chair Hallock asked if there was a motion to approve the minutes of the 142nd regular meeting. Commissioner Kronsteiner moved and Commissioner Mays seconded to approve the minutes of the 142nd regular meeting. The motion carried unanimously.

NEW BUSINESS

Wasson Creek Project

Hannah McDonald gave an update on the Wasson Creek Watershed Restoration project. The area is the highest priority for restoration work for the Reserve and is a rich cultural resource which includes the Fredrickson barn. Staff has been working with the Tribes on the project which will include the mass eradication of invasive plants such as reed canary grass and the replanting of native foliage. An extensive inventory has been completed of the uplands and staff would like to introduce the concept of thinning. The planning phase of the project will be finished in late fall of next year; and it is expected that the entire project will not be funded by one entity.

Hunting Regulations

Manager Gary Cooper spoke with ODFW regarding current hunting restrictions. The Reserve's hunting map and hunting restrictions will remain the same for now. Commissioner Mays suggested changing some of the guidelines regarding 22 rifles and the like. Mr. Cooper agreed it would be a good idea to do a review.

Suggestions from the Chair

Chair Hallock requested that any new business agenda items be forwarded to her in advance of the next meeting. She also asked that staff share five minute highlights at the next meeting in addition to their written program reports. She noted that her assignment as interim agency director would only be through the end of February, but she would like to see an update for the Commission at the next regular meeting regarding the MOU and host agency discussion with the UO and OSU. As Chair, she feels it is appropriate to keep the Commission apprised of any developments regarding the host agency for the Reserve.

312 Evaluation

The Reserve is waiting to receive the report back from NOAA. We will provide an update at the next meeting. We believe the process went well.

ADJOURNMENT

Chair Hallock adjourned the meeting at 2:10 p.m.

Administrative/Facilities Report

Administrative

Attached are the state budget reports for the 2015-17 biennium through January 2016. The federal budget for FY15 is dedicated to salaries with some travel to the annual meeting.

The Land Acquisition and Construction grant (PAC grant/NOAA funding) was submitted on January 28, 2016 for \$329,000. This grant will fund the ECOS building expansion. The proposed project includes reorientation of the garage, additional parking, expansion of the wet laboratory, and additional offices to support Science staff as well as interns and partners. Landscaping will be included along with all available sustainable design elements and green infrastructure. Awardees should know by April or May if awarded. PAC grant will total \$329,000 as well as University of Oregon providing the match (land and office space) for this project in the amount of \$141,000. Total project will be \$470,000.

FY16 Ops Award guidance should be out this month. Staff has already started preparation for application.

All of the new staff members have settled in to their respective positions. New staff means new life in all programs to include Education, Science and Administration.

The new GIS position is currently under recruitment. This position is supported by a \$20,000 grant through Department of Land Conservation and Development (DLCD) and will fund the GIS Technician position through January, 2017. This position will be using ArcGIS/ArcMap to refine Oregon's Coastal and Marine Ecological Classification (CMECS) habitats classified by Department of Land Conservation and Development (DLCD). Refinement will

include adding new levels of detail, status and trends and CMECS coding. Staff hopes to have position filled as soon as possible.

All staff completed and updated their First Aid/CPR certifications in February, 2016.

Pam Wilson has officially retired again as of February 29, 2016. She plans on coming back and helping here and there dependent on needs with specific grants, especially the FY 16 Operations Award. Rebecca Muse has been on board training with Pam since January 6, 2016. Rebecca is a Coos Bay/North Bend native and comes to us with 18 years' experience in State and Federal grant management and administration.

Facilities

Replacement work on the sump pump/septic was contracted through RotoRooter and completed end of February. During the storms in December 2015, unusual amounts of rain caused a back-flow of water which found its way through the sump pump and into our education classroom.

Michael Allman has settled into his position of Maintenance Lead and has been a great addition to the team. His wealth of knowledge from previous experience has been great.

At the end of December, there was a fairly large tree down on the North Creek trail. We were expecting the trail to be closed for a longer period of time but instead the trail was only closed for about a week. Maintenance (Michael

Allman and Don Smith) along with some assistance from a Harding Learning Center class cleaned up the tree and fixed the damage to the trail. With all the extra hands, the work was completed in only a day.

SSNERR Education Program update

October 18, 2015 through February 18, 2016

During the winter season education program delivery slows down and staff has an opportunity to examine the previous year's activities and plan for the coming year. Programming still continues but the pace allows for some longer term preparation and planning. The Education staff took part in annual work planning sessions and has created a work plan for 2016. This will allow staff to forecast workloads and prioritize projects. Staff will look at the plan throughout the year to gauge completion of projects and use the plan to evaluate and prioritize activities as we move forward. This period of time also allows staff to strengthen partnerships and develop grant proposals.

Professional meetings

Reserve Education Coordinator, Joy Tally attended the Northwest Aquatic and Marine Educators (NAME) mid-year board meeting in Port Townsend, WA in January. NAME is a partner in the Oregon Coast Education Program (OCEP) and hosts the education modules created by OCEP on the NAME website. Along with regular business, plans to modify the web platform and access for the OCEP Coordinator to update OCEP pages on the NAME website were developed. Education staff also participated in cultural artifact training by the Coquille Tribal Historic Preservation Officer.

Education Program Totals

For the period from October 18, 2015 to February 18, 2016 an overall total of 71 educational activities were conducted for 1,200 participants. There were 164 contact hours and 137 hours of preparation recorded. These totals include all types of education, interpretation, training and outreach.

Including visitors to the South Slough Interpretive Center, a combined total of 1,907 individuals learned about estuaries and coastal watersheds through South Slough education programs and interpretive facilities during this period. This level of activity and participation is an increase in participation for this same period of time last year. This increase reflects the introduction of

new interpretive program offerings developed by Eric Dean, Education Specialist, and strengthened efforts at program promotion.

Staffing capacity was enhanced by the addition of an 11 month AmeriCorps members with the primary responsibility of delivering afterschool formal education programs which also adds to the increase in program participation and delivery.

Visitation and Visitor Services

Independent of education programs 707 people visited the interpretive center from mid-October, 2015 to mid-February, 2016 accounting for an average of 9 visitors per day. This represents a slight decrease in visitation for the same period in 2014-15 when an average of 11 visitors per day was recorded. Late fall and winter remain the slowest time for visitation and numbers fluctuate depending on weather conditions and other local events. The period covered by this report spanned 79 days when the South Slough Interpretive Center was open to the public. Public hours for the building remain 10am – 4:30pm, Tuesday through Saturday, throughout the year.

Formal Education & Training

A total of 42 formal education programs were offered for 829 participants during the period from mid-October, 2015 to mid-February, 2016. A total of 110.5 contact hours and 78 hours of preparation time were recorded. Programs were offered on-site at the reserve as well as at schools in Coos Bay and North Bend. Professional development activities occurred at the High Desert Museum in Bend, the Oregon Coast Aquarium in Newport and the Lane Education Service District Office in Eugene.

Of the formal education programs, 32 were delivered for elementary level classes, 1 for middle school classes, 4 for high school classes, 2 for college level classes, and 3 professional development trainings for teachers. This data has been submitted as a part of the required performance indicators included in the National Estuarine Research Reserve's performance measures database.

The demand for formal education program offerings is low during the winter but steadily increases as spring approaches. AmeriCorps member Astrea Strawn completed two more rounds of the 2015-16 Estuary Explorers program at Madison Elementary School, Sunset Middle School

and Hillcrest Elementary School. Hillcrest Elementary in North Bend is a new school for the program and another new school, Lighthouse Elementary also in North Bend will be added in late February. Estuary Explorers provides afterschool activities focusing on science and nature for students in Kindergarten through 7th grade. This program has been the bulk of formal program delivery during the winter. Astrea Strawn and Eric Dean also conducted training for volunteers assisting with the Estuary Explorers program in January.

Oregon Coast Education Program (OCEP)

OCEP represents a partnership of education institutions working to advance the use of best practices in field and classroom-based education to incorporate meaningful watershed education experiences for students. Through teacher professional development workshops and activities, teachers receive support to facilitate coastal education activities with their students. Institutions participating include South Slough NERR, the Oregon Coast Aquarium, the Hatfield Marine Science Center, Portland State University, and the High Desert Museum. Funding for OCEP has been provided through the NOAA Bay Watershed Education and Training (B-WET) program.

In its 5th year, the project continues to be implemented by a core leadership team from partnering institutions. The OCEP project coordinator, Cait Goodwin based at Hatfield Marine Science Center, works with the existing OCEP alumni network to recruit and train new teachers. The project aims to directly impact 120 teachers.

Four community workshops have already taken place and 4 more are scheduled for late winter in Florence, Portland, Coos Bay and Bend. The project has already reached 58 teachers through community workshops. B-WET Year 5 will help OCEP conduct a Teachers on the Estuary (TOTE) workshop at South Slough, June 27-30, 2016 and June 11-14, 2016 in Newport. Registration is open for these multi-day summer workshops.

In December, NOAA released the grant opportunity for a 6th year of B-WET funding. The OCEP leadership team submitted a grant proposal on February 9th for an additional \$60,000 to support teacher professional development. This project will harness the power of OCEP alumni teachers, project partners, developed education modules, and lessons learned to dive deeper into

the implementation of OCEP education modules and best practices in local schools. OCEP project coordinators will work with OCEP mentor teachers to strengthen the integration of coastal education in four Oregon communities on the Oregon Coast, Bend and Portland. The project will directly impact 10 OCEP teachers who will work with 30 new teachers and 800 students.

Gray Family Foundation – Fishing the Tides

Funding has been provided by the Gray Family Foundation through the Oregon Community Foundation in the amount of \$10,000 to complete the Fishing the Tides project. The Fishing the Tides project goals are to: 1) Train teachers to engage their students in inquiry-driven study of real world issues related to our understanding of fisheries and the role that science plays in managing our natural resources for the benefit of all. 2) Develop a curriculum module comprised of activities, data products, and tools to support and enhance student understanding of the role estuaries play in the health of fish populations. 3) Provide field and classroom-based experiences that support and enhance the understanding of change over time in estuaries and possible causes.

This project will be developed in support of a multi-year scientific study that is designed to collect data on fish populations in the Coos estuary through sampling and analysis of historic data for locations in Coos Bay and South Slough. Pilot field and classroom activities are currently being planned and delivered. At the end of this school year classroom and field activities will be ready to be incorporated into the TOTE workshop in June 2016.

Community Education, Interpretive & Outreach Activities

Interpretive programs continue to be offered for a diverse public audience of children, adults, and families. A total of 28 interpretive and outreach programs were offered and 371 people attended activities ranging from toddler programs, nature films, mushroom classes and art openings.

Several new interpretive programs were offered including a Seaweed Art class and a photography guest speaker. There were 53.5 hours of contact time and 55 hours of preparation time recorded. This data is being provided to NOAA as part of the performance measures reporting requirements on a semi-annual basis.

Public Involvement

Volunteers/Internships

50 SSNERR volunteers logged in 970.45 hours valued at \$22,388.28 during the time period of November 2015 through January 2016. The program category breakdown included 648.45 education, 168.25 research/stewardship, 110.75 administration, and 43 other volunteer hours. (Some volunteers worked in more than one category)

During fall 2015-winter 2016, the Reserve hosted 2 internship positions. MacKenna, an OIMB student participated in the Research Fish Seining internship. Talo, a SWOCC/OSU distance learning student participated in the Vegetation Monitoring internship.

The Reserve is currently recruiting for five spring internships in the areas of education, outreach, trails, fish seining, and vegetation monitoring. Stipend awards are available through the Friends of South Slough Reserve, Inc. Funding is provided through an Oregon Community Foundation Grant, a Zonta International Grant, sponsorships from local businesses and donations from members.

Friends of South Slough (FOSS) Board of Directors

FOSS has hired an additional part time bookkeeper Shirlee Bennel, to help manage grants, keep up the Quick Books Bookstore accounts and assist with other bookkeeping needs. Shirlee has her own accounting business and is also a regular South Slough volunteer.

FOSS is currently developing the budget and work plan for 2016. At the February 23 Annual Meeting the 2016 board of directors will be elected and the work plan and budget will be presented to the membership for approval. In March, the elected Board of directors will elect officers to specific positions. FOSS is also looking for volunteers to serve on project committees.

Outreach/Marketing

SSNERR Public Involvement staff participated in the following activities this quarter, Bay Area Chamber of Commerce Planning Session, organizing a staff charitable contribution for a local youth shelter, organizing staff and volunteers as hosts for Friends of Shore Acres Holiday Lights event, organizing a Holiday Volunteer Appreciation at the Interpretive Center, participating in

an Education Team planning session, the Annual Bay Area Chamber of Commerce Awards Banquet, and the Charleston Crab Feed in support of the Charleston Visitor Center.

This quarter public involvement staff worked with SSNERR Admin staff to purchase an PSA/Advert opportunity with Willamette Valley TV, placing ten ads with the match of ten per week for a total of 20 commercials at a rate of \$150/week. The target dates include, the week before spring break, March 13-19, and two separate weeks before summer, May 22-28 and June 6-11 for a total of \$450.00.

Public Involvement staff conducted an interview with KCBY and the Eugene affiliate station on a piece highlighting local attractions. The South Slough NERR, the Egyptian Theatre and the Coos Art Museum were selected for this piece funded through the Visitor Convention Bureau. Outreach and communications continue to include a bi-monthly online newsletter/calendar, public service announcements, monthly *Hooked on Oregon* radio spots, flier distribution, email, Face Book and Twitter alerts.

Coastal Training Program

Pacific Marine and Estuarine Fish Habitat Partnership

The CTP coordinator travelled to Portland November 12 to participate in the Coastal and Estuarine Research Federation conference at the Oregon Convention Center representing the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP). In a pair of back-to-back sessions, PMEP members and contractors presented 10 papers describing the work the partners have accomplished over the past two years to assess the state of knowledge about the habitat needs of juvenile fish and availability of data describing the nursery functions of West Coast estuaries. In November PMEP released *Nursery Functions in West Coast Estuaries: Data Assessment for Juveniles of 15 Focal Fish and Crustacean Species* (Toft et al, 2015). PMEP has previously identified gaps in decision makers' knowledge and understanding of how juvenile fish use estuaries based on the needs of 15 focal species of fish and shellfish that, together, represent the gamut of fishes found in West Coast estuaries and are for commercial, cultural, or recreational importance. PMEP is now considering how the information it has gathered, and the data gaps it has identified, might be used to prioritize habitat restoration projects in West Coast estuaries. The coordinator subsequently joined the PMEP steering and science-data committees

in a workshop (December 1-2 in Sacramento) to begin the selection of the prioritization scheme. SSNERR is currently engaged in a fish habitat study funded by PMEP; the data from this study will inform PMEP's continuing effort to improve understanding of how fish use habitat in estuaries.

Introducing Green Infrastructure for Coastal Resiliency

In November the CTP coordinator began working with partners (including NOAA Digital Coast Office, University of Oregon's Partnership for Disaster Resiliency, Oregon Coastal Management Program) to present *Introduction to Green Infrastructure for Coastal Resiliency*, a one-day training workshop, which is scheduled to take place February 25 at the interpretive center. Registered participants include local government officials from the City of Coos Bay, Coos County, and other local coastal governments, and planning specialists from throughout coastal Oregon and the Willamette Valley, and British Columbia.

Communities, Lands and Waters Database

The CTP coordinator assisted Jenni Schmitt to identify web resources development specialists to inform the preparation of a proposal to fund development of a website to host the Communities, Lands & Waterways Data Source (currently located on the website of the Partnership for Coastal Watersheds).

NERRS Business

The CTP coordinator has been working with staff at NOAA and training coordinators at other reserves to explore several issues raised at the NERRS annual meeting in Mobile, Alabama (October 2015), including:

- Working with local businesses. We discussed the logistics of getting business owners' attention; the reality is that, for most businesses, that time away from the storefront (e.g., to attend a training workshop) is time not spent earning income. The role of chambers of commerce, business associations, etc., was discussed as a potential partner for planning or coordinating training. SSNERR CTP suggested the idea of working through service clubs and organizations to provide training; one or two reserves reported working with similar groups, with mixed results.

- CTP has begun working with training staff at the reserves, with assistance from Pete Wiley at NOAA, to identify and explore issues or difficulties faced by coastal training programs at reserves located in rural regions. Although the topic has come up occasionally at reserve-wide meetings, and at least three reserves have identified their reserves as rural, there hasn't been any systematic consideration of barriers, limitations, needs, or strategies for rural reserves, or how many reserves are affected. The CTP coordinator is working with NOAA's Office for Coastal Management and several of the reserves to develop a fuller picture of needs and opportunities.

CTP need assessments

The CTP coordinator is identifying issues, audiences and partners for future training as part of a periodic assessment of coastal training strategy. SSNERR's coastal training program strategy is due for revision (as required by NOAA) in 2017. The assessment will inform training needs (2017—2022); in addition it will provide program guidance for the coming year.

NERRS Science Collaborative

The CTP coordinators is assisting members of the Pacific Northwest Blue Carbon Working Group to develop a proposal for carbon stocks assessments and decision-maker outreach in the Pacific Northwest. Planning is in collaboration with the Padilla Bay NERR. Among other tasks, CTP will help to identify policy- and decision-makers in Oregon, Washington, and California, assess their needs for coastal blue carbon data and information, and involve them in subsequent decision-making, as end users in the project.

SCIENCE PROGRAM UPDATE

November 19, 2015 – March 17, 2016

MONITORING

NERRS System-Wide Monitoring Program (SWMP)

Ali Helms (Estuarine Monitoring Coordinator) and Adam DeMarzo (Monitoring Technician) continued to operate the water quality, weather and nutrient components of SWMP.

SWMP Data: Ali & Adam completed monthly field and lab work associated with the water quality, meteorological and nutrient long-term monitoring stations. They completed monthly and quarterly data submissions to the NERRS SWMP Centralized Data Management Office (CDMO) on time and are working on annual data submissions for 2015 due in April, May, and June 2016. Data submissions include data that have undergone several levels of quality assurance and quality control (QA/QC) procedures, metadata development, calibration and field logs, and instrument and sensor inventory. System-Wide Monitoring Program data for the SSNERR and all other Reserves are accessible online at <http://cdmo.baruch.sc.edu>.

The final data collection for the meteorological station was made on 4/1/15 in its current location on the OIMB campus. The station is being moved due to a wind turbine (see section below on Weather Station Relocation) and data collection will resume following installation. We received the delayed nutrient samples from the University of Washington Marine Chemistry laboratory and Adam is currently working on the 2015 annual nutrient submission and CDMO is being kept up to date on the progress and new submission schedule. In January, Ali completed the 2011 Final Water Quality Data Review and 2011 data are now authenticated through the CDMO, which means they have been through final tertiary reviews and are the final authoritative dataset. In December and January, Adam completed 2008 and 2009 Final Nutrient Data Reviews and these data are authenticated by the CDMO. Ali completed the NERRS SWMP equipment inventory for FY16 budget planning on 1/13/16.

The water quality instruments at the four SWMP stations have all been switched to the Yellow Springs Instrument (YSI) EXO2 sonde platform from the older version 6600 V2. The major differences between the EXO and 6600 platforms are wireless communication and smart sensor technology, which allows

sensors to automatically be recognized by the sonde for easier calibration and configuration. The sensors can also be batch calibrated and then distributed to individual instruments. The ports allow wet-mateable connections which prevent damage during wet field conditions and allow probes to be swapped easily in the field if needed. The EXO instruments are used for the four core SWMP stations as well as the four secondary Coos Bay SWMP stations.

Estuary pH Monitoring: Ali Helms and Adam DeMarzo continued instrument cleanings, data downloads, and maintenance of the Sami $p\text{CO}_2$ and SeapHOx pH monitoring equipment at the Valino Island station. The pH sensor was pulled out of the water, cleaned of fouling at low tides, and data were downloaded on 11/23/15, 1/7/16, and 2/8/16. Discrete water grab samples were collected at high tides on 11/24/15, 12/22/15, 1/26/16, and 2/9/16. The grab samples will be used to check sensor performance and calibrate the data.

After initial failure of the pH sensor deployment tube straps on 9/14/15, both sensor tubes needed to be removed in order to fit straps behind both instrument tubes. On 10/21/15, John Schaefer of the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians (CTCLUSI) dove on the site to reinstall both instrument tubes and secured them with a sturdier strapping system. While changing out reagent bags for the SAMI $p\text{CO}_2$ sensor, we discovered that much less of the reagent was being used than is estimated by our sampling rate. After troubleshooting this with Sunburst Sensors and sending data files, they acknowledged that something was wrong with the sensor and we retrieved it from the field on 11/10/15 and mailed the instrument to them for testing and diagnosis. They determined the pump had failed and the reagent had gone bad. They completed repairs and refurbishment of the instrument and made new reagent in December and the instrument was received 1/13/16 and redeployed 1/21/16. Both instruments are currently collecting data.

Background on estuary pH monitoring: The two water quality instruments (Sami $p\text{CO}_2$ and SeapHOx) were acquired through the NOAA Ocean Acidification Program to collect measurements related to the carbon dynamics of the South Slough estuary in order to understand the rising pH (less acidic) trends detected by the YSI 6600 SWMP dataloggers. From 1995-2010, SWMP pH levels indicate an increasing trend (less acidic) while analysis of more recent data 2011-2013 show decreasing (more acidic) pH values; overall the annual mean and median linear regressions indicate an increase in pH with interannual and seasonal variability between years. The Sami $p\text{CO}_2$ sensor is collecting continuous carbon measurements of the partial pressure of carbon dioxide gas ($p\text{CO}_2$). $p\text{CO}_2$ is one of four carbon cycle measurements (pH, Dissolved Inorganic Carbon (DIC), and Total Alkalinity (TA)) that helps to understand ocean acidification processes. $p\text{CO}_2$ can provide information on community respiration, biological productivity, gas exchange, calcification, and cycling of carbon in a system. The second sensor, the SeapHOx, is collecting high resolution pH and also includes oxygen and temperature/conductivity sensors.

Real-Time Data: As a participant in the US Integrated Coastal Ocean Observing System (IOOS)/Northwest Association of Networked Ocean Observing System (NANOOS), we operate telemetry systems at all four of the core SWMP water quality stations and the weather station (currently being relocated) to provide real-time data available at www.nvs.nanoos.org/Explorer.

Data Management: The Centralized Data Management Office (CDMO) is the technical support team dedicated to data management activities associated with the SWMP data collected at the 28 reserves. Recent activities of the CDMO include data processing and database changes to accompany the newer YSI EXO water quality sondes and modification of the Data Export System and Real Time Data Application for adding SWMP station type designations, optional parameters, and vegetation monitoring applications. Additionally, the CDMO is upgrading the main database server, CDMO Manual, and Standard Operating Procedures related to EXO water quality instruments, telemetry, and streamlining data uploading processes. They are working on completing past water quality, nutrient, and weather data reviews for reserves so all data will be authenticated. Ali participated in the Technician Training Workshop planning committee in January 2016 to review priorities for training sessions, finalize the agenda, and discuss improvements for this year's training in March 2016. Adam and Ali will be attending the annual SWMP Technician Training Workshop held in Myrtle Beach, SC from 3/15-3/17/16.

The CDMO now provides data hosting for SWMP stations that are established and maintained in addition to the required stations (4 water quality and 1 weather), and these are known as Secondary SWMP stations. The SWMP database has a new designation column for all stations (isSWMP column) for distinguishing Primary or Secondary stations. Reserves can upload raw data from secondary SWMP stations and the CDMO will provide web services if the station is telemetered. Data must be collected for one year at the station and the stations must follow all SWMP protocols and be reserve run in every respect. SSNERR has four water quality stations eligible for secondary SWMP status that were established as part of the Partnership for Coastal Watersheds inventory project. Ali Helms completed the required metadata document for the four secondary hosted stations and is working on the data quality control/quality assurance following the NERRS SWMP procedures and utilizing the data upload service and tools for secondary SWMP stations.

Weather Station Relocation: Science staff are in the process of relocating the long-term SWMP weather station, previously located on the campus of the Oregon Institute of Marine Biology (OIMB) from August 2001-April 2015, due to a 140 foot wind turbine installed by OIMB in December 2014. Adam DeMarzo worked with the NERRS SWMP Oversight and Data Management Committees to obtain approval for a new location that meets the required specifications for a SWMP weather station and after review of several sites, staff selected Tom's Creek Marsh located at the south end of the reserve.

In November, construction of the new wooden platform base for the station was completed with help from Mike Allman (SSNERR facilities staff). The new platform was installed at Tom's Creek on 12/29/15 and the tower was installed 1/29/16. The temperature/humidity, barometric pressure, and wind sensors and the CR1000 datalogger were calibrated in October/November and a new Apogee PAR (Photosynthetically Active Radiation) sensor was purchased. The next steps are for staff to mount the telemetry equipment and the calibrated sensors on the tower. The CDMO has specific protocols for placement of sensors and staff will follow the guidelines for installation of the equipment.

Other Monitoring Projects

Bacteria Monitoring: We continued monthly monitoring of fecal indicator bacteria at the SWMP nutrient monitoring stations. The bacteria data are of interest to the Partnership for Coastal Watersheds project, Oregon Department of Environmental Quality (DEQ) for Total Maximum Daily Load (TMDL) standards and to Oregon Department of Agriculture (DOA) as they conduct commercial and recreational shellfish bacteria assessments. Volunteers from the Surfrider Foundation continued to use the ECOS (Estuarine and Coastal Ocean Sciences) lab for their monthly monitoring of fecal indicator bacteria at local beaches.

Climate Reference Network: The NOAA Climate Reference Network station at Frederickson Marsh lost power on 12/7/15 due to power outages in the area and was restored on 12/8/15. The rain gauge was pumped out on 12/14/15 and 1/27/15, and methanol and hydraulic oil were added to prevent freezing. The rain gauge pump was broken 12/14/15 during routine maintenance and repaired with help from Mike Allman (SSNERR facilities staff).

SeagrassNet Monitoring: Science staff completed quarterly eelgrass sampling at Valino Island on 1/9/15 using the SeagrassNet sampling protocol. SeagrassNet is an international monitoring program established to document the status and health of seagrasses. The natural southward migration of Day Creek channel has been affecting the north end of two of the established 50-m transects that are sampled routinely, the deep and mid transects, over time. There are six out of twelve plots that are in the channel, where eelgrass used to grow. Staff will be adding six new plots on each of these two

transects by using a random number generator to select new quadrat locations. These quadrat numbers (12 per transect) are important for maintaining enough plots for our Sentinel Site Monitoring, since this site is also used as one of the four eelgrass monitoring sentinel sites.

Northwest Association of Networked Ocean Observing Systems (NANOOS): SSNERR is a participant in a partnership project that provides real-time water quality data for shellfish growers in Oregon, Washington, and Alaska through the NANOOS Visualization System (NVS); <http://nvs.nanoos.org/ShellfishGrowers>.

On 1/25/16, science staff received notification that the NANOOS 2016-2020, 5 year proposal was selected for funding. For 2016, NANOOS will be level funded, which includes 30K for the South Slough estuary stations and there will be potential for an increase in funding in subsequent years (45K/year). Progress reports for the current funding year 2015 were submitted on 12/17/15.

The NANOOS governing council elected new members for four year terms of service on the Executive Committee, including Jon Allan (Oregon Department of Geology and Mineral Industries) representing State Agency for Oregon, Andy Lanier (Oregon Coastal Management Program) representing Federal Agency for Oregon, Paul Dye (The Nature Conservancy) for NGO, Andrew Barnard (Sea-Bird Scientific) representing industry, and Margaret Barrette (Pacific Shellfish Growers Association) for At-Large membership.

Changes were made to the existing SWMP water quality data collection platforms to accommodate telemetry with the new EXO sonde instruments, including changes to the Satlink transmission programs, a signal output adapter to convert the EXO sonde output so the sensor measurements can be transmitted, and an EXO compatible field cable. All changes were made to the Charleston, Valino Island, and Winchester Creek stations and Elliot Creek station is the final station that needs to be completed with telemetry changes.

We partner with one of the local tribes, Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians (CTCLUSI) to provide telemetry equipment for their North Spit BLM Boat Launch sonde station in lower Coos Bay. The data are available to end users through the NANOOS Visualization System (<http://nvs.nanoos.org>).

NERRS Sentinel Sites Monitoring: The NERRS Sentinel Sites program pairs the long term water quality and water level data collected at SSNERR's System-Wide Monitoring Program (SWMP) sites with data quantifying other controlling factors (e.g., marsh elevation, plant community, vertical accretion, soil salinity, groundwater level) to help interpret long term changes in wetland emergent marsh plant communities and eelgrass beds.

This past February SSNERR science staff deployed five water level loggers into the groundwater wells at the Hidden Creek sentinel site. Groundwater level data will enable SSNERR science staff to directly track changes in average daily or monthly tidal inundation periods for Hidden Creek marsh root zone and marsh surface, key controlling factors influencing plant community dynamics in tidal wetlands. The loggers will collect one year's worth of data.

This spring, SSNERR science staff will purchase a dedicated high-precision water level data logger to be deployed near the SSNERR's Hidden Creek marsh. The dedicated water level data logger, which will be considered part of the SWMP network of permanently deployed data loggers, is needed because the water level data collected with SWMP's multi-parameter loggers are not collected with a high enough precision to meet the data analysis requirements of the Sentinel Sites project. The water level logger will be directly correlated with elevation using the Global Navigation Satellite System (GNSS) network by surveying it to three new deep rod benchmarks. All three benchmarks were installed in October and December 2015 by SSNERR staff. The benchmarks will be surveyed into the GNSS network this fall when we receive NOAA's Real-Time Kinematic (RTK) GPS equipment.

Science staff have begun to prepare for the upcoming monitoring work that will begin in May and end late August at marsh and eelgrass sentinel sites. Staff have been GPS locating existing transect start/end points and vegetation plot points, and permanently marking them with wooden stakes. Summer monitoring work will be done by SSNERR staff, volunteers, interns, a NOAA Hollings Scholar, and a College-Supported NOAA intern (if a student match is made).

Science staff have begun to draft a Sentinel Site Implementation Plan for Hidden Creek Marsh, an essential component for SSNERR to become a fully operation Sentinel Site. This plan will: include a Vertical Control Plan within; include a sampling plan; help SSNERR science staff to develop strategies for synthesizing data; help SSNERR staff reach intended audiences; and ensure results are relevant to coastal managers.

Once fully operational as a Sentinel Site, SSNERR will have a competitive advantage for funding opportunities to support the program through NERRS, NOAA's broader Sentinel Site program, and partnerships with other state and federal agencies.

Winchester Creek Water Quality Monitoring: In anticipation of restoring Coho salmon spawning habitat to the upper West Fork Winchester Creek, SSNERR staff have been monitoring water quality at three locations since December 2014. Continuous water quality instruments have measured temperature, turbidity, and dissolved oxygen at the mouth of the creek, in a section of the creek that is in need of restoration, and in a section of creek where fish currently spawn. Data were collected through December 2015, and will provide valuable baseline information with which to determine post-restoration effectiveness.

Wasson Watershed Monitoring: Science staff have begun baseline monitoring of the Wasson Creek lowlands, in preparation for anticipated restoration work. Weekly Coho salmon spawning surveys were conducted (with the help of volunteers and a FOSS funded intern) from October 2015 through early February 2016. In February, staff began vegetation mapping for four commonly occurring species including two native (slough sedge and small fruited bulrush) and two non-native (reed canary grass and pasture grass). Bi-weekly surveys of birds using the lowlands began late November 2015. In March 2016, these will become weekly surveys as birds begin to migrate. Bird survey work is funded by an OWEB technical assistance grant and carried out by an outside contractor. Bird surveys will end by June 2016. Staff are beginning to set up vegetation surveys to quantify canopy cover from existing trees and shrubs, and percent cover of herbaceous species.

Lamprey Monitoring: Very little is known about lamprey distribution or abundance in the Coos watershed and in particular the South Slough watershed. In December 2015, SSNERR science staff met with ODFW science staff to discuss the best way to assess lamprey populations in the South Slough watershed. As a result of this conversation, SSNERR and ODFW staff are planning an assessment of lamprey distribution and relative abundance in Winchester Creek beginning at the confluence with Wasson Creek and extending up into each tributary. Implementing a newly signed MOU between SSNERR and ODFW, July 2016 survey work will be accomplished using ODFW lamprey shocking equipment, ODFW take permits, and SSNERR and ODFW staff time.

RESEARCH

SSNERR Projects

Blue Carbon: SSNERR continues to collaborate with the EPA to quantify the rate of carbon sequestration in Coos estuary tidal wetlands, including SSNERR's "sentinel sites". Coring was completed in the summer of 2015 and Cesium coring results for Hidden Creek marsh were incorporated into accretion rates used for the NERRS Sentinel Site data synthesis (*Marsh sustainability in the face of sea level rise* project). SSNERR contributed final data analyses and metadata from Hidden Creek in November 2015.

In February, SSNERR staff provided EPA Scientist, T Chris Mochon Collura, with tidal datum information near the SWMP stations so sediment core site elevations can be related to Mean High High Water and Mean Sea Level. Elevation data for each coring site should be collected in the spring of 2016 by EPA staff.

Native Oyster (*Ostrea lurida*) Recruitment in Coos estuary: Oyster settlement plates were removed from Haynes Inlet, Downtown Coos Bay, and Coalbank Slough in November for the winter. Plates will be re-deployed in April 2016 to continue a multi-year recruitment study. Recruitment in 2015 was near absent at all three sites; there were only three living oysters found on the plates (at least one at each site) and a number of shell fragments indicating oysters had recruited but died. This project adds to data collected by an OIMB graduate student in 2012 and 2013 using the same methods. Data from this project will eventually be combined with recruitment data along the Pacific Coast to examine levels of variability in recruitment of native oysters across the region.

Fish Assemblages of South Slough and Coos Estuary: SSNERR staff, interns, and volunteers continued monthly seining at six sites in South Slough; seasonal seining was done at Palouse, Larson, and Willanch Creeks in the upper estuary by OSU/USFS project partners. In January, SSNERR staff deployed YSI 6600 sondes at the upper estuary sites; data will be downloaded monthly from those locations during 2016. The project is designed to characterize seasonal patterns of fish and invertebrate species diversity, richness, and presence/absence throughout the estuary. In 2015, from June through December, over 17,000 fish comprising 25 species and nearly 1,000 Dungeness crabs were caught in South Slough. In addition, five European green crabs were collected in South Slough, which indicates numbers of this invasive species may be on the rise.

Partner Projects

Partnership for Coastal Watersheds (PCW): The PCW continues to move forward. The group is guided by a committee that includes representatives of the Coos County Planning Department, City of Coos Bay (planning and city council), South Coast Development Council, Stuntzner Engineering (planning), Department of Land Conservation and Development, Southwest Oregon Community College, Oregon Department of Fish and Wildlife, US Fish and Wildlife Service, and the Coquille Indian Tribe. Currently the group is focused on two projects: finalizing the Communities, Lands & Waterways Data Source (Data Source) project, which is an encyclopedic compilation of all available data describing the socioeconomic and environmental conditions in the lower Coos watershed; and developing the next steps needed to revise the Coos Bay Estuary Management Plan. As the sixth largest estuary on the US west coast, the Coos estuary is one of Oregon's most valuable estuarine resources, both in its abundance, diversity, and quality of natural resources and in its economic and cultural values. However, modern management of the estuary and surrounding shorelands is based on the economic and social drivers of the 1970's era within which local land use plans were developed. The PCW agrees that current estuarine and shoreland use regulations need to evolve to reflect today's economic and social drivers while proactively addressing environmental changes and protecting natural resources.

PCW highlights:

- With the end of the grant, temporary staff positions disappeared; however Craig Cornu (former SSNERR staff member) and Jenni Schmitt continue to finish editing the last Data Source environmental chapters. Jon Souder (formerly Coos Watershed Association, now Oregon State University), continues to write the Data Source's socioeconomic chapters.
- SSNERR staff submitted a coastal management success story on the work the PCW has done to NOAA's Office for Coastal Management website:
<https://coast.noaa.gov/states/oregon/articles/stories/citizens-lead-the-way-as-communities-prepare-for-climate-change-impacts.html>
- Jenni Schmitt and Craig Cornu presented the Data Source to Bio-Breakfast members (a quarterly meeting for natural resource practitioners to discuss current work being done in the Coos and Coquille watersheds).
- PCW committee members encouraged SSNERR staff to resubmit a NERRS Science Collaborative science transfer proposal for improving online access and usability of the Data Source for target audiences (local decision makers and other stakeholders, etc.), as well as the outreach needed to inform those audiences about the Data Source and its potential. The proposal was submitted January 2016 and funding notification will occur in March.
- PCW members advised SSNERR staff to work with the Coos County Planning Department on a technical assistance grant to provide a gap and needs assessment of the Coos Bay Estuary Management Plan based on Oregon's Statewide Planning Goals, the Data Source assessments, and new estuary and shoreland habitat maps. This needs assessment will provide a legal perspective of

necessary revisions, and help the county focus on areas where more information is needed in order to revise the plan.

- Likewise, the PCW advised SSNERR staff to submit a NERRS Science Collaborative pre-proposal to develop an estuarine and shoreland use and zoning integrated assessment of the Coos estuary. In order to identify areas where zone change will benefit estuarine management, the proposed integrated assessment will synthesize existing information to compare actual uses of estuarine and shorelands to regulatory zoned uses. For those targeted areas, SSNERR staff and PCW members will apply a triple bottom line lens (economic, social, and ecosystem services) to generate management scenarios and recommendations for Coos County to revise its Coos Bay Estuary Management Plan.

Coastal and Marine Ecological Classification Standard: Oregon’s Department of Land Conservation and Development (DLCD) was awarded funding by NOAA in November 2015, in which SSNERR has been named a subcontractor. SSNERR’s role is to validate the Coos estuary habitat classification scheme developed in 2014 by DLCD. The protocol that a former SSNERR science program staff member (Colleen Burch Johnson) developed for “ground-truthing” the classification scheme will be used by a new grant-supported temporary staff member to refine the Coos estuary habitat classification scheme. SSNERR plans to hire this part-time employee in March 2016.

Northwest Climate Science Center-USGS Sea-level rise project: SSNERR continues to be a partner in the Northwest Climate Science Center (NWCSC) Sea-Level Rise Project - *Marshes to mudflats: climate change effects along a latitudinal gradient in the Pacific Northwest* - led by John Takekawa, USGS Western Ecological Research Center, Vallejo, CA. The project objectives are to: (1) measure morphological and ecological characteristics (e.g., elevation, tidal range, vegetation) along transects crossing the habitat continuum of tidal marsh, intertidal mudflat, and subtidal shoals; (2) model vulnerability of these nearshore habitats and dependent avian indicator species to projected climate change effects; and (3) examine spatial variability of these projected changes along the latitudinal gradient of the Oregon and Washington coasts. Coos Bay is one of eight study sites. SSNERR staff assists the project by downloading data from water level and conductivity loggers at two locations near Bull Island in the upper portion of the Coos estuary. We download and re-launch the loggers during low tide, and send data, photos and field notes to USGS about every four months. The last download of data from the loggers was done in February and the next download will be June 2016.

Effects of Eutrophication on Eelgrass and Grazing Invertebrates: The grant proposal submitted by Fiona Thomas Nash (Oregon State University) to Oregon State Sea Grant for an eelgrass project in the Coos estuary was funded and work will begin April 2016. The project will study the effects of nutrient enhancements and grazer removal on eelgrass growth and density. SSNERR is listed partnering agency for this project and Bree Yednock is coordinating fieldwork in the Coos estuary and recruiting two undergraduate students to assist with this project. This project also has an outreach component to educate the public on the importance of eelgrass along the Oregon Coast. SSNERR education staff will be including eelgrass monitoring as an educational activity for school groups during the course of this project.

Blue Carbon Eelgrass Mapping in Canada and the United States: SSNERR is collaborating on a project with Fred Short (University of New Hampshire), Margot Hessing-Lewis (Hakai Institute), and Jeff Gaeckle (Washington Department of Natural Resources) to create maps of eelgrass habitat for blue carbon resources using algorithms/GIS and to measure seagrass plant carbon storage and sequestration from surface sediment and deep cores at sites in British Columbia, Washington (Puget Sound), and Oregon (South Slough). Ali Helms and Bree Yednock participated on a conference call to discuss project details, individual roles, and review protocols. The project will rely on previously collected data from the SeagrassNet monitoring program and biomass data for Oregon from previous work done by Margot Hessing-Lewis as part of her PhD research as a NERRS Graduate Research Fellow (2007-2010). SSNERR will contribute by continuing to collect SeagrassNet monitoring data at Valino Island and adding shallow sediment cores (collected quarterly) for three transects. Another site within South Slough, yet to be determined, will be sampled for blue carbon coring. Ali Helms will provide field assistance during the deep coring field collections, currently scheduled for May 22-26, 2016 in Oregon.

NERRS Science Collaborative Research Proposals

Science staff worked with several project partners to develop five collaborative research pre-proposals and one integrated assessment pre-proposal for the NERRS Science Collaborative 2016 funding announcement. The NERRS Science Collaborative is a competitive grant program administered through the University of Michigan Water Center that funds research conducted in a NERR that specifically focuses on end user needs and that uses collaborative methods.

Hydrodynamic Model of Coos Estuary: University of Oregon and Woods Hole Oceanographic Institution scientists submitted a grant pre-proposal to the NERRS Science Collaborative to continue developing a hydrodynamic model for the Coos estuary. The primary focus of the proposal is to characterize present-day sediment distribution, monitor sediment fluxes to the estuary, and model how circulation and sediment in the estuary will respond to change (e.g., sea level rise or channel dredging). The modeling work will be a continuation of a previous NERRS Science Collaborative project where SSNERR and the Partnership for Coastal Watersheds directed development of the first phase of the Coos estuary hydrodynamic model.

Estuarine Acidification in South Slough and Impacts on Eelgrass: Scientists from Oregon State University, Francis Chan and Sally Hacker, scientists from U.S. Environmental Protection Agency (EPA), Cheryl Brown and James Kaldy, and the Director of Institute of Natural Resources, Lisa Gaines,

collaborated with SSNERR on a research pre-proposal to investigate the spatial and temporal patterns of ocean acidification (OA) in the South Slough estuary and the role of submerged aquatic vegetation in mitigation impacts from OA. The project would also conduct a cross-system comparison of OA dynamics in South Slough with other Oregon estuaries where similar research is occurring. This project will engage end-users from the West Coast Ocean Acidification and Hypoxia Science Panel, a group comprised of scientists and government agencies that are summarizing the current state of knowledge and developing scientific consensus about available management options to address ocean acidification and hypoxia on the West Coast.

Pharmaceutical Contaminants in Coos Estuary and Impacts on Native Oysters: Elise Granek from Portland State University submitted a grant pre-proposal to the NERRS Science Collaborative focused on measuring levels of pharmaceuticals and personal care products in waters of the Coos estuary and evaluating the effects of these contaminants on native oysters. The project would also include collaborative work with ODFW and SSNERR (Yednock) to repeat an estuary-wide native oyster population survey.

Blue Carbon Stocks Assessment of Pacific Northwest: The Pacific Northwest Coastal Blue Carbon Working Group, a partnership among researchers, policy makers, and land managers submitted a grant pre-proposal to the NERRS Science Collaborative in February. The proposed project focuses on working with end users to characterize data and information needs related to coastal blue carbon policy, development of a database to house all blue carbon data collected in the Pacific Northwest, and a research project to quantify carbon budgets and sequestration potential for different tidal wetland habitats across the Pacific Northwest. The project would involve SSNERR science staff participating in planning meetings and collecting data in South Slough, and SSNERR CTP involvement in the policy needs assessment. The proposal was submitted by Craig Cornu (formerly at SSNERR, now working with the Institute for Applied Ecology at OSU)

Modeling Sea Level Rise at Sentinel Sites: Matt Ferner at San Francisco Bay NERR is the lead on a NERRS Science Collaborative pre-proposal to examine projected differences in tidal wetland resilience to sea-level rise across environmental gradients and biogeographic regions. The project will use data collected at all 28 NERRS (including SSNERR) and employ an ecological forecasting modeling to predict wetland responses to sea level rise. Resulting products will help guide coastal research and management priorities.

Coos Estuary Land Use and Zoning Integrated Assessment: SSNERR staff submitted a NERRS Science Collaborative pre-proposal to develop an estuarine and shoreland use and zoning integrated assessment of the Coos estuary. In order to identify areas where zone change will benefit estuarine management, the proposed integrated assessment will synthesize existing information to compare actual uses of estuarine and shorelands to regulatory zoned uses. For those targeted areas, SSNERR staff and Partnership for Coastal Watershed members will apply a triple bottom line lens (economic, social, and ecosystem services) to generate management scenarios and recommendations for Coos County to revise its Coos Bay Estuary Management Plan.

Other Research Proposals

Eelgrass Mapping: SSNERR submitted a grant proposal for \$64,141 to the Pacific Marine and Estuarine Fish Habitat Partnership to fund eelgrass mapping of the Coos estuary. This project would collect aerial imagery, underwater video and bathymetry data to create updated maps of the distribution of eelgrass throughout the estuary, including South Slough. In addition to showing the current extent of eelgrass, maps from this project could be used to assess changes in eelgrass coverage over the ten years since the last eelgrass maps were made for the estuary.

Green Crab Distribution and Abundance: SSNERR submitted a grant proposal for \$15,000 to the M.J. Murdock Charitable Trust's Partners in Science program. The grant would provide a stipend for a high school science teacher to work for two summers on a green crab monitoring project in South Slough and the Coos estuary. In 2015, SSNERR staff caught five European green crabs in South Slough (this highly invasive species has not been documented in the slough for a number of years). With El Niño, 2016 is projected to be a big recruitment year for green crabs, making it especially important to monitor temporal and spatial patterns to help guide eradication efforts and prevent the species from becoming established.

Oregon Coastal Ecosystem Long-Term Ecological Research Site: SSNERR staff (Yednock) is included as a team member on a preproposal that was submitted to the National Science Foundation by researchers at the University of Oregon (Oregon Institute of Marine Biology). The proposal is for the establishment of a Long-Term Ecological Research Site, which would include the nearshore coastal waters from the Coos estuary to the continental shelf. Research would focus on understanding mechanisms of larval and recruit success and potential effects of environmental and climatic changes on population dynamics.

Plankton Monitoring: SSNERR was included as a partnering agency on a project proposal that was submitted to the Northwest Association of Networked Ocean Observing Systems (NANOOS) to monitor the seasonality and diversity of plankton in the Coos estuary. Reviews of the proposal were positive, but NANOOS did not have funds available for the project. The proposed project was led by Tawnya Peterson at Oregon Health and Science University.

Visiting Researchers

SSNERR supported our PMEP Fish Assemblage Project research partners from OSU/USFWS during their January seining trips in the Coos estuary by providing housing at Spruce Ranch.

SSNERR continues to serve as a field site for UO PhD student Keyyanna Blount who is measuring gas fluxes at multiple marsh locations within the reserve.

Intern activities

Since November 2015, SSNERR/FOSS intern MacKenna Hainey has been assisting with the native oyster recruitment study in Coos estuary and the fish assemblage project in South Slough.

SSNERR/FOSS intern, Talo Silver, has been assisted with Coho salmon spawning surveys on Wasson Creek from November 2015 through early February 2016. Silver also assisted with vegetation mapping of Wasson Creek's lowlands.

Sadia Crosby accepted the NOAA Ernest F. Hollings Scholarship to assist with the Sentinel Site project this summer, May-August 2016 and completed a site orientation visit of SSNERR in December 2016 as part of the internship requirements

STEWARDSHIP

Invasive Species: SSNERR continues to be involved in various invasive species projects. The stewardship coordinator is an active participant with the Gorse Action Group (GAG) and has recently begun helping the group develop their strategic plan. Invasive species control around SSNERR has been slowed for the winter months but will likely pick up in the spring. A primary focus for spring will include the development of the Wasson Creek Watershed Restoration Plan for removing Reed Canary Grass.

Restoration & Monitoring Support: The Wasson Creek Watershed Restoration Plan is moving along. In November the stewardship coordinator visited a number of ongoing and recently completed wetland restoration projects to help inform the lowland component of the Wasson project. Sites included Coos Watershed Association's project at Timber Tangle and the North Bend Water Board's Matson project. Science team members also visited the US Forest Service's Five Mile-Bell restoration project with

partners from the BLM. In January, the project manager and botanist from the Five Mile-Bell project visited Wasson to provide technical assistance for restoration and monitoring designs.

As part of the Wasson project, the stewardship coordinator is currently overseeing a forestry intern from Oregon State University. The forestry student is modeling restoration prescriptions for upland project design. In February, the stewardship coordinator met with Oregon State University professors and the intern to discuss upland project concepts and research opportunities. Lowland surveying for stream remeander designs began in February as well, and March 4th was the third official meeting of the Wasson project technical advisors. The stewardship coordinator is also supporting the Watershed Monitoring Coordinator in pre-restoration monitoring of lamprey, Coho salmon, avian species, and vegetation.

The Winchester creek spawning habitat restoration technical assistance project was submitted in October through the Coos County Forestry Department. If the Winchester technical assistance grant is funded, work will begin to complete a design for spawning habitat restoration.

The stewardship coordinator continues to serve as a participant on the Coos Watershed Association's restoration projects team.

Cultural Resource Coordination: The Stewardship program is taking on several cultural resource coordination tasks. In order to best meet the needs of stakeholders and begin to catalogue the cultural resources of Indian Point, SSNERR staff met with both tribal groups (Coquille and Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians - CTCLUSI) in December. As stewardship plans progress over the next several years for Indian Point, cultural resource planning will be included. Furthermore, the stewardship program is coordinating the cultural resource review for the Wasson Creek Watershed Restoration planning process, in addition to coordinating cultural considerations for the Fredrickson shed project. As part of the effort to incorporate these considerations into SSNERR programmatic activities, the Coquille Tribal Historic Preservation Officer provided artifact training to SSNERR staff and CTCLUSI staff in January.

Education & Internships: The stewardship coordinator continues to support the education program at SSNERR. In December, the coordinator helped organize and implement a forest ecology focused field trip for North Bend High School Students. The stewardship coordinator is also currently overseeing an Oregon State University student in the effort to model upland restoration prescriptions for the Wasson Creek Watershed Restoration Project.

Fredrickson Shed: In December the Friends of South Slough (FOSS) was announced as a winner of the Coquille Tribal Community Funds grant program to receive funds for arresting the decay of the Fredrickson Shed. FOSS was awarded \$20,000 in February to hire a contractor to help improve the structure. The stewardship coordinator is serving as the project manager for the effort and has met with the contractor to begin the planning and materials acquisition for the endeavor. The Coquille Tribe has offered to donate some materials and volunteer time, so the stewardship coordinator is assisting with organizing those efforts. Construction on the Fredrickson Shed is slated to begin this spring and wrap up by the fall.

Management Plan Revision: The stewardship coordinator has taken the lead on the revision of the SSNERR management plan. A draft was submitted to NOAA in early January for review. Drafts for all sections of the plan are now complete and a presentation on the content will be made to the Management Commission and SSNERR staff during the March Commissioners meeting. Formatting of the plan will be the next major hurdle, in addition to compiling all NOAA, staff, commissioner, stakeholder, and public feedback. The 2016-2021 plan is slated to be complete this spring.

Other: The stewardship program coordinated the following activities during the November 19 - March 17 time period:

- Completion of a five-year Memorandum of Understanding with the Oregon Department of Fish & Wildlife
- Repair of a landslide on the North Creek Trail, using volunteers from the Coos Watershed Associations youth corps at the Harding School.
- Obtaining demolitions bids from local contractors for the tear down of the log cabin on Salal Lane and the green shed structure on the Bybee Property.
- The stewardship coordinator is also still an active participant in the 2015-2016 cohort of Leadership Coos.

OTHER SCIENCE PROGRAM ACTIVITIES, including cross-sector cooperation

NERRS Committees and Projects

SWMP Guidance Committee: In January 2016, the SWMP Guidance Committee members (Marie Bundy, Dwight Trueblood, Willy Reay, Ed Buskey, Matt Ferner, Sandra Erdle, Ali Helms, Shon Schooler, Robin Weber, Joan Muller, and Lindsay Spurrier) held a conference call to discuss several topics related to the national SWMP syntheses and data products as well as the applications of SWMP data and protocols to Sentinel Sites and development of the Sentinel Site Application Module 1. Members reviewed the process for updating the 2011 SWMP Plan to include the Sentinel Site module guidance, discussed the SWMP recapitalization and business plan, and developed strategies for communicating SWMP value and products.

Bivalve Working Group: Bree Yednock continues to be a member of the Bivalve Working Group (Brandon Puckett, North Carolina NERR; Nikki Dix, Guana Tolomato NERR; Kerstin Wasson, Elkhorn Slough NERR; Angie Doroff, Katchemak Bay NERR; and Jeff Crooks, Tijuana NERR), working towards gathering and summarizing bivalve-related research currently being done by the NERRS.

Meetings / Presentations / Trainings

SSNERR Watershed Monitoring Coordinator, Jenni Schmitt:

November 2015 – February 2016 – Trained interns on how to conduct a Coho salmon spawning survey then coordinated intern involvement in weekly surveys.

November 2015 – March 2016 – Convened bi-monthly meetings with the Partnership for Coastal Watersheds to report on progress in the development of the Communities, Lands & Waterways Data Source. Schmitt also facilitated the group's discussion of next steps for financing the science transfer of the Data Source, and the Coos Bay Estuary Management Plan revision.

November 2015 - February 2016 – Coordinated with DLCD on SSNERR subcontractor work to refine their Coastal and Marine Ecological Classification Standard for the Coos estuary, including a signed interagency agreement between DSL and DLCD.

November 2015 – Met with Coos County Planning Director, Jill Rolfe to develop the technical assistance grant proposal, which will fund the next step in the Coos Bay Estuary Management Plan revision.

November 2015 – Toured the US Forest Service’s “Five Mile Bell” restoration project to better understand strategies that SSNERR science team should employ in the Wasson Creek restoration project.

December 2015 – With Gary Cooper and Hannah McDonald, met with members of the Coquille Indian Tribe and the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians to discuss cultural concerns for the new Indian Point acquisition.

December 2015 – Coordinated a meeting with Oregon Department of Fish and Wildlife, Coquille Indian Tribe, and SSNERR science staff to discuss a strategy for understanding lamprey distribution and relative abundance in South Slough’s Winchester Creek.

December 2015 – With Hannah McDonald, Joy Tally, Eric Dean, Ali Helms, and several Bureau of Land Management staff, co-led a fieldtrip for North Bend High School students to understand forest ecology and how it affects lowlands and the estuary.

December 2015 – Attended a GIS webinar to better understand how to use MAPTITE, a geospatial tool, that could help us plant appropriate marsh species to create or restore ecosystem functions in a marsh.

December 2015 – January 2016 – Organized numerous meetings to develop the NERRS Science Collaborative Science Transfer proposal and the Land Use Inventory pre-proposal. Attended conference calls with Dave Sutherland, (University of Oregon) and Dave Ralston (Woods Hole Oceanographic Institution) to discuss development of their hydrodynamic model pre-proposal.

Had several phone conversations with the Blue Carbon Working Group about the pre-proposal they submitted.

December 2015 – Co-hosted (with Ali Helms) and led a site-visit tour for the NOAA Hollings Scholar (Sadia Crosby) who will be working on the Sentinel Site project from May-August 2016.

January 2016 – Along with SSNERR science staff, attended a science team planning meeting for 2016.

January 2016 – Co-presented on the Partnership for Coastal Watersheds and the Data Source assessment at the quarterly Bio-Breakfast meeting, with former SSNERR employee Craig Cornu.

January 2016 – Co-led, with Hannah McDonald, three expert restoration practitioners on a tour of Wasson Creek to discuss restoration ideas.

February 2016 – Attended a 1st Aid and CPR training.

March 2016 – Led a Sentinel Site tour to SSNERR staff so they better understand the program in general, and the monitoring that takes place in the South Slough estuary. Finished with discussions on how to incorporate those ideas into education and outreach programming at SSNERR.

March 2016 – Attended a Wasson Creek restoration advisory board meeting, led by Hannah McDonald.

SSNERR Estuarine Monitoring Coordinator, Ali Helms:

November 2015-January 2016 – Participated in Ocean and Coastal Acidification state of the science webinars series on climate change ecosystem impacts, modeling coastal acidification

linkages with land-based nutrient loads, and acidification and hypoxia in Chesapeake Bay shallows.

November-March 2015 – Participated in SWMP Guidance Committee calls and discussions about SWMP data syntheses and Sentinel Sites

November 2015 – Contributed Letter of Support for a research proposal submitted to the Commission for Environmental Cooperation on blue carbon seagrass habitat mapping

December 2015-Participated in Restoration Webinar MAPTITE, a geospatial tool for estuary restoration including marsh analyses and planning tools that incorporate tides and elevations

December 2015 – Co-led NOAA Hollings Scholar, Sadia Crosby, site visit including tours of ECOS/OIMB/Interpretive Center and site visit to Hidden Creek and Frederickson Marsh Sentinel Sites.

December 2015 – Co-led SSNERR site tours and delivered program overviews for the potential Operations Manager candidates

December 2015 – Participated in conference calls to help develop the Blue Carbon pre-proposal for the NERRS Science Collaborative Funding Announcement

December 2015 – Co-led North Bend High School Forestry field trip at Wasson Creek, teaching a water quality station

January 2016 – Participated in Cultural Resource Artifact Training taught by the Coquille Tribe (Kassandra Rippee) at the South Slough Interpretive Center

January 2016 – Developed and posted descriptions for college-supported NOAA internship opportunities funded by the National Centers for Coastal Ocean Science to help SSNERR this summer with SWMP and Sentinel Sites projects

January 2016 – Contributed to the NOAA Procurement, Acquisition, and Construction grant development for the SSNERR's science lab expansion

January 2016 – Participated in conference call for the Blue Carbon Seagrass Mapping project to establish timelines and collaboration roles for field work this summer

January-February 2016 – Helped develop two pre-proposals for the NERRS Science Collaborative, one on ocean acidification and the second on oyster contaminants; contributions included advising with project details, editing pre-proposals, establishing end-user groups, and contacting individuals for project letters of support

February 2016 – Participated in Blue Carbon Habitat webinar on mapping datasets, developing a geodatabase, and assessing data and methodology gaps

February 2016 – Completed First Aid and CPR training led by South Slough staff Joy Tally and Pam Wilson

February 2016 – Participated in meeting for development of an Oregon Ocean Acidification Monitoring Network

March 2016 – Attended Wasson Creek watershed restoration project planning meeting at the Coquille Tribal Headquarters, including discussions on upland inventory and modeling, lowland vegetation planning, fish and wildlife survey, and stream hydrology and restoration

March 2016 – Contributed SWMP and additional monitoring and research program narrative elements to the NERRS Operations Award grant proposal

March 2016 – Co-led a field trip to the Hidden Creek Marsh Sentinel Site for SSNERR education, coastal training, and public involvement staff so help develop the information transfer and dissemination products for the NERRS Sentinel Site program

March 2016- Attended the annual NERRS SWMP Technician Training Workshop held in Myrtle Beach, SC

SSNERR Lead Scientist/Research Coordinator, Bree Yednock:

November 2015-March 2016 – Coordinated volunteer and intern involvement in seining fieldwork for fish assemblage project

November 2015-March 2016 – Attended monthly FOSS meetings

November 2015 – Presented at the Trout Unlimited chapter meeting

November 2015 – Participated in NERRS Bivalve Working group meetings

November 2015-January 2016 – Participated in several meetings with partners working on 5 different NERRS Science Collaborative Preproposals

January 2016 – Facilitated annual science team planning meeting

January 2016 – Co-led seining field trip with Eric Dean and Astrea Strawn for high school group

January 2016 – Participated in Cultural Resource Artifact Training taught by the Coquille Tribe (Kassandra Rippee) at the South Slough Interpretive Center

February 2016 – Attended make-up session of Leadership Coos

February 2016 – Met with staff from ODFW Marine Resources Program to plan for Sea Grant funded eelgrass project

February 2016 – Attended First Aid and CPR training at SSNERR

February 2016 – Participated in webinar meeting focused on establishing a coast-wide estuarine acidification monitoring network

March 2016 – Participated in Pacific Northwest NOAA Ocean Acidification Roundtable session

March 2016 – Participated remotely in SWMP Technician Training

March 2016 – Attended Wasson Restoration Project meeting

March 2016 – Attended Partnership for Coastal Watersheds meeting

SSNERR Stewardship Coordinator, Hannah Schrage:

November 2015 – Attended the Gorse Action Group meeting at Bandon Dunes

November 2015 – Attended a field trip to Timber Tangle and Matson Creek lowland restoration project sites

November 2015 – Attended a field trip to the Five Mile-Bell restoration project site with USFS and BLM partners

December 2015 – Coordinated a cultural resource planning meeting between SSNERR and local tribal groups

December 2015 – Attended the interagency lamprey monitoring meeting coordinated by the SSNERR's Watershed Monitoring Coordinator

December 2015 – Co-lead a field trip for North Bend High School students in the Wasson Creek drainage

January 2016 – Coordinated an artifact/cultural training for SSNERR staff by the Coquille Tribal Historic Preservation Officer

January 2016 – Submitted a fully revised draft of the 2016-2021 SSNERR Management Plan to NOAA for agency review

January 2016 – Presented SSNERR projects to the Coquille Tribal Council

January 2016 – Coordinated a USFS site visit to the Wasson Creek Watershed Restoration Project site

February 2016 – Began the surveying effort for the Wasson lowland project design

February 2016 – Attended a National Resource Conservation Service meeting

February 2016 – Met with Oregon State University faculty to discuss upland projects and opportunities at SSNERR

February 2016 – Attended the Coquille Tribal Community Fund grant awards luncheon

February 2016 – Met with the local BLM hydrologist to establish a working relationship for support on the Wasson project

March 2016 – Lead the third Wasson Creek Watershed Restoration Project advisory group meeting