

SOUTH SLOUGH RESERVE MANAGEMENT COMMISSION

July 16, 2020

156th REGULAR MEETING 1:00-4:00 P.M.

***** Due to COVID-19 restrictions, this meeting will occur virtually. Commissioners will receive a link by email to join the meeting.**

PUBLIC PARTICIPATION:

To receive the Zoom link, please email Katherine Andreasen, South Slough Reserve Administrative Assistant, at katherine.andreasen@dsl.state.or.us by July 15. If you would like to testify, please provide your name, address, and organization/affiliation, if any. Testimony will be heard in the order that requests for the meeting link are received.

Written comments may be submitted until 4 p.m. on Wednesday, July 15, 2020 by emailing them to: katherine.andreasen@dsl.state.or.us

AGENDA

I. Call-to-Order

II. Introductions

III. Review of Meeting Minutes

1. 155th regular meeting minutes from November 15, 2019

IV. Public Input*

V. Old Business

1. Younker Point Easement Application – Verbal Update
2. Potential Transfer of Management of South Slough Reserve – Verbal Update
3. Winchester Creek Coho Spawning Reach – Verbal Update

VI. New Business

1. Report on 2019 Fees –Rebecca (Action Item)
2. Hunting Map Update – Alice (Action Item)
3. Staff Presentation – Citizen Science Project on Lamprey Distribution – Shon/Deborah

VII. Information Reports

1. Administration/Facilities
2. Education
3. Science
4. Coastal Training Program
5. Friends of South Slough

VIII. Next scheduled meeting: November 19, 2020 at 1pm

IX. Adjourn

*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 Auditorium
Charleston, Oregon

Minutes of the 155th Regular Meeting
November 15, 2019

Commission members present:

Vicki Walker, Chair	Bob Main
Trent Hatfield	Kris Wall
Chief Warren Brainard	Dave Kronsteiner
Lonne Mays	Maya Watts

South Slough NERR staff and others present:

Bree Yednock	Rebecca Muse
Eric Dean	Laura Mays
Christine Moffitt	Deborah Rudd
Jonathan Forth	John Bragg
Kathy Andreasen	Jenni Schmitt
Jaime Belanger	Todd Buchholz
Alice Yeates	Ed Oswald
Mike Allman	Shon Schooler
Ali Helms	Adam DeMarzo

The meeting was called to order at 1:03 p.m. by Vicki Walker Director of the Department of State Lands and Chair of the Commission.

INTRODUCTIONS

Chair Walker introduced Maya Watts who will represent the University of Oregon's Institute of Marine Biology on the Management Commission. Lonne Mays accepted a re-appointment to the Commission. John Bragg, the Reserve's Coastal Training Program Coordinator will retire effective January 31, 2020 after serving for seventeen years.

APPROVAL OF THE MINUTES OF THE PREVIOUS MEETING

Chair Walker 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 unanimously.

PUBLIC INPUT

There was no input from the public.

OLD BUSINESS

Younker Point Easement Application

On September 23, 2019, the Department of State Lands (DSL) received a Summons & Petition for Judicial Review from the landowner of the Younker Point parcel in response to DSL's denial of the landowner's application for an easement and road construction across reserve-managed lands. DSL is working with the Department of Justice on a response.

Potential Transfer of Management of the Reserve

The Reserve has not heard from the University of Oregon regarding their outreach efforts with the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians, the Coquille Indian Tribe, or the Confederated Tribes of Siletz Indians. The Reserve Manager, Bree Yednock and Director Walker are trying to identify a date in December, possibly the 13th, to meet with staff from the Confederated Tribes of the Siletz Indians to hear their thoughts on a potential transfer of management of the Reserve to the University of Oregon.

Chair Walker said she was informed that Jason Younker plans to schedule meetings with the Tribes on the matter after the first of the year. The item most likely will not be on the Land Board agenda until April or June, as the February agenda is booked.

Winchester Creek Coho Spawning Reach

South Slough Reserve is working with Coos County on a proposed land exchange to increase protection of riparian habitat along the coho salmon spawning reach of Winchester Creek. Coos County submitted a signed application to the Department of State Lands (DSL) on August 6, 2019 with the following details:

1) Coos County Forest Department would acquire four parcels from the South Slough Reserve/DSL of forest land totaling 57.30 acres.

2) South Slough Reserve would acquire: 33 acres of county-owned pasture adjacent to the south end of the reserve; 14.62 acres of county-owned forest adjacent to the west boundary of reserve land; and a conservation easement across approximately 71 acres of forested and wetland riparian area along the coho spawning reach of Winchester Creek. The exact acreage will be determined through the requested due diligence and appraisals.

DSL Director Vicki Walker presented the proposed land exchange to the Oregon State Land Board on October 22nd and received approval for staff to move forward with due diligence. The next step in the process is to send the proposal out for public review, after which the DSL staff will start the appraisal process. Commissioner Main, in response to Chair Walker's question to him regarding the process, said that the county is waiting for a conservation easement draft from DSL. He added that there would be a limited scope for ODFW personnel only.

Commercial Activities Rulemaking

On June 4, 2019, the Commission passed a motion to file a temporary rule related to commercial guiding in the South Slough Reserve and to convene permanent rulemaking under Division 10, Chapter 142, related to public use restrictions in the reserve.

The temporary rule was made effective on June 14 and expires on December 10, 2019.

As part of the permanent rulemaking process, a Rules Advisory Committee (RAC) was assembled and met on August 20, 2019. The RAC reviewed the proposed rule language and provided input, which led to the following revisions to the rule language:

- a. Addition of a definition for "non-commercial" in 142-010-0010 (9)
- b. Inclusion of non-commercial in rules 142-010-0020 (25-26)

The revised language was sent out for public review. Public comment was open from October 1 through 5:00 p.m. on October 31, 2019, and a public hearing was held at the Reserve's Interpretive Center from 5:00-6:30 p.m. on October 29, 2019. There was no public testimony, but five written comments were received.

Bree Yednock distributed handouts of the changes that were made. (The briefing packet contained a clean copy of the revisions.) Chair Walker informed the meeting that a review by DOJ legal counsel highlighted the need to address the categories of "commercial" and "non-commercial" uses in the document; uses must be either one or the other. The Commission discussed this at length and a consensus was reached to edit the language in the existing document

and to keep the rules uncomplicated with the understanding that they could be further revised in the future if need be.

Chair Walker asked if there was a motion to approve the adoption of the proposed permanent rule for Chapter 142, Division 10, related to the Definitions and Restricted Activities of the South Slough National Estuarine Research Reserve. Commissioner Mays moved to approve the rules as written with the following amendments:

On line 14 of the 142-010-0010 Definitions, add “or personal use” so the line reads: *“Recreational or personal use” refers to an activity undertaken for personal enjoyment as opposed to economic gain.*

On lines 26 and 27 of the 142-010-0020 Restricted Activities, remove the references to “non-commercial” so that line (26) reads: *Guiding by commercial groups within the Reserve is prohibited unless authorized under a Permit issued by the Reserve Manager and in compliance with any conditions imposed by that Permit.*

And line (27) reads:

(27) New or increased commercial activities which are not existing as of the creation of the Reserve in June 1974 must be authorized by the Reserve Manager after consultation and approval by the Commission.

Commissioner Kronsteiner seconded the motion. The motion was approved by all pending final approval by state legal counsel.

NEW BUSINESS

Acquisition and Construction Grant Proposals to NOAA

The National Oceanic and Atmospheric Administration (NOAA) administers an annual grant program related to Procurement, Acquisition, and Construction (PAC) projects in the National Estuarine Research Reserve System (NERRS). The request for proposals for federal fiscal year 2020 is expected to be announced soon. Proposals are expected to be due in February of 2020. The Reserve is requesting permission from the Management Commission to apply for the following grants:

1. Acquisition of Property at the Entrance of the Interpretive Center – estimated Estimated project cost: \$300,000 (Federal Funds: \$200,000. State Matching Funds: \$100,000)

This project would include the acquisition of 1.7 acres at the entrance of the driveway to the Visitor Center. If we are successful in acquiring funds to purchase this property, we plan apply for construction funding the following

year to create a welcoming entrance and a much-needed overflow parking area for the Visitor Center.

2. Construction Proposal for Improvements of Trails and Associated Facilities
Estimated project cost: \$285,714 (Federal Funds: \$200,000. State Matching Funds: \$85,714)

This project would include:

- Renovation of trail bathrooms, which have been closed for over a year
- Construction of a covered education pavilion on the trail
- Updates to the bridges and interpretive signs on the trail system

Chair Walker asked if there was a motion to authorize staff to submit the above-named grant proposals to NOAA's PAC funding program.

Commissioner Mays moved that staff submit both proposals and Commissioner Brainard seconded. Commissioner Main asked to recuse himself from voting on the acquisition grant, citing a conflict of interest as a County Commissioner.

A decision was made to split the motion. Commissioner Mays moved that staff work to submit the proposal to acquire the property at the entrance of the Interpretive Center. Chair Brainard seconded. The motion passed with Commissioner Main abstaining. Commissioner Mays moved to authorize staff to submit a construction proposal for improvements of trails and associated facilities. Commissioner Watts seconded and the motion carried.

Information Reports

Staff shared highlights and progress within their program areas. The Friends of South Slough submitted an activity report and hosted a presentation on the revision of their strategic plan. Vice-President Todd Buchholz plans to attend the annual NERRS meeting in Charleston, SC with staff later in the month.

The next regular scheduled meeting of the Commission is scheduled for Thursday March 19, 2020.

ADJOURNMENT

The meeting was adjourned at 3 p.m.

New Business

Agenda Item 1: Report on Fees Collected in 2019

Originally prepared for the March 19, 2020 meeting of the Management Commission, which was canceled due to COVID-19.

Subject

Review by the Management Commission of the Reserve’s fee schedule and report from 2019, and consideration of staff recommendation for fees in 2020 and 2021.

Authority

ORS273.553; relating to the management policy of the South Slough National Estuarine Research Reserve

ORS273.554 and ORS Chapter 183; relating to the authority of the South Slough National Estuarine Research Reserve Management Commission’s to adopt rules necessary to carry out ORS 273.553

OAR 142-015-0040; relating to the biennial review of fees by the Management Commission.

Summary

Per OAR 142-015-0040, the Reserve Manager must prepare a report and recommendations on fees to be considered by the Commission at its first meeting of each even-numbered year. At this meeting, the Commission shall review the report and adopt a new fee schedule.

The last time the fee schedule was reviewed was in November 2018. The statistics below cover the period of January 1, 2019 through December 2019.

I. Spruce Ranch

Current Rates:		
Spruce Ranch House	\$25/night	\$250/month
Spruce Ranch Yurts	\$25/night	\$250/month
Spruce Ranch Camping	\$15/night	n/a

Residents include South Slough Reserve interns, visiting researchers on SSNERR projects, visiting researchers on non-SSNERR projects, partner staff and DSL/SSNERR staff

Income generated from Spruce Ranch - \$4,175 (increased from last report by \$2,015)
Total utility costs for Spruce Ranch - \$1322.97 (decreased since last report by \$1,514.05)
Net gain of \$2,852.03
Spruce Ranch was closed January – May 15th for renovation

Residents during this time frame:

Paying Residents

- **Interns from other partners that needed housing (BLM, OSU)**
BLM – 2 throughout summer
OSU – 3 throughout summer
- **Temporary staff at BLM**
Average of 2 per month from August - December

Non-paying Residents

- **DSL Employees – 4**
- **Reserve-based Interns (FOSS, NOAA, NCCOS, Oregon Sea Grant)**
2 for summer season
- **Reserve-based project partners**
13 throughout the year

**** NOTES:**

- Utility costs have gone down significantly after new HVAC system installed in October 2018 (funded by NOAA)
- 2019 was a year for other partners throughout the area to reach out and use our housing which brought in additional revenue. Other temporary housing options in area were limited.

II. Auditorium

Current Rate: \$100.00 for up to 4 hours/ \$150 for up to 8 hours

- Income generated from Auditorium rental - \$1,450.00
- Utility costs are integrated with the Visitor Center so there's no way to breakdown costs for just the auditorium
- Multiple different renters which included:
OIMB, Oregon Coast Music Assn. Coos Watershed, Oregon Society of Soil Scientists, Coos Art Museum, PEW Charitable Trust and the general public.

Over 2019, rentals have increased which has provided revenue for support maintenance costs associated with the facilities. Prices remain comparable to other entities.

Staff Recommendation

Reserve staff recommend the Commission approve the fees report and keep the fee schedule the same for the next two years.

New Business

Agenda Item 2: Hunting Map Update

Subject

Recommendation to adopt an updated hunting map that includes designation status for all lands managed by the South Slough Reserve. The existing map does not include the Indian Point Property, which was acquired by the Department of State Lands for management by the South Slough National Estuarine Research Reserve in 2014.

Authority

ORS273.553; relating to the management policy of the South Slough National Estuarine Research Reserve

ORS273.554 and ORS Chapter 183; relating to the authority of the South Slough National Estuarine Research Reserve Management Commission's to adopt rules necessary to carry out ORS 273.553

OAR 142-010-0020(6); relating to South Slough National Estuarine Research Reserve Management Commission's authority to prohibit hunting in specific areas for the protection of health, safety, and welfare of the public

Summary

The Reserve is recommending updates to the South Slough Reserve Hunting Map, last updated by the Management Commission on April 13, 2017. Proposed changes from the previous map include minor grammatical and aesthetic changes, along with the inclusion of the Indian Point property, acquired in 2014. The Indian Point property, adjacent to Crown Point Rd, is 236.19-acres of forested upland, saltmarsh and tide flats located on the South Slough of the Coos Bay estuary. The property includes six parcels within township 26S, range 14W and sections 11 (parcel 1300), 12 (parcels 500, 600 and 1200) and 12AC (1500 & 1600). The land was purchased using funds from the US Fish and Wildlife Service's National Coastal Wetlands Conservation Grant Program in 2014 with the primary objective *"to support the longstanding efforts of the state of Oregon, NOAA, other agencies, and stakeholders to maintain the integrity of the South Slough estuary and to protect it from uses and activities that would alter the ecosystem and its natural dynamic processes."*

The Reserve has a long history of hunting and currently includes over 5,000-acres of land open to hunting and only 714-acres closed to hunting. Prior to acquisition, the Indian Point property was privately owned, with no public access to hunting. Once it became state-owned Land it was automatically designated as open to hunting. However, for the following reasons, the Reserve feels it prudent to close this property to hunting:

1) The acquisition objectives do not include hunting

Neither the land acquisition grant, awarded by the US Fish and Wildlife Service, nor the restoration plan includes hunting as a proposed activity on this property. As stated above, the primary objective of the land acquisition was to ensure the protection of the ecosystem and natural dynamic processes in the South Slough estuary. The land acquisition proposal, states that “[t]his project will [e]nsure protection in perpetuity of the ecological structure and functions of one of the most important areas of tidelands in the Coos estuary. Protection of the Indian Point, Joe Ney Slough, Day Creek and Brown’s Cove tidelands will strengthen the chances for successful restoration of resident (and historically resident) stocks of anadromous fishes, native oysters, and other fauna.” The proposal goes on to state that the project will “[c]ontinue to support and encourage the coordinated, conservation-oriented stewardship of the South Slough watershed and use of the [property] for educational, research, and recreational purposes.” Although hunting is generally considered a recreational activity, it is not listed among the recreational activities referred to in the proposal. Additionally, the proposal aims at “... enhancing the existing outdoor recreation opportunities on Oregon’s “Adventure Coast” (<http://www.oregonsadventurecoast.com/>) ...”; where the embedded link does not include hunting as an “exciting outdoor activity on the Oregon Coast” (accessed 04/25/2020). Finally, the Indian Point Restoration Plan (approved by the Commission on November 30, 2017) does not include hunting under the public use plan.

2) Safety and welfare to the public

The Indian Point Restoration Plan includes a public use plan that was approved by the Management Commission on November 30, 2017. The public use plan includes the proposed development of a recreational trail that intersects much of the Indian Point Property and creates a loop trail around the property. For public safety, the Reserve currently restricts hunting within 100 feet of trails. With this restriction in place, there is very little area available for hunting at a safe distance from hikers.

3) Communication with adjacent landowners

The previous Stewardship Coordinator, Hannah Schragger, spoke with neighboring landowners during plan development and noted considerable opposition to opening the area up to hunting.

4) Protection of sensitive ecological and cultural resources

The Indian Point Restoration Plan states that “[t]he sensitive species present at the property will need to be shielded from public access, as well as some historical sites.” Instead of closing off sensitive areas, which draws attention to them, the Reserve intends to direct public access away from these areas by establishing designated trails. Encouraging off trail activities, such as hunting, increases the risk to these areas.

The South Slough Reserve acknowledges the importance of its lands to the hunting community and provides over 5,000-acres of land for Coos Bay residents and visitors to hunt wildlife. The updated hunting map will be made available on the Reserve website as a georeferenced pdf for download and use with mobile applications and provided to relevant agencies, such as Oregon Department of Fish and Wildlife (ODFW).

Staff Recommendation

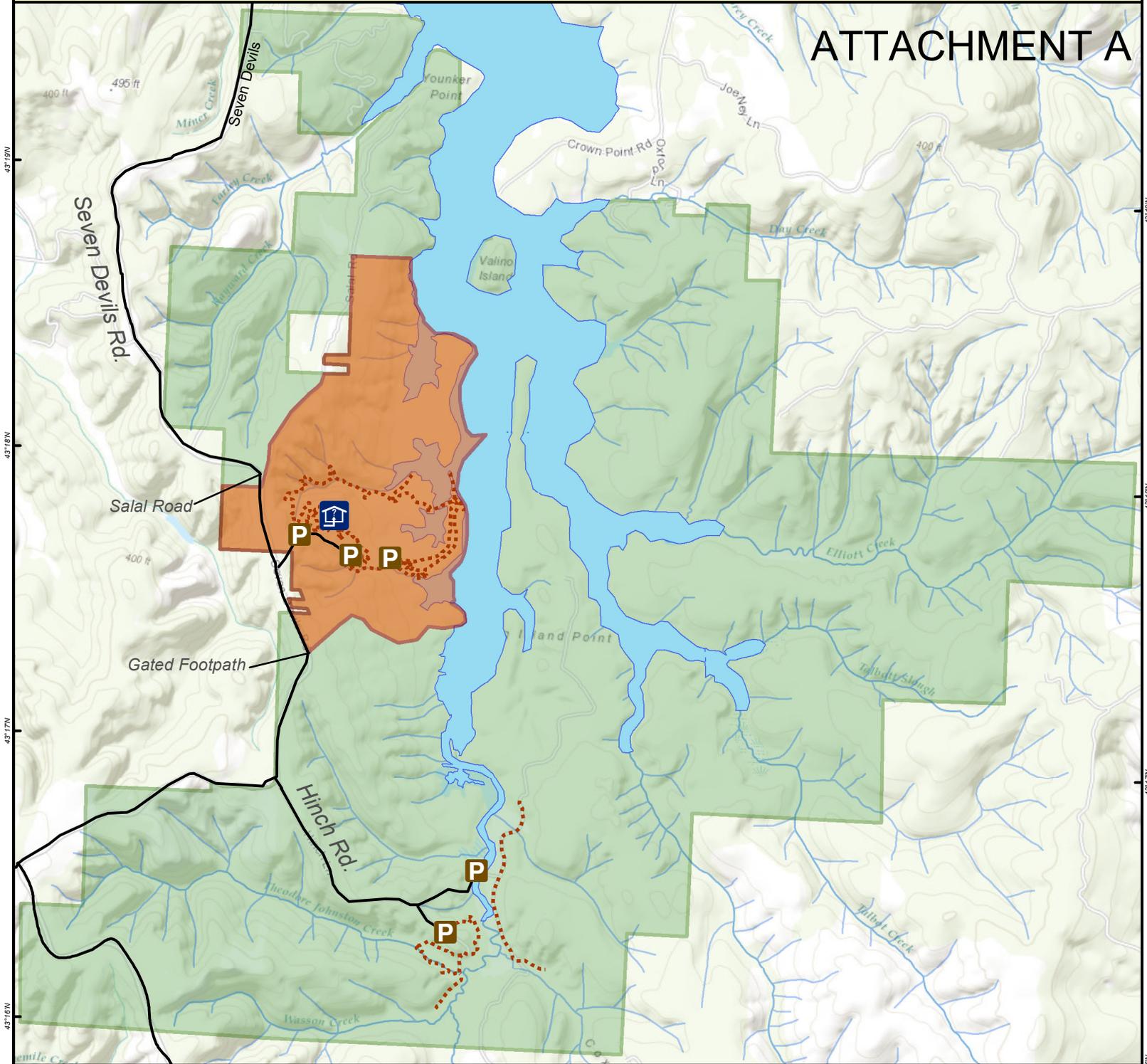
Reserve staff recommend the Management Commission adopt the updated hunting map as proposed, with the Indian Point Property closed to hunting.

Attachments

- A. Existing Hunting Map
- B. Proposed Hunting Map, with Indian Point Property included

South Slough Reserve Hunting Map

ATTACHMENT A



Be advised that the following activities are prohibited on all Reserve property:

- Motorized Travel Off Designated Roads
- Horse Or Pack Animal Use
- Commercial Harvesting (mushrooms, boughs, bait, etc.)
- Overnight Camping
- Fires
- Target Shooting
- Hunting within 100 feet of Trails

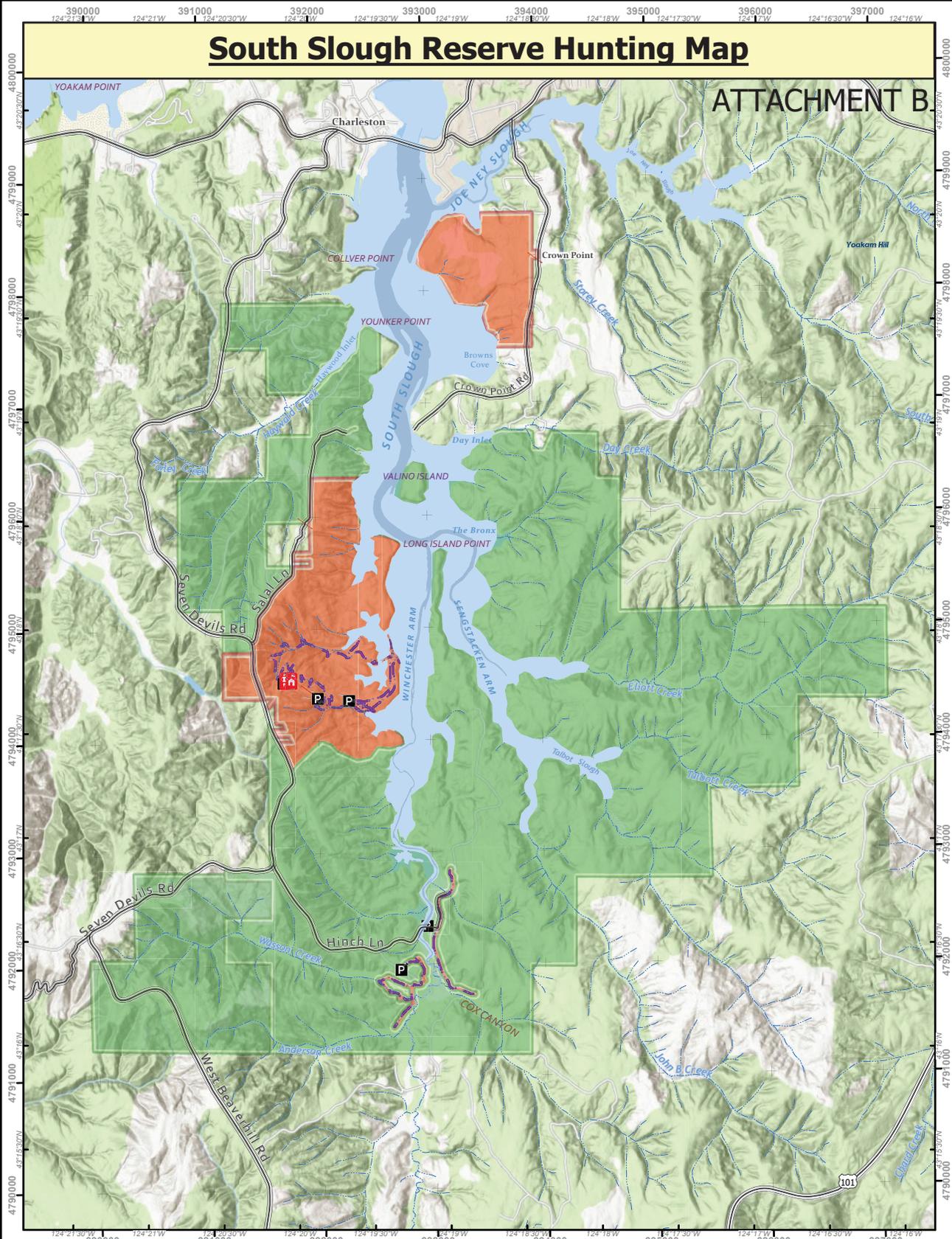
Please do not dump carcasses along roads or trails.
Boat users, please be aware that the Reserve is a No Wake Zone.

Questions? Please call (541)-888-5558.



South Slough Reserve Hunting Map

ATTACHMENT B

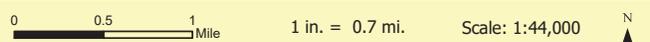


Please be advised the following activities are prohibited:

- Hunting within 100 feet of trails
- Dumping of carcasses along roads or trails
- Target shooting
- Baiting or trapping of any kind
- Overnight use of the Reserve (including blinds or camping)
- Fires
- Motorized travel off designated roads
- Pack animal use
- Commercial harvesting (mushrooms, cedar boughs, bait, etc.)

Hunters must hold appropriate license, tag or permit from ODFW.

Boat users, please be aware that the Reserve is a No Wake Zone.



- | | |
|-----------------------|-------------------|
| Hunting Status | Roads |
| Closed | Roads |
| Open | Reserve Trails |
| Visitor Center | Low Tide Channels |
| Parking | High Tide Channel |
| Gate | Streams |
| Launch Site | |

Coordinates shown in:
Geographic, Datum: WGS84,
Units: degrees, minutes, seconds
UTM Zone 10, Datum: NAD83, Units: meters



Administrative/Facilities Report

Staff: Bree Yednock, Reserve Manager
Rebecca Muse, Operations Manager
Michael Allman, Facilities Lead
Jonathan Forth, Park Ranger Assistant
Patrick Juarez, Procurement/Contract Assistant
Katherine Andreasen, Administrative Assistant
Ed Oswald, Information Systems Technician

Administrative

Attached are the state budget reports for the 2019-2021 biennium through January 2020.

Winter has been a busy time for admin and facilities at SSNERR but it seems like that is now the new normal.

Staff have been busy planning and writing two different Land Acquisition and Construction grants that were submitted on February 14, 2020.

The land acquisition grant is for purchasing the property at the entrance to the Visitor Center from the county. The federal funding request was \$60,000 along with \$60,000 in match from FOSS and DSL/SSNERR, total project cost is \$120,000. FOSS was generous enough to match \$25,000 towards the cost of this project.

The second grant included funding for updating the trail bridges/boardwalks, getting a full trail assessment and updating information kiosks at the Visitor Center and the trailhead parking areas. Total federal funding request was \$150,000 along with match of \$64,286 from DSL/SSNERR for salary/fringe, volunteers and materials already on site, total project cost is \$214,286.

Staff are currently in the budget season for the FY 2020 NOAA operations award with draft task/outcomes and budget going to NOAA for comments by February 28th. We will have time, once comments come back, to adjust the final budget and task information before final submission through grants.gov by the first part of April.

We completed recruitment and hiring of our new GIS technician which started January. Welcome Keary Howley to SSNERR. We have also started the recruitment to fill our CTP coordinator opening after long-time employee, John Bragg retired at the end of January. Interviews happened during the month of February with hopes to have someone on staff before April 1st.

Facilities

There has been lots of activity with facilities lately. We have been working through the projects that were funded by the FY18 NOAA Facilities construction award which will be completed by March 30, 2020. Along with these special projects, we continue to keep facilities and vehicles clean and maintained, trails safe as well as covering other normal day to day duties.

During November through the first week in February, facilities staff focused 100% on the rain garden and forest enhancement project at the Visitor Center. Facilities and Stewardship Staff along with volunteers and crews from the Coos Forest Protective Association (CFPA) completed the forest improvements as well as the rain garden during this timeframe. We had CFPA crews onsite for a total of 15 days during November – February cleaning up brush, trimming trees, taking out dead Port-Orford-cedar and digging the rain garden. As you can tell with a glance outside, the terrain around the Visitor Center has changed immensely.

Our FY19 Construction award has been finally released by NOAA after going through an additional NEPA clearance and approvals. This project has been on hold since July 1, 2019. This grant funds the expansion of Maintenance to include another pole barn that will house all our kayak gear for programs as well as replacing the siding on the maintenance building and putting in an RV parking spot for a potential volunteer host. Staff will start working on this project ASAP with procurement, planning and permits.

32007 SSNER O/F		Report for December-2019					Biennium Remaining: 75.00%		
	Biennium To September	October	November	December	Biennium To Date	Budget	Adjustments	Remaining Balance	% of Budget Remaining
1010	TRANSFER IN FROM OTHER FUND	300,000	200,000	0	200,000	700,000	0	0	NA
Total:	TRANSFER IN	300,000	200,000	0	200,000	700,000	0	0	NA
Grand Total:	Transfer In	300,000	200,000	0	200,000	700,000	0	0	NA
0210	OTHER NONBUSINESS LICENSES A	75	0	0	0	75	0	0	NA
0355	FEDERAL FUNDS	0	23,919	0	0	23,919	0	0	NA
0410	CHARGES FOR SERVICES	0	1,070	0	9,995	11,065	0	0	NA
0510	RENTS AND ROYALTIES	3,100	650	750	500	5,000	0	0	NA
0975	OTHER REVENUE	1,106	0	0	0	1,106	0	0	NA
Total:	REVENUES	4,281	25,639	750	10,495	41,165	0	0	NA
Grand Total:	Revenue	4,281	25,639	750	10,495	41,165	0	0	NA

32007 SSNER OIF

Report for December-2019

Biennium Remaining: 75.00%

	Biennium To September	October	November	December	Biennium To Date	Budget	Adjustments	Remaining Balance	% of Budget Remaining	
3110	CLASS/UNCLASS SALARY & PER DI	175,934	59,066	57,111	56,827	348,938	1,117,541	0	768,603	68.78%
3160	TEMPORARY APPOINTMENTS	8,942	2,140	2,887	1,710	15,679	6,756	0	-8,923	-132.08%
3170	OVERTIME PAYMENTS	0	201	0	0	201	0	0	-201	NA
3180	SHIFT DIFFERENTIAL	67	22	24	24	137	0	0	-137	NA
3190	ALL OTHER DIFFERENTIAL	3,828	1,286	1,286	1,286	7,685	8,648	0	963	11.13%
3210	ERB ASSESSMENT	69	22	23	22	137	592	0	455	76.91%
3220	PUBLIC EMPLOYEES' RETIREMENT S	29,219	9,769	9,585	9,518	58,090	188,272	0	130,182	69.15%
3221	PENSION BOND CONTRIBUTION	11,565	3,888	3,435	3,371	22,258	56,967	0	34,709	60.93%
3230	SOCIAL SECURITY TAX	14,376	4,775	4,668	4,560	28,380	87,551	0	59,171	67.59%
3240	UNEMPLOYMENT ASSESSMENT	0	0	0	0	0	6,304	0	6,304	100.00%
3250	WORKERS' COMPENSATION ASSE	63	23	19	18	124	563	0	439	78.02%
3260	MASS TRANSIT	0	0	0	0	0	6,558	0	6,558	100.00%
3270	FLEXIBLE BENEFITS	40,643	13,256	12,829	13,962	80,690	334,936	0	254,246	75.91%
Total:	PERSONAL SERVICES	284,707	94,448	91,867	91,297	562,318	1,814,688	0	1,252,370	69.01%
4100	INSTATE TRAVEL	4,131	1,340	760	3,556	9,787	17,140	0	7,353	42.90%
4125	OUT-OF-STATE TRAVEL	1,376	494	-1,565	0	304	7,975	0	7,671	96.18%
4150	EMPLOYEE TRAINING	1,659	-516	-82	291	1,352	9,365	0	8,013	85.57%
4175	OFFICE EXPENSES	1,077	161	1,548	71	2,857	24,170	0	21,313	88.18%
4200	TELECOMM/TECH SVC AND SUPPLI	290	1,040	764	889	2,983	16,363	0	13,380	81.77%
4250	DATA PROCESSING	0	0	0	0	0	583	0	583	100.00%
4275	PUBLICITY & PUBLICATIONS	0	0	0	0	0	542	0	542	100.00%
4300	PROFESSIONAL SERVICES	2,236	0	0	0	2,236	123,605	0	121,369	98.19%
4325	ATTORNEY GENERAL LEGAL FEES	349	556	0	0	905	6,810	0	5,905	86.71%
4375	EMPLOYEE RECRUITMENT AND DE	80	0	0	0	80	2,700	0	2,620	97.04%
4400	DUES AND SUBSCRIPTIONS	450	668	0	0	1,118	12	0	-1,106	-9215.75%
4425	FACILITIES RENT & TAXES	42	0	0	0	42	51	0	9	18.45%
4450	FUELS AND UTILITIES	3,576	353	837	348	5,114	8,581	0	3,467	40.40%
4475	FACILITIES MAINTENANCE	7,070	1,819	81	8,919	17,890	29,881	0	11,991	40.13%
4650	OTHER SERVICES AND SUPPLIES	29,189	4,174	4,012	1,410	38,785	120,922	0	82,137	67.93%
4700	EXPENDABLE PROPERTY \$250-\$50	2,682	0	1,879	0	4,561	3,752	0	-809	-21.57%
4715	IT EXPENDABLE PROPERTY	5,637	275	0	620	6,532	51,302	0	44,770	87.27%
Total:	SERVICES AND SUPPLIES	59,841	10,365	8,235	16,105	94,546	423,754	0	329,208	77.69%
5100	OFFICE FURNITURE AND FIXTURES	0	0	0	0	0	43,093	0	43,093	100.00%
5600	DATA PROCESSING HARDWARE	0	0	0	0	0	18,020	0	18,020	100.00%
5700	BUILDINGS AND STRUCTURES	12,365	0	0	0	12,365	0	0	-12,365	NA
Total:	CAPITAL OUTLAY	12,365	0	0	0	12,365	61,113	0	48,749	79.77%

32007 SSNER O/F

Report for December-2019

Biennium Remaining: 75.00%

	Biennium To September	October	November	December	Biennium To Date	Budget	Adjustments	Remaining Balance	% of Budget Remaining
Grand Total: Expense	356,912	104,813	100,102	107,402	669,229	2,299,555	0	1,630,326	70.90%

62007	SSNER F/F	Report for December-2019					Biennium Remaining: 75.00%			
		Biennium To September	October	November	December	Biennium To Date	Budget	Adjustments	Remaining Balance	% of Budget Remaining
0995	FEDERAL FUNDS REVENUE	209,619	50,442	59,808	49,527	369,397	0	0	NA	NA
Total:	REVENUES	209,619	50,442	59,808	49,527	369,397	0	0	NA	NA
Grand Total:	Revenue	209,619	50,442	59,808	49,527	369,397	0	0	NA	NA

62007 SSNER F/F

Report for December-2019

Biennium Remaining: 75.00%

	Biennium To September	October	November	December	Biennium To Date	Budget	Adjustments	Remaining Balance	% of Budget Remaining
3110 CLASS/UNCLASS SALARY & PER DI	92,330	32,056	32,440	31,168	187,994	899,515	0	711,521	79.10%
3160 TEMPORARY APPOINTMENTS	0	0	0	0	0	78,153	0	78,153	100.00%
3170 OVERTIME PAYMENTS	0	0	0	0	0	3,365	0	3,365	100.00%
3180 SHIFT DIFFERENTIAL	0	0	0	0	0	8	0	8	100.00%
3210 ERB ASSESSMENT	43	14	14	14	86	478	0	392	82.09%
3220 PUBLIC EMPLOYEES' RETIREMENT S	14,695	5,087	5,144	4,956	29,882	154,112	0	124,230	80.61%
3221 PENSION BOND CONTRIBUTION	5,724	1,987	1,817	1,745	11,274	51,177	0	39,903	77.97%
3230 SOCIAL SECURITY TAX	7,014	2,436	2,465	2,372	14,287	75,452	0	61,165	81.06%
3250 WORKERS' COMPENSATION ASSE	31	12	10	9	61	455	0	394	86.63%
3270 FLEXIBLE BENEFITS	22,774	7,591	7,591	8,107	46,062	276,546	0	230,484	83.34%
Total: PERSONAL SERVICES	142,610	49,183	49,480	48,372	289,646	1,539,261	0	1,249,615	81.18%
4100 INSTATE TRAVEL	0	0	0	432	432	15,682	0	15,250	97.24%
4125 OUT-OF-STATE TRAVEL	0	0	6,424	-1,484	4,941	14,052	0	9,111	64.84%
4150 EMPLOYEE TRAINING	0	3,300	476	8,439	12,216	22,960	0	10,744	46.80%
4175 OFFICE EXPENSES	389	0	105	105	599	20,434	0	19,835	97.07%
4200 TELECOMM/TECH SVC AND SUPPLI	0	0	0	0	0	8,790	0	8,790	100.00%
4250 DATA PROCESSING	0	0	0	0	0	10,987	0	10,987	100.00%
4275 PUBLICITY & PUBLICATIONS	0	0	0	0	0	1,606	0	1,606	100.00%
4300 PROFESSIONAL SERVICES	0	0	0	5,807	5,807	246,985	0	241,178	97.65%
4375 EMPLOYEE RECRUITMENT AND DE	0	0	0	0	0	6,361	0	6,361	100.00%
4400 DUES AND SUBSCRIPTIONS	0	0	0	0	0	898	0	898	100.00%
4425 FACILITIES RENT & TAXES	760	0	0	0	760	0	0	-760	NA
4450 FUELS AND UTILITIES	0	0	0	0	0	27,504	0	27,504	100.00%
4475 FACILITIES MAINTENANCE	0	5,892	2,980	21,384	30,255	32,795	0	2,540	7.74%
4575 AGENCY PROGRAM RELATED SVC	0	0	0	0	0	5,879	0	5,879	100.00%
4650 OTHER SERVICES AND SUPPLIES	3,884	585	1,036	1,816	7,321	149,031	0	141,710	95.09%
4700 EXPENDABLE PROPERTY \$250-\$50	0	0	0	0	0	23,131	0	23,131	100.00%
4715 IT EXPENDABLE PROPERTY	0	0	0	0	0	1,576	0	1,576	100.00%
Total: SERVICES AND SUPPLIES	5,033	9,777	11,021	36,500	62,330	588,671	0	526,341	89.41%
5100 OFFICE FURNITURE AND FIXTURES	0	0	0	0	0	10,025	0	10,025	100.00%
5700 BUILDINGS AND STRUCTURES	42,242	0	0	0	42,242	0	0	-42,242	NA
Total: CAPITAL OUTLAY	42,242	0	0	0	42,242	10,025	0	-32,217	-321.37%
Grand Total: Expense	189,886	58,960	60,501	84,871	394,219	2,137,957	0	1,743,738	81.56%

SSNERR Education Program update

Staff: Jaime Belanger, Education Coordinator/Lead
Eric Dean, Education Specialist
Deborah Rudd, Public Involvement Coordinator
Daniel Dobrosielski, Seasonal Education Specialist

November 1, 2019 – March 1, 2020

Education programs and attendance continue to vary seasonally to meet the needs of different audiences. The winter reporting period is typically the lightest season. Reserve education programs and visitation are subject to changes and cancellations due to weather, schools are reluctant to schedule field experiences and visitors are less likely to come hiking during the rainy season. The visitor center visitation gets much lower, especially during the shorter windows of daylight. Program offerings cater to indoor experiences, festive events and classroom visits. The Reserve visitor center was closed for five holidays between November and March, and at a few partial days due to loss of power.

There were no education program interns during the winter, and the seasonal education specialist was not working during this period. Education volunteers assisted staff members with watershed hikes and other education programs lead during during the winter. The seasonal education specialist returns on March 10th, and several education volunteers are committed to assist with the upcoming spring school season. Visits to school classrooms and field trips to the Reserve began in February and will continue through the second week in June. Education staff are also scheduling summer programs and working on intern recruitment for the 2020 summer.

Staff training and innovations

Jaime Belanger attended the National Estuarine Research Reserve's (NERR) annual meeting in Charleston, SC. Attendance at the annual meeting is supported by NOAA, and provides sector leads and staff an opportunity to connect with colleagues about national goals and initiatives within the reserve system and bring resources back to local communities. Jaime attended a pre-meeting training on climate change communication. She is also moving forward with several outputs from the 4 main days of meetings, including participation in a NERRs science

collaborative proposal to fund guidance for an interpretive exhibit. Jaime is also part of three NERRs educator workgroups; one guiding NOAA's "Estuary Education" website of estuary education resources, one creating a summary of different internship models used by Reserves and one drafting guidelines for market analysis and needs assessment requirements by the education sectors.

Jaime participated in a 2-day annual meeting in Newport for educators working on issues related to marine debris and ocean plastics. The group of coastal educators, marine debris and microplastic researchers identified focused, collaborative objectives for 2020 including a shared communication strategy around marine debris.

Deborah Rudd attended the NERRs annual meeting held November 18-22. Deborah had the opportunity to attend an introductory four-hour GIS class to gain a better understanding about how ESRI tools could be used with and by Reserve volunteers. During the meeting, Deborah worked with the Reserve Stewardship Coordinator, Alice Yeates to facilitate a session for reserves in the system that are doing work with citizen science. An email list has been developed amongst the various reserve staff interested and a formal work group will be established to collaborate on citizen science best practices, efforts, etc.

Education Program Metrics

Between November 1, 2019 and March 1, 2020, Reserve provided 35 education programs that were attended by 736 people of all ages. These diverse learning opportunities provided 1,636 hours of estuary learning. In addition to 75 hours of programming, 50 hours were committed to program planning, development and reflection. This summary accounts for all education, interpretation, training and outreach provided directly by South Slough education staff.

Including the number of people who entered the South Slough Visitor Center for self-lead learning in the exhibits, a total of 1,605 individuals learned about estuaries and coastal watersheds. These summary data are also submitted to NOAA as one of the required performance indicators to the National Estuarine Research Reserve's (NERR) performance measures database.

Visitation and Visitor Services

869 individuals entered the visitor center during the winter months. The building was open to the public for 82 days, yielding an average of about 11 building visitors per day. The Reserve does not have the capacity to track visitors outside of building hours, or those who use the trails without entering the building. Visitor numbers are an increase to last year's average of 8 per day during this period. Visitation declines during the winter, when there are fewer tourists traveling the coast and the days are shorter. Public hours for the building were 10:00am – 4:00pm, Tuesday through Saturday, except for holidays.

Formal Education & Training

The Reserve categorizes education program areas based on audiences and learning goals. “Formal education” refers to programs provided to pre-K-12 students, undergraduates, graduate students or teachers and teachers-in-training. 15 formal education programs were delivered for 395 participants between November 1 and March 1. Learners spent a total of 1,145 contact hours with educators; this work was achieved through 35.5 hours of planning and reflection. Programs were carried out at the reserve, in schools, school yards or adjacent natural area. Lessons were taught by South Slough education staff, science staff, volunteers and partners.

Formal education audiences during this period included 6 elementary and 3 middle school classes, as well as 6 teacher trainings. The overall number of K-12 formal education programs offered, and students reached remains lower than during previous years for a similar period because, as mentioned in previous reports, changes in internship programming lead to reduced year-round staff to visit schools. Still, the continued dedication of education volunteers enables the Reserve to maintain steady field programs for visiting school groups during the fall. Many schools prefer not to schedule field trips during the winter months due to complicated holiday schedules and unpredictable weather. This winter, students who visited the Reserve participated in watershed hikes and stewardship work.

The Reserve partnered with Oregon Sea Grant and the Oregon Coast STEM Hub to provide a year-long training for a cohort of 18 teachers. The group is participating in the Meaningful Watershed Education Experiences (MWEEs) By the Sea: Diving Deeper workshop series. This 30+ hour training aligns with the Teachers on the Estuary (TOTE) task that provides professional learning opportunities about the reserve research and estuarine systems for pre-service and non-formal teachers nation-wide. Three full-day workshops were offered focusing on different estuarine and coastal issues that teachers can bring into their classrooms to investigate with students. Water quality, climate science and marine debris were topic options during the winter. Three 1-hour check-in meetings were also hosted during this period to provide support and guidance for teachers working to implement investigations with students. 25 different teachers have participated in varying opportunities, for a total of 329 hours of learning.

Community Education, Interpretive & Outreach Activities

Programs for general audiences in the community were well-attended during the winter. Education staff strive to satisfy customer needs and were able to offer several of the most popular classes between November and March, including mushroom identification and crabbing. The overall range of interpretive programs, generally offered once a week on Saturdays, provide exceptional ways for a variety of people from children to seniors to connect with South Slough. 20 of these programs and events occurred during the winter. 341 people participated in activities ranging from a birdhouse workshop to a showing of the OPB special “Unprepared,” accompanied with a discussion about disaster preparedness. The Reserve also connected with people at events like the Southwestern Oregon Community College Community Fair and art receptions in the visitor center. Programs and activities were led on site at the Reserve, in other nearby natural habitats, and at event locations in nearby towns. There were 491 hours of contact time with customers.

Public Involvement

Volunteers/Internships

An average of six South Slough Reserve volunteers logged 291 hours valued at \$7,216.11 during the time of November 1- February 29, 2020. The program category breakdown included 82.95 education, 20 research/stewardship, and 157.25 administration hours. This period reflects the time of year when there is less volunteer involvement because it is the slow season for field work, school groups and outreach events.

Due to some logistical difficulties, Reserve volunteers are still in process of fully converting to the Volgistics record keeping system. In order to address any barriers that volunteers may be experiencing with the software, Deborah has set up walk-in training session time slots to provide help navigating the system. Our goal is to have everyone using the new system before the busy summer season begins.

A \$30,000 grant was awarded by the USDA Forest Service to continue the project to study lamprey species using eDNA methods with citizen scientists. Research and Public Involvement staff will begin the sampling with the volunteers around the end of May.

This winter the Reserve did not host any FOSS-sponsored interns however recruitments for spring internships were sent out for an education and a water quality intern. Staff are in process of evaluating the applicants. Summer recruitments will be posted in the next couple months.

Outreach/Marketing

Deborah has been working with Reserve management staff to develop a formal communications plan for the Reserve. A partnership group has been developed between Coos and Coquille Watershed Associations to co-author a grant proposal to hire a shared consultant to help each organization develop their own, unique plan. If the proposal is funded, work will begin in May of 2020 and be completed by October 2020. A targeted focus for marketing and outreach will be developed from the new communications plan. Reserve staff are working together with DSL communications manager as she works on the DSL Communications plan.

Deborah conducted the following outreach efforts during this quarter: two art receptions, and a three-day social media campaign for #IHeartEstuaries Feb 12-14. Several outreach events are scheduled for this next quarter.

SCIENCE PROGRAM UPDATE
November 16, 2019 – March 19, 2020

Staff: Dr. Shon Schooler, Research Coordinator
Alicia Helms, Estuarine Monitoring Coordinator
Jenni Schmitt, Watershed Monitoring Coordinator
Adam DeMarzo, Monitoring Technician
Dr. Alice Yeates, Stewardship Coordinator
Keary Howley, GIS Technician

MONITORING

NERRS System-Wide Monitoring Program (SWMP)

Ali Helms and Adam DeMarzo continued to operate the water quality, weather, and nutrient components of SWMP.

SWMP Data: Science staff completed monthly field and lab work associated with the water quality, meteorological and nutrient long-term primary monitoring stations. This included monthly and quarterly station maintenance, data uploads, instrument cleanings and calibrations, and data submissions to the NERRS SWMP Centralized Data Management Office (CDMO) on time. Quarterly submissions for water quality and meteorological data were submitted February 2020. 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 inventories. Data reviews for 2012 water quality data were completed in September 2019 and those data are authenticated, having undergone tertiary review and are now available as final authoritative data. System-Wide Monitoring Program data for the SSNERR and all other Reserves are accessible online at <http://nerrsdata.org>.

The science staff completed monthly weather station maintenance, data downloads, and field logs for November 2019 – March 2020 at Tom’s Creek Marsh. A new satellite transmitter was installed December 2019, and real-time data communications resumed. The SWMP weather station (sostcmet) real-time data are available at <http://cdmo.baruch.sc.edu/get/realTime.cfm>.

Science staff relocated the Charleston Bridge SWMP station in Spring 2019 due to the failing pier infrastructure. The new site is a nearby piling with boat access only. Deployments at the station resumed May 2019. A telemetry package (Storm 3) from the CDMO for equipment upgrades was received December 2019 and is being prepared for installation at this new site.

The science staff completed monthly collection, processing, and analysis for Total Suspended Solids (TSS), a nutrient parameter added to the routine SWMP nutrient dataset, for a NERRS Science Collaborative Sediment Hydrodynamic Model project.

The science staff completed monthly field deployments, retrievals, and calibrations for three Coos estuary SWMP water quality stations, and data were uploaded using the non-SWMP tool provided by the CDMO.

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 to provide real-time data available at www.nvs.nanoos.org/Explorer.

CDMO 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 29 reserves. Recent activities of the CDMO include supporting the NERRS Science Collaborative data management activities, prioritizing SWMP data reviews, recapitalization for aging telemetry equipment by providing reserves with telemetry package options, updating the real time applications and improving data graphing and export systems.

The CDMO provides data hosting for secondary SWMP stations that are established and maintained in addition to the core primary 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, the station must be planned for long term monitoring (at least 5 years), and the station must follow all SWMP protocols and be reserve run in every respect. SSNERR has three water quality stations that may be eligible for secondary SWMP status in the future. Science staff currently utilize the non-SWMP data upload service tool for the Coos estuary water quality stations to provide automated quality control and formatting for the monthly data files.

SWMP Status Reports: The Reserve system developed tools for creating Annual Status Reports on water quality, nutrient, and weather summaries for each Reserve. The CDMO provides the R software package for download and updates files annually.

Estuary pH Monitoring: Field deployments of the Sami $p\text{CO}_2$ and SeapHOx pH monitoring instruments near the Valino Island SWMP station were completed September 2019. Water grab samples used to check sensor performance and calibrate the pH data will be processed at Burke Hales' lab at Oregon State University for analysis of carbonate chemistry parameters. Data analysis for the $p\text{CO}_2$ and pH time series (2015-2019) at Valino will be coordinated with datasets collected at the Charleston Bridge station for Caitlin Magel's (Oregon State University) project.

Bacteria Monitoring: Staff continued monthly monitoring of fecal indicator bacteria (total Coliforms and *Escherichia coli*) at the four SWMP nutrient monitoring stations. The bacteria data are of interest for the Coos Bay Estuary Data Source, Oregon Department of Environmental Quality for Total Maximum Daily Load standards and to Oregon Department of Agriculture as they conduct commercial and recreational shellfish bacteria assessments.

Volunteers from the Surfrider Foundation continued to use the SSNERR science lab for their monthly monitoring of fecal indicator bacteria (*Enterococcus sp.*) at four local beach sites (Bastendorff Beach, Lighthouse Beach, and two Sunset Bay locations: Big Creek and Sunset Bay proper).

Climate Reference Network: The NOAA Climate Reference Network station at Frederickson Marsh continued hourly data transmissions and staff completed maintenance for the station rain gauges. Annual station maintenance was completed Fall 2019 by NOAA staff. Data are available for this station (OR Coos Bay 8 SW) at: <https://www.ncdc.noaa.gov/crn/current-observations>.

SeagrassNet Monitoring: SSNERR science staff completed quarterly eelgrass sampling at Valino Island in January 2020 using the SeagrassNet sampling protocol. SeagrassNet is an international monitoring program established to document the status and health of seagrasses. Eelgrass has been declining at these permanent monitoring plots since 2016 and science staff are working on projects and research proposals to understand factors that may be contributing to the declines in eelgrass in South Slough.

Northwest Association of Networked Ocean Observing Systems (NANOOS): The 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>.

In December 2019, the subcontract for continuing estuarine water quality observations as part of the Sustaining NANOOS grant was completed, and the progress report was submitted.

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 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 SWMP sites with data quantifying other factors (e.g., marsh elevation, plant community, vertical accretion, soil salinity, groundwater level) to help interpret long term changes in emergent marsh plant communities and eelgrass beds.

Water level and temperature loggers were deployed in January 2020 at two of the Sentinel Sites where summer marsh monitoring will occur. Additional salinity loggers were deployed at one site (Metcalf Marsh) for an initial analysis of groundwater salinity.

A water level sensor will be deployed in Winchester Creek, near the Hidden Creek Marsh sentinel station to collect high-precision (mm) water level data to meet requirements of the South Slough's Reserve Sentinel Sites project goals. The water level logger will be

directly correlated with elevation using the Global Navigation Satellite System (GNSS) network by surveying it to five deep rod benchmarks, following Center for Operational Oceanographic Products and Services (CO-OPS) guidelines. Science staff completed installation of the tide gauge station infrastructure on the piling with Wes Sessoms at AquaTrak Corporation in October 2019. Staff collected a temporary RTK elevation for the water level sensor using a nearby marsh island tidal benchmark that was surveyed during the simultaneous occupation static surveys. Next steps include relocating the lower support clamps and working with NOAA contacts to create a program for collecting the sensor data.

Wasson Watershed Monitoring: Science staff have nearly completed baseline monitoring of the Wasson Creek lowlands, in preparation for anticipated restoration work. Science staff and interns conducted simultaneous GPS occupations at benchmarks at Wasson and the control marsh, Tom's Creek. In January, staff deployed 10 additional water level data loggers for a total of 23 at Wasson and Tom's Creek. As funding becomes available, staff will continue to purchase depth and temperature loggers to place inside each well for hydrology information (39 wells will be full build-out). Staff also relocated groundwater wells and vegetation plots at nearby Anderson Creek. Wells were pumped to verify they still functioned properly, and eight water level loggers were deployed to begin collecting data nearly 20 years after restoration of this site was complete. Results will help inform the Wasson restoration project.

Indian Point Monitoring: Staff continue to monitor western lily populations and track changes to herbaceous, shrub and tree cover metrics related to the restoration work. Staff continue to collect water level and temperature groundwater data at the restoration site in order to gauge how tree thinning affected groundwater levels in the treatment area. Groundwater data are retrieved quarterly and last downloaded January 2020.

Lamprey Monitoring: South Slough watershed hosts at least two native species of lamprey; however, we do not have adequate data to evaluate the status of lamprey anywhere in the Coos watershed. Beginning in 2016, science staff began to collect data to understand which streams in the South Slough watershed contained lamprey using lamprey electro-shocking units. Staff surveyed all the major freshwater tributaries of Winchester Creek, providing a general understanding of presence/absence for each tributary. In summer of 2018, staff and partners set up permanent plots at three locations on Winchester Creek to help determine status and long-term population trends of each species. Staff also completed range limit extent surveys on the four major arms in Winchester Creek.

In addition, SSNERR staff are using eDNA techniques to look at upland range extent of lamprey on West Fork Winchester and Wasson Creeks and gain a better understanding of how that technique works for lamprey (juvenile lamprey burrow into stream sediments and therefore eDNA might not be sensitive enough to capture lamprey signals). Water samples were collected June through November 2019 and were sent to the USDA-USFS National Genomics lab in Missoula, Montana. Results indicate; 1) Pacific and western brook lamprey are present in most of West Fork Winchester and Wasson Creeks, and 2)

the results from this method agree with results from previous surveys. Therefore, this technique works as expected. The Reserve is currently leading a citizen science project (funded from a USDA-USFS grant) that is starting to map lamprey species distributions in south coast Oregon watersheds, including more in the South Slough watershed. Schooler and Schmitt are part of a statewide Lamprey Technical Workgroup.

RESEARCH

SSNERR Projects

Invasive European Green Crabs in the Coos Estuary: This year marks the fifth year of research on European green crabs in the Coos Estuary, including South Slough. The overall goals of the work are to: 1) compare the relative abundance of green crabs and native crabs in the estuary across years and locations, 2) examine linkages between environmental conditions and green crab abundance, 3) study the potential impacts of green crabs on native species, 4) better understand the life-cycle of green crabs in Oregon estuaries, and 5) generally reduce green crab abundance through consistent and repeated sampling. Generally, we sample in the summer months. However, due to public interest (observing more green crabs when trapping for Dungeness crabs) in Feb 2020 we started a Citizen Science program for monthly green crab trapping at 2 locations in Coos Bay. Partners for this on-going work include Oregon Sea Grant, Oregon State University, University of Oregon, Oregon Department of Fish and Wildlife, Pacific States Marine Fisheries Commission, and Friends of South Slough Reserve.

DNA Methods to Monitor Invasive Species and Biodiversity in Estuarine Systems: The Reserve is partnering on a research project funded through the NERRS Science Collaborative to use DNA collected from environmental samples (known as eDNA) to characterize fish biodiversity in estuaries. The project includes researchers from University of New Hampshire and from the Great Bay (NH), Apalachicola (FL), He'eia (HI), Hudson (NY), and Wells (ME) NERRs. In 2019 we created a sample design to look at the most effective method to use eDNA to annually monitor South Slough fish diversity. We are currently waiting on results of DNA analyses to determine the use of this method to monitor fish species presence and diversity in South Slough over time. In addition, in Feb 2020 we submitted another proposal to continue this research.

Building capacity to respond to an eelgrass (*Zostera sp.*) decline in the South Slough estuary, OR: The Reserve completed the NERRS Science Collaborative project to develop a recovery plan to understand the eelgrass habitat declines in the South Slough estuary, and a final report was submitted December 2019. The Eelgrass Advisory Committee recommended focusing on understanding causes of the decline before initiating large scale restoration projects. Three data modeling projects will utilize SWMP water quality data to understand what factors may be contributing to the declines. A graduate student from University of Oregon, Maria Jose Marin Jarrin (Dave Sutherland's lab) is interested in connectivity between the Coos estuary and South Slough, and the role of water residence time on abundance of species like native oysters,

crabs, and eelgrass. For eelgrass, she is exploring retention time of anomalously high water temperatures and low river discharge contributing to the eelgrass losses. She delivered a presentation on this project development at the Ocean Sciences meeting in San Diego, CA in February 2020. Two graduate students from Oregon State University, Winni Wang (Ryan Mueller's lab) and Caitlin Magel (Sally Hacker/Francis Chan labs) are interested in species distribution modeling and path analysis modeling to understand water quality drivers contributing to eelgrass decline. These graduate students will be partially supported by funds from the 2019 NERRS/NOAA Margaret Davidson graduate research fellowship program.

Partner Projects

Partnership for Coastal Watersheds (PCW): The PCW is a local group of civic-minded community members that includes representatives of South Slough Reserve, Coos County Planning Department, Cities of Coos Bay and North Bend (planning and city council), Coquille Indian Tribe, Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians, South Coast Development Council, Stuntzner Engineering (planning), Coos Watershed Association, Department of Land Conservation and Development, Southwestern Oregon Community College, Oregon Department of Fish and Wildlife, US Fish and Wildlife Service, International Port of Coos Bay, Oregon Department of Environmental Quality, and citizens at large. Currently the group has largely focused on the helping Coos County and city jurisdictions update the Coos Bay Estuary Management Plan, which is based on 40-year old information and technology.

The PCW meets monthly. Since the last commission meeting, the PCW prioritized several 'next steps' directions for the group to head next:

- Facilitate development of a coastal hazards vulnerability assessment and adaptation planning effort, including climate change related hazards. Several proposals were submitted to achieve this including a NERRS Science Collaborative proposal to conduct a community-level needs assessment to understand how organizations around the area are (or aren't) incorporating climate change into their strategic plans (see Grant Proposal section below), and a two-year FEMA Cooperating Technical Partners proposal to develop the vulnerability assessment and adaptation strategies including assessing risks to economic, social and natural resource systems. The project team was notified in February 2020 that the latter was being awarded funding.
- Explore mitigation banking options for the Coos estuary. The PCW is working with DSL mitigation specialists to understand various mitigation bank processes, scope and potential opportunities in this area.
- Continue to fill data gaps. Through each project the PCW leads, data gaps are identified and the group identifies opportunities to fill those gaps. Currently, the PCW is interested in developing and refining a restoration inventory for the Coos estuary (see Grant Proposal section below).

- Continue to leverage the PCW collaborative process. The PCW continues to be a sounding board for researchers doing work around the Coos estuary. Most recently, University of Oregon professor Dave Sutherland is leading a proposal to better understand sedimentation and temperature in the Coos estuary (see Grant Proposal section below) and will create end products iteratively with the PCW.

For more on the PCW and its current work, visit their website:

<http://www.partnershipforcoastalwatersheds.org/>

Ocean Acidification/ pH monitoring, and effects on eelgrass: The Reserve provided assistance to Oregon State University graduate student Caitlin Magel (co-advisors Francis Chan and Sally Hacker) for her research investigating the role of eelgrass in mitigating OA stress. Caitlin deployed a SAMI CO₂ sensor and a SeaFet pH sensor near the Charleston SWMP station to collect time-series partial pressure carbon dioxide and high-resolution pH monitoring data from 2016-2019. She exchanged sensors monthly, and science staff coordinated with her for field site access by boat. She surveyed eelgrass, macroalgae, and epiphytes at three sites in the Coos estuary: Barview, Valino Island, and Danger Point. She collected data in three additional estuaries in OR (Netarts Bay, Yaquina Bay) and WA (Willapa Bay). She completed her final instrument deployments and eelgrass/macroalgae sampling in South Slough at the end of August 2019 and is currently working on data analyses.

Tillamook Bay Ocean Acidification and Hypoxia (OAH) Monitoring: Oregon Watershed Enhancement Board (OWEB) funded a project to establish baseline information on carbonate chemistry and spatiotemporal patterns of OAH in Tillamook Bay, OR. Collaborative partners include Tillamook Estuaries Partnership (TEP), Oregon State University, Environmental Protection Agency, Oregon Department of Fish and Wildlife, and the South Slough Reserve. York Johnson (TEP and DEQ) established monitoring sites for SeaFet pH sensors in Tillamook Bay with field deployments for the Spring season beginning April 2020.

Hydrodynamic Model of Coos Estuary: This project, led by David Sutherland (University of Oregon) and David Ralston (Woods Hole Oceanographic Institution), has resulted in a hydrodynamic model for the Coos estuary to characterize present-day sediment distribution, surface and bottom salinity, monitor sediment fluxes to the estuary, and model how circulation and sediment patterns in the estuary will respond to change. SSNERR is involved in collecting sediment data, providing data from water quality and Sentinel Site stations, and facilitating end-user discussions between the project team, end-users (i.e., Coos County, Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, Oregon Institute of Marine Biology, SSNERR) and other stakeholders through the Partnership for Coastal Watersheds. This project has created a much-needed bathymetry spatial layer for the Coos estuary, modeled areas of potential eelgrass habitat for the Coos estuary based on depth (i.e., light attenuation in the Coos estuary) and salinity; created summer-steady and winter-steady salinity profiles (depth-averaged, surface, and bottom); and, modeled comparisons from present day Coos Bay at different river discharge values with historic bathymetry, and future proposed channel

deepening and widening bathymetry. The newest suite of products are models of native oyster settling locations, with an end goal to understand best likely opportunities for future native oyster restoration.

In April 2019, Sutherland, Ralston, several graduate students and Jenni Schmitt submitted a paper to the journal *Estuaries and Coasts* entitled “Impacts of 150 years of shoreline and bathymetric change in the Coos Estuary, Oregon, USA”. The paper describes results from model runs comparing present day Coos Bay at different river discharge values with historic bathymetry, and future proposed channel deepening and widening bathymetry. The manuscript has undergone review and will be accepted pending revisions. The revised manuscript was resubmitted January 2020.

Is marsh surface tracking sea level change? Developing tools and visualizations for NERRS Sentinel Site data: This project was led by Kim Cressman (Grand Bay NERR, MS) in collaboration with team members at Padilla Bay NERR (WA), Mission-Aransas NERR (TX), Delaware NERR, Waquoit Bay NERR, and South Slough NERR. This project has created standardized tools to quality-check Sentinel Site Surface Elevation Table (SET) data, perform trend analyses, and produce informative visualizations for varied audiences. The technical team (represented by Jenni Schmitt for SSNERR) focused on creating quality-control (QC), analysis tools, and outreach products. Final products included site-specific trend analyses, visualizations, and a national synthesis of surface elevation change vs. sea level trends. This project, funded by the NERRS Science Collaborative, was finalized February 2020.

Building a coastwide Olympia oyster network to improve restoration outcomes and enhance community engagement: This NERRS Science Collaborative catalyst project (8/1/18-8/31/19) led by Kerstin Wasson (Elkhorn Slough NERR) in collaboration with other West Coast NERRs, tribes, and research institutions assessed restoration projects for the native oyster (*Ostrea lurida*). The project conducted a synthesis of success of past restoration projects to share lessons learned and to identify the practices and environmental conditions that predict the best restoration outcomes. Final products included the creation of the Native Olympia Oyster Collaborative (NOOC) website with story map featuring the restoration projects (<https://olympiaoysternet.ucdavis.edu>). The NOOC received funding for two new projects in 2020/2021 for conservation aquaculture techniques for Olympia oyster restoration and oyster population assessments in Baja California, Mexico.

GRANT PROPOSALS

South Slough staff are working with PCW members to write and submit several grant proposals to further their work:

- Craig Cornu (Institute for Applied Ecology) submitted a proposal to the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) to refine the Coastal and Marine Ecological Classification Standard (CMECS) habitat classification for the Coos estuary from the state-scale it's currently at, to a high-resolution local scale.

The proposed work will then use the refined habitat classification to finalize a Restoration Opportunity Inventory for the Coos estuary. This proposal was recommended for funding; however, the funding threshold for PMEP is likely below what will be needed to fund this project. Alternative funding options are being explored.

- Haley Lutz (Coos Watershed Association) submitted a proposal to the NERRS Science Collaborative to conduct a listening tour to stakeholders of the Coos estuary (including local municipal and private organizations) to understand local awareness of coastal hazard vulnerabilities, understand priority coastal hazards concerns, and determine what plans are being developed or actions are being taken to address those concerns. Funding would also include resources to build a dedicated website for the Data Source. Funding notifications will occur June 2020.

South Slough staff are working with local, regional and national partners on a variety of NERRS Science Collaborative proposals:

- University of Oregon researcher Dr. Dave Sutherland is leading a NSC Collaborative Research proposal development to understand sediment and temperature effects on native oysters and eelgrass in the Coos estuary.
- Craig Cornu (Institute of Applied Ecology) is leading a NSC Collaborative Research project proposal to continue research on blue carbon in tidal wetlands of the PNW.
- Chris Peter (Great Bay NERR, NH) is leading a multi-reserve NSC Collaborative Research project to conduct a national synthesis of tidal marsh vegetation responses to sea level rise, which is leveraging Sentinel Site and SWMP data collection.
- Dr. Brooke Sullivan (University of Washington; Back to Nature Designs) is the project lead for a NSC Catalyst proposal to develop an eelgrass restoration research implementation plan for the South Slough estuary and pilot restoration techniques.
- Dr. Sylvia Yang (Padilla Bay NERR, WA) is the project lead for a NSC Catalyst proposal to develop techniques for eelgrass restoration by seed.
- Dr. Kari St. Laurent is leading a NSC Catalyst proposal to examine wetland decomposition rates across 26 Reserves.
- Dr. Alison Watts (University of New Hampshire) is leading a NSC Catalyst proposal to continue eDNA research to look at use for monitoring fish community diversity at multiple Reserves.
- Dr. Catherine de Rivera (Portland State University) is leading a NSC Catalyst proposal to examine public and stakeholder perceptions of tidal wetland restoration activities.

VISITING RESEARCH SUPPORT

We are reviewing two applications for the first full round of the NOAA Margaret A. Davidson Graduate Fellowship program. As a start to the program, the SSNERR is partly

funding 3 graduate students from September 2019 to June 2020. This next round will fund one graduate student from September 2020-August 2022. Currently NERR staff Ali Helms, Adam DeMarzo and Shon Schooler are on a review panel and will review the applications and make a recommendation to NOAA by April 2020.

Reserve staff helped graduate student Caitlin Magel (OSU) recover and deploy pH and $p\text{CO}_2$ sensors in South Slough estuary near the Charleston SWMP station and access survey eelgrass sampling sites for her research with final field deployments completed August 2019.

The SSNERR is a field location for Oregon Department of Fish and Wildlife's adult mosquito abundance trapping program, to be used as a reference comparison to restored marshes in the Coquille valley. Trapping began in June 2018 and is expected to continue through 2022. ODFW staff have also agreed to sample Wasson Creek for the SSNERR restoration project at SSNERR staff request. This sampling will help us understand the effect of marsh restoration projects on mosquito populations.

The SSNERR is a field site for graduate student Riley Anderson (UO) who is studying methods to use UAVs to monitor eelgrass in South Slough, specifically low density eelgrass.

INTERNSHIPS

Science staff selected two NOAA Hollings Scholars to host for summer 2020. Both interns completed a site visit (December 2019; January 2020) to determine housing options and begin preliminary discussions on summer research projects.

The Reserve science program will continue participation in OIMB's Research for Undergraduate Experience ("Exploration of Marine Biology on the Oregon Coast") and provide mentorship to two undergraduate students (one from a 2 year college and one from 4 year college) for Summer 2020. Science staff are current reviewing applications and will interview final candidates in coordination with OIMB.

STEWARDSHIP

Wasson:

Dr. Alice Yeates (Stewardship Coordinator) continues to work with the Coos Watershed Association to move the Wasson Restoration Project forward. An invitation has been sent requesting participation on the Wasson Technical Advisory Team with representatives from, the following groups: Bureau of Land Management (BLM), Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians (CTCLUSI), Coquille Indian Tribe, Coquille Watershed Council, Institute of Applied Ecology, National Oceanic and Atmospheric Administration (NOAA), OR, Dept. of Fish and Wildlife (ODFW), OR Dept. of Forestry, OR State University, OR Watershed Enhancement Board (OWEB), U.S. Fish and Wildlife Service (FWS), and U.S. Forest Service. The Reserve has been invited to submit a full funding application to the NOAA Restoration Center for a FY

2020 Community-based Restoration Program Coastal and Marine Habitat Restoration Grant. Applications are due April 9th, 2020.

Invasive Species:

Alice has developed a Stewardship program, The Second Saturday Stewardship Program, which aims to combine public education with conservation action that targets Reserve invasive species research and management needs. The first program (Feb. 8th, 2020) focused on reducing the introduction of invasive plants into disturbed areas, where participants learnt about the role of disturbance in the landscape, along with the association invasion risks, and planted native shrubs and pulled English ivy.

Research:

The Reserve continues to be involved in various invasive species management projects. The Reserve continues to collaborate with the USFS Dorena Genetic Research Lab to monitor Port-Orford-cedar root rot disease (*Phytophthora lateralis*) and serves as a research site. Staff are preparing for the next Stewardship Program in which we will be collecting data on the presence and impact of spruce aphids on Sitka spruce trees in the research and will use the information provided by and submit data to the Citizen Science program run by OR Dept. of Forestry.

Communication:

Alice has replaced long term participant, John Bragg, on the Gorse Action Group. Staff continue to communicate about invasive species in public and school programs.

Mapping and planning:

Staff continue to map invasive plants and request Tribal permission to disturb the soil during management. Permission has been granted at several locations and weed pulling has commenced. A Tribal Monitor is required to be present during weed pull events in a few locations and this will be included in the invasive species management plan. The Coquille Indian Tribe has offered their youth group to pull weeds in these culturally important areas in the summer of 2020 and Alice is working with the coordinator to utilize this offer. Alice mapped gorse seedling populations within Reserve managed lands with the help of Jeanne Standley, retired BLM weed officer.

Management:

Alice and is working with the Tribes to get permission to pull young gorse seedlings in areas of the Reserve's managed lands. Alice and Jeanne cut three large adult gorse plants which had previously escaped management and were ready to set seed in 2020.

Endangered Species Projects:

Resulting from staff and intern monitoring efforts in 2019, Valino Island has been identified as a potentially high-risk site for impacting the Oregon listed endangered species, Point Reyes bird's beak (*Chloropyron maritimum ssp. palustre*). Consequently, Valino Island has been removed from potential landing sites recommended to commercial guides. The Reserve is recommending a landing site in the eastern tip of

Long Island Point and have consulted the local Tribes for input on this recommendation. South Slough guided paddle trips are also exploring transitions to other landing sites to minimize impact.

Trash and Marine Debris:

Alice has coordinated two local groups, scout troop 156 (Dec. 30th, 2019) and Coos Watershed Association school program (Feb. 27th, 2020), to help clean up the Anderson restoration site. This site was restored in 2002 and plastic tree guards and metal rebar skates remain on site.

Visitor Center Forest Enhancement:

Work on the Visitor Center Forest Enhancement project has been completed. The Coos Forest Protection Agency (CFPA) finalized work on Feb. 13th, 2020. Participants of the Second Saturday Stewardship Program (Feb. 8th, 2020) planted the native shrubs in the forest clearing and contractors installed 9 bird boxes on the wildlife snags created. Mike Allman (Maintenance Lead) is building bench from the Port-Orford-cedar felled during the Visitor Center Forest Enhancement Project to be placed in the new gathering area.

Raingarden Establishment

The Visitor Center raingarden (funded through the 2019 PAC award) has been completed. This was a collaboration between Reserve staff and Coos Watershed Association. Interpretive signs are being developed and Mike Allman (Maintenance Lead) is building a bench from the Port-Orford-cedar felled during the Visitor Center Forest Enhancement Project.

Yunker Point

A contractor (Jake Robinson with Swanson Ecological) will incorporate the Yunker Point Reserved managed lands into the Upper Watershed Restoration Plan in May 2020. This was originally proposed in the acquisition documents in 2011, and will include recommendation for restoration actions, where a section is known to require restoration thinning in order to encourage healthy mature forests. The Stewardship Coordinator will work with Education and Science staff to include research and education opportunities and will investigate potential of road decommission.

OTHER SCIENCE PROGRAM ACTIVITIES

Committees and Workgroups

Bivalve Working Group: Shon Schooler continues to serve on the NERRS Bivalve Working Group with Brandon Puckett, North Carolina NERR; Nikki Dix, Guana Tolomato NERR; Kerstin Wasson, Elkhorn Slough NERR; and Jeff Crooks, Tijuana NERR.

Coos Watershed Association Technical Advisory Committee: Jenni Schmitt and Shon Schooler sit on this committee to provide technical feedback on a variety of upcoming or ongoing restoration projects.

DSL GIS User's Group: Jenni Schmitt and Keary Howley are the South Slough Reserve representatives of this team, which is tasked with identifying GIS and geospatial technology needs and solutions for DSL.

Habitat Mapping and Change Classification Review Team: Jenni Schmitt is part of this team to apply a three-tiered review system for habitat mapping products submitted by each reserve. Habitat maps standardize the way high-resolution land cover data (wetland, aquatic, and upland habitats) are classified within the NERRS.

Lamprey Technical Workgroup: Shon Schooler and Jenni Schmitt sit on this advisory committee of the Conservation Agreement for Pacific lamprey in Oregon. The group recently met in December 2019 to discuss updates on conservation initiative, subgroup updates (tagging, contaminants, ocean, engineering criteria, genetics/eDNA, BMPs for minimizing impacts during stream disturbing activities, and restoration), standardizing white paper formats, lamprey terminology and larval lamprey survey and salvage protocols.

NERR Science Collaborative Advisory Committee: Shon Schooler continues to serve on the NERR Science Collaborative advisory committee along with a large national group of members. This group advises the NERR Science Collaborative team currently based at the University of Michigan.

NERRS Stewardship/GIS sector planning team member: Jenni Schmitt has been selected to help plan the virtual and in-person meetings for the NERRS Stewardship/GIS sector. Initial planning discussions commenced in February 2020.

Pacific and Estuarine Research Society (PERS) Board: Jenni Schmitt is the Oregon-at-large representative for PERS. PERS is the regional chapter of the Coastal and Estuarine Research Federation (CERF). Schmitt is working with president-elect Liz Perotti (ODFW) and others on the board to plan a joint PERS/ California Estuarine Research Society meeting in Florence, Oregon April 2020.

Sentinel Site Application Module (SSAM-1) Oversight Committee: Jenni Schmitt and Ali Helms are on this NERRS committee, which was formed to develop SSAM-1 outreach strategies, review outreach products from the Marsh Resilience (MARS) report card, integrate remote sensing/habitat mapping into Sentinel Sites, review Sentinel Site plans, develop Centralized Data Management Office (CDMO) data templates for sediment data, and manage inventory of SSAM-1 equipment, capacity building and data acquisition. The group has met repeatedly in Fall 2019 to develop a draft document called the "least common denominator" (LCD) for Sentinel Site monitoring to articulate expectations for the minimum monitoring protocols to standardize data sets for site, regional and national synthesis; and to justify the need for an increase in the SWMP budget to support on-site monitoring, data analysis, and data maintenance and dissemination through Centralized Data Management Office (CDMO). Comments from NERRS annual meeting participants are being incorporated before the document is sent

on to Reserve managers in March.

Sentinel Site Biomonitoring Workgroup: Jenni Schmitt is part of this workgroup, which develops and oversees implementation of national vegetation monitoring protocols and reviews vegetation monitoring datasets submitted to the CDMO. The group is currently updating the Biomonitoring Protocols and data template. For the latter, they are working with CDMO staff to ensure the template does not over commit their staff capacity while allowing for a much more careful and consistent review of biomonitoring data.

South Coast Lamprey Working Group

Jenni Schmitt and Shon Schooler are on the steering committee for this workgroup, which works to help identify key information for lamprey management at regional, state, and local scales and identify opportunities for future work.

South Slough Safety Committee: Shon is the Science Program representative on the newly re-formed SSNERR Safety Committee. They are finalizing safe boating protocols for the SSNERR motorized boats and paddlecraft.

SWMP Guidance Committee: Ali Helms serves on the SWMP Guidance Committee (current members: Dwight Trueblood, Mary Culver, Suzanne Shull, Chris Kinkade, Jennifer Harper, Joan Muller, Matt Ferner, Ali Helms, Robin Weber, and Steve Baird) formed in 2010 to provide strategic planning and oversight of the SWMP program. The committee revised the SWMP Plan for 2019 with the final draft submitted to the NERRS Data Management Committee for review.

SWMP Oversight Committee: Shon Schooler continues to serve on the SWMP Oversight Committee. This committee provides oversight of SWMP plans and can intervene if SWMP protocols are not being met by individual Reserves.

NERRS Coastal and Ocean Acidification workgroup: Ali Helms joined the NERRS COA workgroup to share ideas, resources, best practices for monitoring, and partnerships to collaborate on ocean and estuarine acidification monitoring activities across the Reserve system. The workgroup is led by Kari St Laurent at the Delaware NERR.

MEETINGS / PRESENTATIONS / TRAININGS

Lead Scientist/Research Coordinator, Shon Schooler

Meetings

November 2019 – March 2020 – Convened SSNERR Science Program fortnightly staff meetings.

November 2019 – March 2020 – Participated in DSL monthly staff meetings.

November 2019 – March 2020 – Participated in monthly SSNERR Safety Committee Meetings.

November 2019 – March 2020 – Participated in monthly eDNA research partner teleconferences and webinars.

November 2019 – March 2020 – Participated in regular calls for Lamprey eDNA citizen science project.

November 2019 – March 2020 – Participated in monthly Coos Bay Leadership Program meetings.

November 2019 – March 2020 – Participated in monthly SSNERR Lead Programs Team meetings.

December 2019 – Met with Sam Chan (OSU) to discuss reed canary grass control and potential for research experimentation at Wasson.

December 2019 – teleconferences with potential Graduate Fellowship applicants.

January 2020 – attended Coos Watershed Association technical team meeting, South Slough Visitor Center.

January 2020 – Led South Slough Research Team 2020 planning session.

January 2020 – Participated in Native American Cultural Training, Coquille Tribe

Watershed Monitoring Coordinator, Jenni Schmitt:

Presentations

March 2020 – Led a restoration presentation and hike to a Utah Valley University class.

Meetings

November 2019 – March 2020 - Convened monthly meetings with the Partnership for Coastal Watersheds (PCW) to report on progress and receive input on the Coos Estuary Land Use Analysis project and develop multiple grant proposal submissions.

November 2019 – March 2020 - Convened multiple meetings with a subgroup of the PCW to develop a strategy for a climate change vulnerability assessment for the Coos area region. This group also worked together to write two proposals related to this concept.

November 2019 – March 2020 - Participated in monthly project team calls for the SET tools and visualizations project.

November 2019 – March 2020 – Met with Dave Sutherland (UO) and/or team members to receive updates on hydrodynamic modeling outputs and products, and helped facilitate interaction between team members and end-users.

November 2019 – March 2020 – Met monthly with others on the Pacific Estuarine Research Society board to develop the April 2020 annual meeting in Florence, OR.

November 2019 – Attended and presented at the NERRS Annual Meeting in Charleston, SC.

December 2019 – With Shon Schooler, met with Sam Chan (OSU) to discuss reed canary grass control and potential for research experimentation at Wasson.

January – February 2020 – Participated in monthly Coos Watershed Association Technical Advisory Committee meetings.

January 2020 – Met with and toured around two Hollings Scholars, who will be completing their summer internships at South Slough Summer 2020.

January 2020 – Met with others on the Sentinel Site Application Module Oversight Committee to discuss and refine the Least Common Denominator document.

January 2020 – Participated in the annual South Slough Science Team planning meeting.

January 2020 – Met with others on the South Coast GIS Users group to vote Keary Howley (South Slough Reserve) as the next coordinator of this group.

January – March 2020 – Began semi-monthly meetings with the DSL GIS User Group to develop agency level recommendations for GIS and GPS needs.

February 2020 – Met with project team members to develop a multi-reserve proposal to conduct a national synthesis of tidal marsh vegetation responses to sea level rise.

February 2020 - Met with project team members to develop a proposal to understand sediment and temperature effects on native oysters and eelgrass in the Coos estuary.

February 2020 – Attended a NERRS Stewardship/GIS sector planning team call.

Trainings

November 2019 – Took a Mobile GIS/GPS collection methods training, which focused on using Collector and Survey123. Training was held in Charleston, SC.

November 2019 – Participated in and helped during field training portion of a NERRS training on using Sprinter levels for restoration and Sentinel Site work. Workshop was at Fort Johnson, SC.

December 2019 – Attended a SSNERR training by SAIF to minimize workplace injuries during everyday work.

January 2020 – Attended and helped facilitate an RTK training hosted by Coos Watershed Association.

January 2020 – Attended a cultural training workshop led by Coquille Indian Tribe’s cultural preservation officer.

February 2020 – Attended the final technical webinar for the SETr project, which assesses how marsh surface rates are changing in relation to sea level rise rates.

March 2020 – Listened to a webinar on stage 0 restoration for alluvial river systems.

Estuarine Monitoring Coordinator, Ali Helms:

Presentations/Meetings/Trainings

December 2019 – Participated in webinar about leveraging NERRS SWMP and Sentinel site data for wetland research and management

December 2019 – Participated in safety training delivered by SAIF

December 2019 – Completed Information Technology trainings

December 2019 - February 2020 Assisted with project proposal developments, letters of support, and manager assessments for NERRS Science Collaborative Catalyst and Research grants related to eelgrass recovery and restoration, sediment and temperature additions for hydrodynamic model for informing eelgrass and native oyster restoration, and sentinel site vegetation data synthesis

January 2020 – Joined and participated in NERRS Coastal and Ocean Acidification workgroup led by Kari St Laurent (Delaware NERR)

January 2020 – Attended Coos Watershed Association technical advisory meeting

January 2020 – Participated in the Sentinel Site workgroup to develop the core standards proposal to fund Sentinel Site monitoring at the Reserve system wide level led by Nina Garfield

January 2020 – Participated in Annual Reserve Science program planning meeting

January 2020 – Attended DSL procurement and contract administration training delivered by Michelle Johnson

January 2020 – Participated in RTK/GPS tools training with the Coos Watershed Association led by Ryan Kilgren (Tetra Tech)

January 2020 – Attended cultural training delivered by Kassandra Rippee, Tribal Historic Preservation Officer at the Coquille Indian Tribe

February 2020 - Participated in Oregon Ocean Acidification and Hypoxia (OAH) Monitoring workgroup conference call on updates about the OAH council, Ocean Science meeting gaps analysis, and future vision for the workgroup and the OAH inventory

February 2020 – Met with Maria Jose Marin Jarrin to discuss her project on effects of anomalous water temperatures on eelgrass declines in the South Slough

February 2020 – Sofia Suesue (REU intern) presented a poster on the endangered salt marsh plant species bird's beak (*Chloropyron maritimum palustre*) distribution and habitat characteristics at the Ocean Sciences conference in San Diego, CA

February 2020 – Participated in webinar featuring project results from thin layer sediment placement to enhance salt marsh resilience implemented across eight reserves

February 2020 – Participated in PMEP eelgrass inventory project discussion

February 2020 – Participated in webinar about seagrass restoration research in the Elkhorn Slough NERR promoting multiple ecosystem functions delivered by graduate student Kathryn Beheshti (UC Santa Cruz)

February 2020 – Attended webinar on project results from NERRS Science Collaborative project that developed tools and visualization for Sentinel site sediment data delivered by Kim Cressman (Grand Bay NERR) and Scott Lerberg (Chesapeake Bay VA NERR)

March 2020 – Met with Andrea Celentano (Policy and Legislative Analyst at DSL) to discuss Ocean Acidification related projects for DSL's contribution to the Governor's OA action plan

Stewardship Coordinator, Alice Yeates:

Presentations

Nov. 2019 – South Slough Restoring Healthy Ecosystems, Nov. 15th, Southwestern Community College.

Dec. 2019 – Introduction to South Slough Forests and Stewardship Coordinator, Dec. 19th, Coos Chapter of American Foresters, North Bend.

Feb. 2020 - Visitor Center Forest Enhancement Project Overview, Feb. 25th, Friends of South Slough Annual Meeting, North Bend.

Meetings

November 2019 – Attended and convened sessions at the NERRS Annual Meeting in Charleston, SC.

February 2020 – Met with project team members to develop a multi-reserve proposal to conduct a national synthesis of tidal marsh vegetation responses to sea level rise.

February 2020 – Met with Coos Watershed Association to discuss the Wasson Restoration Project.

Friends of South Slough (FOSS) Board of Directors
Friends of South Slough (FOSS) Board of Directors

The FOSS Board held their annual members meeting on Tuesday, February 25 from 5-7 pm at the Gloria Dei Lutheran Church. The board presented the progress with the strategic planning efforts, updates to the by-laws, and highlights from the National Estuarine Research Reserve Association (NERRA) meeting, which is held in conjunction with the NERRS meeting. The Reserve Stewardship Coordinator provided a brief presentation for the members on the Forest Enhancement Project. The Reserve Manager presented about the Reserve and highlighted the work being done, specifically how FOSS has been able to help with managing grants, providing support to the education and internship programs, and funds towards match for grants and land acquisitions. FOSS is undergoing a brief period of re-organization in order to focus on strategic planning and updating their record keeping policies.

The FOSS Board meets every fourth Tuesday in Charleston at the Port of Coos Bay Marina RV park facility from 3-4:30 pm. South Slough Reserve staff program leads also often attend the meetings to facilitate communication with our 501C3 FOSS partner.

Administrative/Facilities Report

Staff: Bree Yednock, Reserve Manager
Rebecca Muse, Operations Manager
Michael Allman, Facilities Lead
Jonathan Forth, Park Ranger Assistant
Patrick Juarez, Procurement/Contract Assistant
Katherine Andreasen, Administrative Assistant
Ed Oswald, Information Systems Technician

Administrative

Attached are the state budget reports for the 2019-21 biennium through April 2020.

In May 2019, SSNERR was awarded the FY19 Land Acquisition and Construction grant (PAC grant/NOAA funding + match: totaling \$220,000), which will fund projects at the Maintenance compound. Projects include expanding the maintenance compound, construction of a pole barn to house paddle crafts, update and replace the siding on the main maintenance building and then add an RV pad adjacent to Maintenance for an on-site volunteer host. This funding started July 1, 2019. NOAA required an environmental review on this grant and project. Staff reached out to the Coquille Indian Tribe; Coos, Lower Umpqua, and Siuslaw Indians (CTCLUSI); and the Confederated Tribes of Siletz Indians regarding the project. Both the Coquille Tribe and CTCLUSI responded with no issues with the location. The Siletz did not respond. This information was sent on to NOAA on 9/27/2019 for their review. NOAA send approval for the environmental review in April, 2020. Staff have started the process to get clearance through DEQ and Coos County Planning Department on utilities for the RV site.

In March 2020, we were notified that we were awarded two NOAA Land Acquisition and Construction grants for FY20. One will assist in the purchase of land at the entrance to the Visitor Center (\$60,000) and the other will assist in trail upgrades throughout the trail system (\$150,000). These grants start on July 1, 2020 and will cover a 2 year time frame.

Recruitment was completed in April for our new Coastal Training Program Coordinator. Sabra Comet was selected and started her position in May. Sabra comes to us most recently from NOAA's Washington DC area office, where she worked as a Strategic Planning and Outreach Analyst. She holds a Bachelor's degree in Zoology from Southern Oregon University, a Master's in Natural Resources Conservation from Portland State University, and she brings with her a wealth of professional experience related to coastal and ocean issues. Welcome Sabra!

Facilities

Facilities has been different at South Slough since the closure of our offices due to COVID-19. Facilities staff have continued to work on site with security patrols, trail and grounds maintenance and small projects here and there. Cleaning all staff areas has increased to protect staff that are working in the office or onsite doing field work.

During the down time, facilities staff installed new benches in the 10-minute trail clearing and at the new rain garden site.

SSNERR Education Program update

Staff: Jaime Belanger, Education Coordinator/Lead

Eric Dean, Education Specialist

Deborah Rudd, Public Involvement Coordinator

Daniel Dobrosielski, Seasonal Education Specialist

March 1 – June 30, 2020

For most of this reporting period the Reserve was closed to visitors and programs due to the COVID-19 pandemic. The shutdown drastically changed the operation of education efforts. The spring and summer are typically extremely busy for the education team. Field trips to the Reserve from schools across Oregon increase throughout April, May and early June. Classroom visits, and outreach events also become more frequent throughout the spring. As summer begins, interns arrive and program direction shifts to summer camps, Saturday programs and regular community events. During 2020, these activities were curtailed due to stay-at-home to save lives orders. The last in-person education programs occurred on March 11, just after the Seasonal Education Specialist arrived. Education volunteer training scheduled for mid-March was canceled and volunteers have not returned to Reserve. The visitor center closed to the public on March 19, though the trails remain open from dawn to dusk. Education staff began teleworking around March 21. Staff identified projects they could work on at home and took time to dive into numerous tasks from their long lists of priority projects for the first few weeks of stay-at-home. As time went on, staff began to identify needs and niches and learn new ways to reach Reserve audiences virtually.

Intern recruitment carried out in the early spring yielded two local candidates, who were able to join the education team for the summer and still commute from home.

Lucas Parvin, a Zoology major in the honors college at Oregon State University was recruited through OSU's Sea Grant Summer Scholar program. Lucas grew up in North Bend and frequently hikes at South Slough with his dogs. He began working on June 17th and has been able to work safely at a computer station in the visitor center. Lucas will assist with summer science camps and education projects for the Reserve. He has made significant progress on

developing a plant guide that will be used by volunteers, staff and visitors to identify and learn about plants around the visitor center and along trails. He has also been able to assist with some of the science fieldwork. Lucas will be with the Reserve until mid-August. He will present about his projects and internship at a virtual symposium hosted by Oregon Sea Grant in August.

Sabrina McNeely is a Biology major at Oregon State University. She is supported by a stipend through the Friends of South Slough internship program. She also grew up in North Bend. Sabrina began on July 7 and will primarily be helping with summer science camps. Sabrina will also work opportunistically on projects at the Reserve and assist with science fieldwork when possible. She is applying for university credits for her internship and will be with the Reserve until mid-August.

Staff training, innovations, and COVID-19 work

Jaime Belanger worked with Reserve partner Cait Goodwin from the Oregon Coast STEM Hub and Oregon Sea Grant to finish up a teacher workshop series that begin in November 2019. During the spring, Jaime attended numerous webinars and participated in many phone calls with other environmental education providers, nature center facilities and NERRs education coordinators to identify meaningful roles, communication tools and techniques for Reserve audiences during the pandemic. She worked with the Reserve stewardship coordinator (Alice Yeates) and seasonal education specialist (Daniel Dobrosielski) to finalize interpretive signs for the rain garden at the visitor center. Jaime worked on the planning committee for and attended the NERRs Education Sector annual virtual meeting March 31 – April 2. Following Oregon Health Authority guidelines, Jaime worked with the rest of the education team to develop procedures for the Reserve to follow to host safe in-person summer science camps in July and August 2020. Jaime is the mentor for the Sea Grant Summer Scholar, Lucas, and the FOSS intern Sabrina.

Deborah Rudd promoted virtual education initiatives and worked with the education team to identify platforms and techniques for communication to audiences sheltering at home. She attended numerous webinars and components of the Education, Stewardship and Coastal Training virtual meetings during the spring. Deborah was instrumental in two Second Saturday Stewards programs that transitioned to virtual platforms from their original in-person

stewardship plan. Deborah received confirmation of a second round of funding for the lamprey eDNA citizen science project she developed with the Reserve Science Coordinator in 2019. She also successfully received funding to support FOSS's internship program.

Daniel Dobrosielski applied his art and design skills to assist with final edits for signage at the visitor's center rain garden. He became the Reserve's virtual program lead. He continues to contribute significant time to researching and identifying appropriate platforms and methods for communicating distantly with a variety of Reserve audiences. In this added responsibility to his existing job duties, Daniel will work with each education program area to identify, design, and carry out virtual programming to virtually communicate about South Slough's mission and management priorities. Daniel led the Reserve's first virtual Tide of the Toddler's lesson, which can still be viewed on the [South Slough Facebook](#) page. Daniel also helped create and lead a virtual camp for 5- & 6-year-old children. He worked with other education staff to create plans for a safe environment for in-person summer science camps.

Eric Dean assisted with the Second Saturday Stewards program and worked with Jaime, Daniel, and Lucas to plan and carry out the virtual camp for 5 & 6-year-old children. Eric led several kayak training days on the estuary for science, education and intern staff who might use kayaks during projects or programs during the summer.

Education Program Metrics

Between March 1 and June 30, 2020, the Reserve offered 7 education programs that reached about 149 people of all ages. The learning opportunities, which were comprised of both in-person and virtual programs provided 170 hours of estuary learning. A significant number of hours were committed to program planning, development and reflection as the education team worked to adjust to distance learning opportunities for a variety of audiences. This summary accounts for all education, interpretation, training, and outreach provided directly by South Slough education staff.

Including the number of people who entered the South Slough Visitor Center for self-lead learning in the exhibits, a total of 237 individuals learned about estuaries and coastal watersheds.

These summary data are also submitted to NOAA as one of the required performance indicators to the National Estuarine Research Reserve's (NERR) performance measures database.

Visitation and Visitor Services

88 individuals entered the visitor center during the 12 days of this reporting period that the building was open, which is about 7 people per day. While the Reserve does not have the capacity to track visitors outside of building hours, or those who use the trails without entering the building, the Reserve's front desk administrator (Kathy Andreasen) kept anecdotal evidence of visitation with a count of vehicles that parked in the front lot each day. She cannot see cars that park in the lower lot or on the south trail system. Kathy counted 201 cars during the 34 days she spent in the office between April 8th and June 26th. Many parks use a count of cars to estimate visitation and use multipliers between 2.5 – 3.5 visitors per car, which yields about 500 – 700 visitors over this period. Public hours for the building prior to March 19 were 10:00am – 4:00pm, Tuesday through Saturday.

Formal Education & Training

The Reserve categorizes education program areas based on audiences and learning goals. “formal education” includes programs provided to pre-K-12 students, undergraduates, graduate students or teachers and teachers-in-training. Only 1 school program occurred between March 1 and March 11, when the schools closed. Jaime and Daniel visited 5 fifth grade classes at Siuslaw Elementary school to prepare them for field trips to the Reserve, which unfortunately were not able to be carried out.

After schools closed, the school systems worked hard to determine methods for distance learning that was equitable and meaningful for all students. Communication with teachers from several districts made it clear that schools, teachers and students were struggling to adjust to new conditions and not ready to incorporate external sources. Toward the end of the school year, teachers indicated that they would be interested in some virtual programming, so the education team is working on identifying opportunities to connect and provide both remote and in-school resources for those audiences in the fall. The team anticipates fewer or possibly no schools will be able to travel for field trips in the fall.

The Reserve partnered with Oregon Sea Grant and the Oregon Coast STEM Hub to provide a year-long training for a cohort of 18 teachers. The MWEs by the Sea: Diving Deeper workshop series was a 30+ hour training that aligned with the Teachers on the Estuary (TOTE) task that provides professional learning opportunities about the reserve research and estuarine systems for pre-service and non-formal teachers nation-wide. Three 1-hour virtual meetings were hosted during this period to provide support and identify ways that teachers could rework their implementation plans with students. Attendance varied from 3 to 9 teachers at the meetings. The training was completed on May 31, but some teachers will continue or begin to implement projects in the fall because they were not able to carry them out during the spring.

Community Education, Interpretive & Outreach Activities

Programs for general audiences in the community were greatly reduced while the education team worked to identify the best platforms and topics to reach our community audiences. 4 virtual programs reached about 60 people during the stay-at-home period. Determining the number and scope of people reached virtually can be challenging because it is harder to count heads and multiple people may be participating in the program from one household computer. The education team is keeping notes with all metrics to explain how numbers are determined. Programs offered included 2 stay-at-home stewardship programs geared toward teenage and adult audiences, 1 virtual Tide of the Toddlers session and part of the virtual camp-in-a-box program.

Public Involvement

Volunteers/Internships

An average of five South Slough Reserve volunteers/interns logged 488.5 hours valued at \$12,422 during the time of March 1- June 30, 2020. The program category breakdown included 5 education, 480.5 research/stewardship, and 3 administration hours. Volunteers have not been able to work in-person at the Reserve since mid-March.

Reserve volunteers are still in process of converting to the *Volgistics* record keeping system. Because the Reserve has been closed to the public not many volunteers have been accruing hours so they haven't had the opportunity to log hours. There is a plan to have a virtual in-

service meeting to encourage volunteer participation and offer training tips for when volunteer involvement can begin again safely.

This summer the Reserve is hosting one FOSS-sponsored intern and a Sea Grant summer scholar to assist with Summer Science camp. Other in-person recruitments were terminated since the Reserve is unable to safely offer housing due to the pandemic. The Reserve is also hosting two remote internships through the NOAA Hollings Scholar program.

Outreach/Marketing

The partnership group with Coos and Coquille watershed associations to seek funding for a communication plan is postponed for the time being due to the current restrictions.

The Public Involvement Coordinator (Deborah Rudd) supported the following outreach efforts during this quarter: the Second Saturday Stewards Virtual programming, monthly radio call-in interviews to promote virtual programming, co-participated with education staff to promote nature journaling and STEAM Education weeks, press releases and social media posts to the public with updates and messaging, a South Slough “Virtual Visits” Facebook campaign, promotion of summer science camps, and a summer newsletter.

Public Involvement activities were greatly impacted by the pandemic, which left Deborah with more time to dedicate to Reserve wide projects. Deborah took the opportunity to participate in on the job learning about range of topics, which improves her ability to communicate about the diverse range of work being conducted in the Reserve. Some activities included, monitoring marsh habitats-specifically beaver populations, soil elevations, and plant communities, aquatic invasive species-such as the European Green crab, using ArcGIS products in the field as a test for how volunteers may be able to use them in the future, and teaching children estuary science safely with health protocols.

SCIENCE PROGRAM UPDATE
March 20, 2020 – July 10, 2020

Staff: Dr. Shon Schooler, Research Coordinator
Alicia Helms, Estuarine Monitoring Coordinator
Jenni Schmitt, Watershed Monitoring Coordinator
Adam DeMarzo, Monitoring Technician
Dr. Alice Yeates, Stewardship Coordinator
Keary Howley, GIS Technician

MONITORING

NERRS System-Wide Monitoring Program (SWMP)

Ali Helms and Adam DeMarzo continued to operate the water quality, weather, and nutrient components of SWMP.

SWMP Data: Science staff completed monthly field and lab work associated with the water quality, meteorological and nutrient long-term primary monitoring stations. This included monthly and quarterly station maintenance, data uploads, instrument cleanings and calibrations, and data submissions to the NERRS SWMP Centralized Data Management Office (CDMO). Quarterly submissions for water quality and meteorological data were submitted May 2020. Annual 2019 weather and water quality data submissions were completed April – July 2020. SWMP 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 inventories. Data reviews for 2018 water quality were completed June 2020 and those data are authenticated, having undergone tertiary review and are now available as final authoritative data. System-Wide Monitoring Program data for the SSNERR and all other Reserves are accessible online at <http://nerrsdata.org>.

The science staff completed monthly weather station maintenance, data downloads, and field logs for March – July 2020 at Tom’s Creek marsh. The PAR sensor and rain gauge cables were damaged March 2020 and sensors/cables are being replaced. The SWMP weather station (sostcmet) real-time data are available at <http://cdmo.baruch.sc.edu/get/realTime.cfm>.

Science staff relocated the Charleston Bridge SWMP station in Spring 2019 due to the failing pier infrastructure. The new site is a nearby piling with boat access only. Deployments at the station resumed May 2019. A telemetry package (Storm 3) provided from the CDMO for equipment upgrades was received December 2019 and is being prepared for installation at this new site.

The science staff completed monthly collection, processing, and analysis for Total Suspended Solids (TSS), a nutrient parameter added to the routine SWMP nutrient dataset, for a NERRS Science Collaborative Sediment Hydrodynamic Model project.

The science staff completed monthly field deployments, retrievals, and calibrations for three Coos estuary SWMP water quality stations, and data were uploaded using the non-SWMP tool provided by the CDMO.

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 to provide real-time data available at www.nvs.nanoos.org/Explorer.

CDMO 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 29 reserves. Recent activities of the CDMO include supporting data management for SSAM1 vegetation monitoring, releasing a new telemetry application for internal troubleshooting use, and updating data management processes for older datasets (2007 and earlier) allowing them to be included in Annual SWMP status reports.

The CDMO provides data hosting for secondary SWMP stations that are established and maintained in addition to the core primary 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, the station must be planned for long term monitoring (at least 5 years), and the station must follow all SWMP protocols and be reserve run in every respect. SSNERR has three water quality stations that may be eligible for secondary SWMP status in the future. Science staff currently utilize the non-SWMP data upload service tool for the Coos estuary water quality stations to provide automated quality control and formatting for the monthly data files.

SWMP Status Reports: The Reserve system developed tools for creating Annual Status Reports on water quality, nutrient, and weather summaries for each Reserve. The CDMO provides the R software package for download and updates files annually.

Estuary pH Monitoring: Field deployments of the Sami $p\text{CO}_2$ and SeapHOx pH monitoring instruments near the Valino Island SWMP station were completed September 2019. The final batch of water grab samples used to check sensor performance and calibrate the pH data were delivered May 2020 to Burke Hales' lab at Oregon State University for analysis of carbonate chemistry parameters. Data analysis for the $p\text{CO}_2$ and pH time series (2015-2019) at Valino will be coordinated with datasets collected at the Charleston Bridge station for Caitlin Magel's (Oregon State University) project.

Bacteria Monitoring: Staff continued monthly monitoring of fecal indicator bacteria (total Coliforms and *Escherichia coli*) at the four SWMP nutrient monitoring stations. The bacteria data are of interest for the Coos Bay Estuary Data Source, Oregon Department of Environmental Quality for Total Maximum Daily Load standards and to

Oregon Department of Agriculture as they conduct commercial and recreational shellfish bacteria assessments.

Volunteers from the Surfrider Foundation temporarily discontinued to use the lab for their monthly monitoring of fecal indicator bacteria (*Enterococcus sp.*) at four local beach sites (Bastendorff Beach, Lighthouse Beach, and two Sunset Bay locations: Big Creek and Sunset Bay proper) due to COVID-19 restrictions.

Climate Reference Network: The NOAA Climate Reference Network station at Frederickson Marsh continued hourly data transmissions and staff completed maintenance for the station rain gauges in Spring 2020. Annual station maintenance (usually Summer) will be scheduled for completion by NOAA staff. Data are available for this station (OR Coos Bay 8 SW) at: <https://www.ncdc.noaa.gov/crn/current-observations>.

SeagrassNet Monitoring: SSNERR science staff completed quarterly eelgrass sampling at Valino Island in April and July 2020 using the SeagrassNet sampling protocol. SeagrassNet is an international monitoring program established to document the status and health of seagrasses. Eelgrass has been declining at these permanent monitoring plots since 2016 and science staff and collaborators are working on projects and research proposals to understand factors that may be contributing to the declines in eelgrass in South Slough.

Northwest Association of Networked Ocean Observing Systems (NANOOS): The 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>.

In June 2020, the progress report for estuarine water quality observations at South Slough was submitted.

Science staff Adam and Ali are currently working on the next 5 year award (FY21-25) statement of work, budget, budget justification, and letter of commitment due 8/10/20. Science staff have also reached out to potential partners to notify them of the NANOOS process for submitting applications for new efforts for the next 5 year award cycle, due 7/28/20.

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 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 SWMP water quality and water level data with biological data quantifying other factors (e.g., marsh elevation, plant

community, vertical accretion, soil salinity, groundwater level) to help interpret long term changes in emergent marsh plant communities, eelgrass beds, and Sitka spruce forest.

Water level and temperature loggers were deployed in January 2020 at two of the Sentinel Sites where summer marsh monitoring will occur. Additional salinity loggers were deployed at one site (Metcalf Marsh) for an initial analysis of groundwater salinity.

Annual vegetation monitoring at 4 eelgrass sentinel sites (Collver, Valino, Hidden, Danger) was completed June-July 2020 by science staff and Summer Oregon SeaGrant scholar, Lucas Parvin. Eelgrass is persisting at low abundance and density at the Collver (avg 20% cover, 38 shoot/m²) and Valino (avg 4% cover, 8 shoots/m²) sites, but remains absent at the upper estuary sites (Hidden, Danger).

A tide gauge with water level sensor is deployed in Winchester Creek, near the Hidden Creek marsh sentinel station to collect high-precision (mm) water level data to meet requirements of the South Slough's Reserve Sentinel Sites project goals. In Summer 2020, staff will be lowering the deep support clamps, part of the infrastructure to keep the sensor stable, establishing elevation for one of the tidal benchmarks, working with NOAA contacts to create a program for collecting the sensor data, and planning for leveling surveys to the sensor from benchmarks. The water level logger will be directly correlated with elevation using the Global Navigation Satellite System (GNSS) network by surveying it to five deep rod benchmarks, following Center for Operational Oceanographic Products and Services (CO-OPS) guidelines.

Wasson Watershed Monitoring:

Science staff have nearly completed baseline monitoring of the Wasson Creek lowlands, in preparation for anticipated restoration work. Science staff and interns conducted simultaneous GPS occupations at benchmarks at Wasson and the control marsh, Tom's Creek. In January, staff deployed 10 additional water level data loggers for a total of 23 at Wasson and Tom's Creek. As funding becomes available, staff will continue to purchase depth and temperature loggers to place inside each well for hydrology information (39 wells will be full build-out). Staff also relocated groundwater wells and vegetation plots at nearby Anderson Creek. Wells were pumped to verify they still functioned properly, and eight water level loggers were deployed to begin collecting data nearly 20 years after restoration of this site was complete. Results will help inform the Wasson restoration project.

Indian Point Monitoring:

Staff continue to monitor western lily populations and track changes to herbaceous, shrub and tree cover metrics related to the restoration work. Staff continue to collect water level and temperature groundwater data at the restoration site in order to gauge how tree thinning affected groundwater levels in the treatment area. Groundwater data are retrieved quarterly and last downloaded January 2020.

Lamprey Monitoring:

South Slough watershed hosts at least two native species of lamprey; however, we do not have adequate data to evaluate the status of lamprey anywhere in the Coos watershed. Beginning in 2016, science staff began to collect data to understand which streams in the South Slough watershed contained lamprey using lamprey electro-shocking units. Staff surveyed all the major freshwater tributaries of Winchester Creek, providing a general understanding of presence/absence for each tributary. In summer of 2018, staff and partners set up permanent plots at three locations on Winchester Creek to help determine status and long-term population trends of each species. Staff also completed range limit extent surveys on the four major arms in Winchester Creek.

In addition, the Reserve is currently leading a citizen science project (funded from a USDA-USFS grant) that is starting to map lamprey species distributions in south coast Oregon watersheds, including more in the South Slough watershed. Schooler and Schmitt are part of a statewide Lamprey Technical Workgroup.

RESEARCH

SSNERR Projects

Invasive European Green Crabs in the Coos Estuary:

This year marks the fifth year of research on European green crabs in the Coos Estuary, including South Slough. We have completed the June 2020 sampling at 10 sites around South Slough and Coos Bay and July and August samples will be completed in the coming months. The overall goals of the work are to: 1) compare the relative abundance of green crabs and native crabs in the estuary across years and locations, 2) examine linkages between environmental conditions and green crab abundance, 3) study the potential impacts of green crabs on native species, 4) better understand the life-cycle of green crabs in Oregon estuaries, and 5) generally reduce green crab abundance through consistent and repeated sampling.

Generally, we sample in the summer months. However, due to public interest (observing more green crabs when trapping for Dungeness crabs) in Feb 2020 we started a Citizen Science program for monthly green crab trapping at 2 locations in Coos Bay. Partners for this on-going work include Oregon Sea Grant, Oregon State University, University of Oregon, Oregon Department of Fish and Wildlife, Pacific States Marine Fisheries Commission, and Friends of South Slough Reserve.

DNA Methods to Monitor Invasive Species and Biodiversity in Estuarine Systems:

The Reserve is partnering on a research project funded through the NERRS Science Collaborative to use DNA collected from environmental samples (known as eDNA) to characterize fish biodiversity in estuaries. The project includes researchers from University of New Hampshire and from the Great Bay (NH), Apalachicola (FL), He'eia (HI), Hudson (NY), and Wells (ME) NERRs. In 2019 we created a sample design to look at the most effective method to use eDNA to annually monitor South Slough fish diversity. We are currently waiting on final results of DNA analyses to determine the use

of this method to monitor fish species presence and diversity in South Slough over time. In addition, in Feb 2020 we submitted a proposal to continue this research (see proposals below).

Eelgrass restoration in South Slough:

We are starting a new experiment in July to look at eelgrass transplanting success along an elevation gradient to better understand the potential to restore eelgrass to South Slough. We will transplant eelgrass shoots from Clam Island into three 0.25m² plots within each of four elevations (high, medium, low intertidal and subtidal). We will then monitor these plots to determine success over time.

Margaret A. Davidson Fellow Research:

Three data modeling projects, prioritized by the Eelgrass Recovery Advisory Committee (established 2019 through NSC Capacity Building) to understand drivers of the eelgrass declines before implementing larger scale restoration projects, are utilizing SWMP weather and water quality data to understand what environmental factors may be contributing to the declines. These graduate students are being partially supported by funds from NOAA, dedicated for the establishment of the new NERRS Margaret A. Davidson graduate research fellowship program.

Winter-Summer 2020: Maria Jose Marin Jarrin, a graduate student from University of Oregon (Dave Sutherland's lab) is interested in connectivity between Coos Bay and South Slough estuary, and the role of water residence time on abundance of species like native oysters, crabs, and eelgrass. For eelgrass, she is exploring retention time of anomalously warm water temperatures and low river discharge contributing to the eelgrass losses. She delivered a presentation on this project at the Ocean Sciences meeting in San Diego, CA in February 2020. She is also working on establishing eelgrass environmental thresholds for Oregon.

Spring-Summer 2020: Winni Wang, a graduate student from Oregon State University, (Ryan Mueller's lab) is applying MAXENT species distribution modeling to understand environmental drivers of the eelgrass declines. Keary Howley (GIS Specialist) has contributed GIS expertise related to the modeling package and other aspects of the project.

Summer-Fall 2020: Caitlin Magel, a graduate student from Oregon State University, (Sally Hacker/Francis Chan labs) is using Path analysis modeling techniques to understand water quality drivers contributing to eelgrass declines in the South Slough estuary.

The Reserve's first official M.A. Davidson Fellow has been selected through NOAA's inaugural competitive fellowship process. Notification of fellowship awards is forthcoming from NOAA and the fellow is scheduled to start in September 2020.

Partner Projects

Partnership for Coastal Watersheds (PCW):

The PCW is a local group of civic-minded community members that includes representatives from South Slough Reserve, Coos County Planning Department, Cities of Coos Bay and North Bend (planning and city council), Coquille Indian Tribe, Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians, South Coast Development Council, Stuntzner Engineering (planning), Coos Watershed Association, Department of Land Conservation and Development, Southwestern Oregon Community College, Oregon Department of Fish and Wildlife, US Fish and Wildlife Service, International Port of Coos Bay, Oregon Department of Environmental Quality, and citizens at large. Currently the group has largely focused on helping Coos County and city jurisdictions update the Coos Bay Estuary Management Plan, which is based on 40-year old information and technology.

The PCW meets monthly. Since the last commission meeting, the PCW prioritized several ‘next steps’ directions for the group to head next:

- Facilitate development of a coastal hazards vulnerability assessment and adaptation planning effort, including climate change related hazards. Several proposals were submitted to achieve this including a NERRS Science Collaborative proposal to conduct a community-level needs assessment to understand how organizations around the area are (or aren’t) incorporating climate change into their strategic plans (see Grant Proposal section below), and a two-year FEMA Cooperating Technical Partners proposal to develop the vulnerability assessment and adaptation strategies including assessing risks to economic, social and natural resource systems. The project team was notified in February 2020 that the latter was being awarded funding.
- Explore mitigation banking options for the Coos estuary. The PCW is working with DSL mitigation specialists to understand various mitigation bank processes, scope and potential opportunities in this area.
- Continue to fill data gaps. Through each project the PCW leads, data gaps are identified and the group identifies opportunities to fill those gaps. Currently, the PCW is interested in developing and refining a restoration inventory for the Coos estuary (see Grant Proposal section below).
- Continue to leverage the PCW collaborative process. The PCW continues to be a sounding board for researchers doing work around the Coos estuary. Most recently, University of Oregon professor Dave Sutherland is leading a proposal to better understand sedimentation and temperature in the Coos estuary (see Grant Proposal section below) and will create end products iteratively with the PCW.

For more on the PCW and its current work, visit their website:

<http://www.partnershipforcoastalwatersheds.org/>

Ocean Acidification (OA) and effects on macrophyte communities:

The Reserve provided assistance to Oregon State University graduate student Caitlin Magel (advisors Francis Chan and Sally Hacker) for her research investigating the role of eelgrass in mitigating OA stress. Caitlin deployed a SAMI CO₂ sensor and a SeaFet pH sensor near the Charleston SWMP station to collect time-series partial pressure carbon dioxide and high-resolution pH monitoring data from 2016-2019. She exchanged sensors monthly, and science staff coordinated with her for field site access by boat. She surveyed eelgrass, macroalgae, and epiphytes at three sites in the Coos estuary: Barview, Valino Island, and Danger Point. She collected data in three additional estuaries in OR (Netarts Bay, Yaquina Bay) and WA (Willapa Bay). She completed her final instrument deployments and eelgrass/macroalgae sampling in South Slough at the end of August 2019 and is currently working on data analyses for completion in Fall 2020.

Tillamook Bay Ocean Acidification and Hypoxia (OAH) Monitoring:

Oregon Watershed Enhancement Board (OWEB) funded a project to establish baseline information on carbonate chemistry and spatiotemporal patterns of OAH in Tillamook Bay, OR. Collaborative partners include Tillamook Estuaries Partnership (TEP), Oregon State University, Environmental Protection Agency, Oregon Department of Fish and Wildlife, and the South Slough Reserve. York Johnson (TEP and DEQ) established monitoring sites for SeaFet pH sensors in Tillamook Bay with field deployments for the Spring season beginning April 2020.

Hydrodynamic Model of Coos Estuary:

This project, led by David Sutherland (University of Oregon) and David Ralston (Woods Hole Oceanographic Institution), has resulted in a hydrodynamic model for the Coos estuary to characterize present-day sediment distribution, surface and bottom salinity, monitor sediment fluxes to the estuary, and model how circulation and sediment patterns in the estuary will respond to change. SSNERR is involved in collecting sediment data, providing data from water quality and Sentinel Site stations, and facilitating end-user discussions between the project team, end-users (i.e., Coos County, Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, Oregon Institute of Marine Biology, SSNERR) and other stakeholders through the Partnership for Coastal Watersheds. This project has created a much-needed bathymetry spatial layer for the Coos estuary, modeled areas of potential eelgrass habitat for the Coos estuary based on depth (i.e., light attenuation in the Coos estuary) and salinity; created summer-steady and winter-steady salinity profiles (depth-averaged, surface, and bottom); and, modeled comparisons from present day Coos Bay at different river discharge values with historic bathymetry, and future proposed channel deepening and widening bathymetry. The newest suite of products are models of native oyster settling locations, with an end goal to understand best likely opportunities for future native oyster restoration.

In April 2019, Sutherland, Ralston, several graduate students and Jenni Schmitt submitted a paper to the journal *Estuaries and Coasts* entitled “Impacts of 150 years of shoreline and bathymetric change in the Coos Estuary, Oregon, USA”. The paper describes results from model runs comparing present day Coos Bay at different river discharge values with historic bathymetry, and future proposed channel deepening and widening bathymetry. The manuscript has undergone review and was accepted pending revisions. The revised

manuscript was resubmitted January 2020 and is now published.

Is marsh surface tracking sea level change? Developing tools and visualizations for NERRS Sentinel Site data:

This project was led by Kim Cressman (Grand Bay NERR, MS) in collaboration with team members at Padilla Bay NERR (WA), Mission-Aransas NERR (TX), Delaware NERR, Waquoit Bay NERR, and South Slough NERR. This project has created standardized tools to quality-check Sentinel Site Surface Elevation Table (SET) data, perform trend analyses, and produce informative visualizations for varied audiences. The technical team (represented by Jenni Schmitt for SSNERR) focused on creating quality-control (QC), analysis tools, and outreach products. Final products included site-specific trend analyses, visualizations, and a national synthesis of surface elevation change vs. sea level trends. This project, funded by the NERRS Science Collaborative, was finalized February 2020.

Native Olympia Oyster Collaborative (NOOC) (<https://olympiaoysternet.ucdavis.edu>):

This Collaborative group, formed through a 2019 NERRS Science Collaborative catalyst project led by Kerstin Wasson and April Ridlon (Elkhorn Slough NERR), completed a synthesis of success of past Olympia oyster restoration projects to share lessons learned and to identify the practices and environmental conditions that predict the best restoration outcomes. The NOOC in partnership with the Pew Charitable Trusts is creating maps of current and historic oyster distributions across the range of the Olympia oyster to inform conservation and restoration strategies. In July 2020, South Slough contributed five native Olympia oyster restoration projects conducted from 2008 - 2014 in the Coos estuary for the 2020 maps.

GRANT PROPOSALS

South Slough staff are working with PCW members to write and submit several grant proposals to further their work:

- Craig Cornu (Institute for Applied Ecology) submitted a proposal to the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) to refine the Coastal and Marine Ecological Classification Standard (CMECS) habitat classification for the Coos estuary from the state-scale it's currently at, to a high-resolution local scale. The proposed work will then use the refined habitat classification to finalize a Restoration Opportunity Inventory for the Coos estuary. This proposal was recommended for funding; however, the funding threshold for PMEP is likely below what will be needed to fund this project. Alternative funding options are being explored.
- Haley Lutz (Coos Watershed Association) submitted a proposal to the NERRS Science Collaborative to conduct a listening tour to stakeholders of the Coos estuary (including local municipal and private organizations) to understand local awareness of coastal hazard vulnerabilities, understand priority coastal hazards concerns, and determine what plans are being developed or actions are being taken to address those concerns. Funding would also include resources to build a dedicated website for the Data Source. Funding notifications will occur July 2020.

South Slough staff are collaborating with local, regional and national partners and have submitted the following NERRS Science Collaborative proposals. We expect to receive notification on which proposals will be funded sometime this month (July 2020).

- University of Oregon researcher Dr. Dave Sutherland is leading a NSC Collaborative Research proposal to understand sediment and temperature effects on native oysters and eelgrass in the Coos estuary.
- Craig Cornu (Institute of Applied Ecology) is leading a NSC Collaborative Research project proposal to continue research on blue carbon in tidal wetlands of the PNW.
- Chris Peter (Great Bay NERR, NH) is leading a multi-reserve NSC Collaborative Research project to conduct a national synthesis of tidal marsh vegetation responses to sea level rise, which is leveraging Sentinel Site and SWMP data collection.
- Dr. Brooke Sullivan (University of Washington; Back to Nature Designs) is the project lead for a NSC Catalyst proposal to develop an eelgrass restoration research implementation plan for the South Slough estuary and pilot restoration techniques. Catalyst project selections will be later in July 2020.
- Dr. Sylvia Yang (Padilla Bay NERR, WA) is the project lead for a NSC Catalyst proposal to develop techniques for eelgrass restoration by seed. Catalyst project selections will be later in July 2020.
- Dr. Kari St. Laurent is leading a NSC Catalyst proposal to examine wetland decomposition rates across 26 Reserves.
- Dr. Alison Watts (University of New Hampshire) is leading a NSC Catalyst proposal to continue eDNA research to look at use for monitoring fish community diversity at multiple Reserves.
- Dr. Catherine de Rivera (Portland State University) is leading a NSC Catalyst proposal to examine public and stakeholder perceptions of tidal wetland restoration activities.

VISITING RESEARCH SUPPORT

Reserve staff are collaborating with graduate student Caitlin Magel (OSU) to analyze pCO₂/pH time-series from sensors in South Slough estuary deployed near the Charleston Bridge and Valino Island SWMP stations. Science staff are working with Burke Hales for grab sample analysis. Science staff have provided SWMP nutrient, weather, and eelgrass and macroalgae datasets (2004-2020) for her research in preparation for her Fall 2020 defense.

The SSNERR is a field location for Oregon Department of Fish and Wildlife's adult mosquito abundance trapping program, to be used as a reference comparison to restored marshes in the Coquille valley. Trapping began in June 2018 and is expected to continue through 2022. ODFW staff have also agreed to sample Wasson Creek for the SSNERR restoration project at SSNERR staff request. This sampling will help us understand the effect of marsh restoration projects on mosquito populations.

INTERNSHIPS

NOAA Ernest F. Hollings Scholars – participating virtually due to COVID-19:

Annaliese Schrandt (Eckerd College, FL) is analyzing restoration data from Anderson Marsh and comparing with reference site (Tom’s Creek Marsh) and an impacted future restoration site (Wasson Creek Marsh). She is comparing the hydrology, vegetation and beaver activity among the three sites.

Sommer Meyer (University of Rochester, NY) is evaluating sensitivity of South Slough secondary sentinel marsh sites to sea level rise using the Marsh Resilience to Sea Level Rise (MARS) tools developed by a previous NERRS Science Collaborative project in 2016. She is also developing a pre-restoration eelgrass summary for the NERRS Restoration database. She is working with Jaime Belanger and Daniel Dobrosielski (Reserve Education staff) to develop outreach materials for the MARS synthesis, including marsh and eelgrass habitat. For the first part of her project, she completed 2019 NERRS Vegetation templates for SSNERR Sentinel Site tidal marsh and eelgrass data from 2010, 2011, and 2015-2019 for submission to the CDMO in 2020.

Research Experience for Undergraduates Program (National Science Foundation):

The Reserve science program selected final candidates for participation in OIMB’s REU program (“Exploration of Marine Biology on the Oregon Coast”) to mentor two undergraduate students (one from a 2 year college and one from a 4 year college) for Summer 2020. The OIMB REU program was cancelled in May 2020 after careful consideration and current University of Oregon restrictions related to COVID-19.

STEWARDSHIP

Wasson:

Dr. Alice Yeates (Stewardship Coordinator) continues to work with the Coos Watershed Association to move the Wasson Restoration Project forward. We are continuing to develop the Wasson Technical Advisory Team with representatives from the following groups: Bureau of Land Management (BLM), Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians (CTCLUSI), Coquille Indian Tribe, Coquille Watershed Association, Institute of Applied Ecology, National Oceanic and Atmospheric Administration (NOAA), OR Dept. of Fish and Wildlife (ODFW), OR Dept. of Forestry, OR State University, OR Watershed Enhancement Board (OWEB), U.S. Fish and Wildlife Service (FWS), and U.S. Forest Service. The Reserve applied for the OR/WA Forest and Woodland Resource Management Grant offered by the BLM; the application is under internal review.

Invasive Species:

The Second Saturday Stewardship Program (launched in February 2020), which aims to combine public education with conservation action, was adapted during this period. Due to COVID19 this program ran virtually for two sessions (May/June) encouraging stay-at-home stewardship, focusing on the removal of invasive plants from backyards and replacement with native species. Local partners provided expert panelists and presenters including Lucy Allison (Coos Watershed Association), Goldie Warncke (Coquille Watershed Association), Jeannie Standley (retired BLM), Ashley Russell (CTCLUSI), Samantha Clayburn (OSU Extension Master Gardeners) and Darcy Grahek (Stillwater Natives Nursery).

Research:

Alice is working with the Research Coordinator (Shon) and the Watershed Monitoring Coordinator (Jenni) to examine tall wheatgrass (*Thinopyrum ponticum*) population change and impact on Bull Island. Although the literature suggests low invasion risk of this exotic species in natural areas nor great impacts, few studies have directly examined this. Tall wheatgrass established a dense population in this high marsh area between 2012 and 2018. Reserve staff are aiming to better understand the spread and impact along with establishing appropriate management methods, if required.

Communication:

Alice continues to collaborate with local invasive species partners and with the public, through such programs as described above.

Mapping and planning:

Staff continue to map invasive plants and request Tribal permission to disturb the soil during management. Alice is developing an invasive species management plan and working with the GIS Specialist (Keary Howley) to improve mapping methods. Alice contributed to the Great Scotch Broom Census as part of the Scotch Broom Ecology and Management Symposium June 2nd-4th 2020.

Management:

Staff continue to remove invasive plants from the Reserve. Two populations of scotch broom (Indian Point and Dalton Creek) were cut in May and gorse seedlings are regularly removed at Indian Point.

Endangered Species Projects:

See Indian Point Monitoring section above regarding the endangered lily restoration.

Trash and Marine Debris:

Reserve staff continue to remove trash and marine debris from within the South Slough Watershed, however public programs have been cancelled due to COVID19. The Second Saturday Stewardship program focusing on marine debris (March session) has been postponed to 2021. The reserve is researching trash receptacles for the Big Cedar parking area, to reduce trash on the trails.

Visitor Center Forest Enhancement:

Benefits from the Visitor Center Forest Enhancement project continue as Port-Orford-cedar logs were made into benches and installed by Mike Allman (Maintenance Lead) outside the Visitor Center and along the ten-minute trail.

Raingarden Establishment

The Visitor Center raingarden (funded through the 2019 NOAA PAC award) is thriving and interpretive signs have been installed, along with the above-mentioned bench.

Hayward Inlet Management Area

Swanson Ecological conducted an inventory and assessment of the Hayward Inlet Management Area, which borders Salal Lane, for inclusion in the Upper Watershed Restoration Action Plan (developed in 2009). The document includes suggested management actions for fuel reduction and promotion of valuable ecological conditions, such as old growth forest and early seral habitat.

OTHER SCIENCE PROGRAM ACTIVITIES

Committees and Workgroups

SWMP Oversight Committee:

Shon Schooler continues to serve on the SWMP Oversight Committee. This committee provides oversight of SWMP plans and can intervene if SWMP protocols are not being met by individual Reserves.

SWMP Guidance Committee:

Ali Helms serves on the SWMP Guidance Committee (current members: Dwight Trueblood, Mary Culver, Suzanne Shull, Chris Kinkade, Jennifer Harper, Joan Muller, Matt Ferner, Ali Helms, Robin Weber, and Steve Baird) formed in 2010 to provide strategic planning and oversight of the SWMP program. The committee revised the SWMP Plan for 2019 with the final draft submitted to the NERRS Data Management Committee for review.

NERRS Sentinel Site Application Module (SSAM-1) Oversight Committee:

Jenni Schmitt and Ali Helms are on this NERRS committee, which was formed to develop SSAM-1 outreach strategies, review outreach products from the Marsh Resilience (MARS) report card, integrate remote sensing/habitat mapping into Sentinel Sites, review Sentinel Site plans, develop Centralized Data Management Office (CDMO) data templates for vegetation and sediment data, and manage inventory of SSAM-1 equipment, capacity building and data acquisition. The group met in Fall 2019 to develop a draft "least common denominator" (LCD) for Sentinel Site monitoring to articulate expectations for minimum monitoring protocols to standardize datasets for site, regional and national synthesis, and to justify the need for an increase in the SWMP budget to support on-site monitoring, data analysis, and data maintenance and dissemination through Centralized Data Management Office (CDMO). Comments from NERRS sectors and staff were incorporated before the document was sent to Reserve managers in March

2020. In June 2020, the Committee formed an SSAM-SAV workgroup. In July 2020, a subset of the Committee met to discuss the LCD protocols for CTP and Outreach inclusion.

Sentinel Site Biomonitoring Workgroup:

Jenni Schmitt is part of this workgroup, which develops and oversees implementation of national vegetation monitoring protocols and reviews vegetation monitoring datasets submitted to the CDMO. The group is currently updating the Biomonitoring Protocols and data template. For the latter, they are working with CDMO staff to ensure the template does not over commit their staff capacity while allowing for a much more careful and consistent review of biomonitoring data.

Sentinel Site Submerged Aquatic Vegetation (SAV) Biomonitoring and Mapping Workgroup:

Ali Helms joined this workgroup Summer 2020 to develop and provide input on protocols for implementing national vegetation, mapping, and mudflat sediment dynamic monitoring in SAV (i.e. eelgrass) habitats.

NERRS Habitat Mapping and Change Classification Review Team:

Jenni Schmitt is part of this team to apply a three-tiered review system for habitat mapping products submitted by each reserve. Habitat maps standardize the way high-resolution land cover data (wetland, aquatic, and upland habitats) are classified within the NERRS.

NERRS Stewardship/GIS sector planning team member:

Jenni Schmitt has been selected to help plan the virtual and in-person meetings for the NERRS Stewardship/GIS sector. Initial planning discussions commenced in February 2020.

NERRS Bivalve Working Group:

Shon Schooler continues to serve on the NERRS Bivalve Working Group with Brandon Puckett, North Carolina NERR; Nikki Dix, Guana Tolomato NERR; Kerstin Wasson, Elkhorn Slough NERR; and Jeff Crooks, Tijuana NERR.

NERRS Coastal and Ocean Acidification (COA) workgroup:

Ali Helms participated in the NERRS COA workgroup, formed in December 2019, to share ideas, resources, best practices for monitoring, and partnerships to collaborate on ocean and estuarine acidification monitoring activities across the Reserve system. The workgroup is led by Kari St Laurent at the Delaware NERR, and held monthly calls March-July 2020 with presentations from OA researchers.

NERR Science Collaborative Advisory Committee:

Shon Schooler continues to serve on the NERR Science Collaborative advisory committee along with a large national group of members. This group advises the NERR Science Collaborative team currently based at the University of Michigan.

Pacific and Estuarine Research Society (PERS) Board:

Jenni Schmitt is the Oregon at-large representative for PERS. PERS is the regional chapter of the Coastal and Estuarine Research Federation (CERF). Schmitt was working with president-elect Liz Perotti (ODFW) and others on the board to plan a joint PERS/ California Estuarine Research Society meeting in Florence, Oregon for April 2020, but the meeting has been indefinitely postponed due to COVID-19.

Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) Eelgrass Advisory Committee:

Ali Helms joined this regional workgroup in July 2020 for providing technical input and expertise from an Oregon perspective related to eelgrass habitats. In July 2020, the workgroup released an RFP to Synthesize Eelgrass Restoration Techniques funded through the Pew Charitable Trusts and administered by the Friends of South Slough with applications due 7/31/20.

Oregon Lamprey Technical Workgroup:

Shon Schooler and Jenni Schmitt sit on this advisory committee of the Conservation Agreement for Pacific lamprey in Oregon. The group recently met in December 2019 to discuss updates on conservation initiative, subgroup updates (tagging, contaminants, ocean, engineering criteria, genetics/eDNA, BMPs for minimizing impacts during stream disturbing activities, and restoration), standardizing white paper formats, lamprey terminology and larval lamprey survey and salvage protocols.

South Coast Lamprey Working Group:

Jenni Schmitt and Shon Schooler are on the steering committee for this workgroup, which works to help identify key information for lamprey management at regional, state, and local scales and identify opportunities for future work.

DSL GIS User's Group:

Jenni Schmitt and Keary Howley are the South Slough representatives of this team, which is tasked with identifying GIS and geospatial technology needs and solutions for DSL.

Coos Watershed Association Technical Advisory Committee:

Jenni Schmitt, Alice Yeates, Shon Schooler, and Ali Helms participate on this committee to provide technical feedback on a variety of upcoming or ongoing restoration projects.

South Slough Safety Committee:

Shon is the Science Program representative on the newly re-formed SSNERR Safety Committee. They are finalizing safe boating protocols for the SSNERR motorized boats and paddlecraft.

Publications (June 2019 – July 2020)

Thomas MD, Schram JB, Clark-Henry ZF, **Yednock BK**, Shanks AL, Galloway AWE. 2020. Juvenile Dungeness crabs (*Metacarcinus magister*) selectively integrate and modify the fatty acids of their experimental diets. *Phil. Trans. R. Soc. B* 375: 20200038. <http://dx.doi.org/10.1098/rstb.2020.0038>

Alice G. Yeates, James B. Grace, Jennifer H. Olker, Glenn R. Guntenspergen, Donald R. Cahoon, Susan Adamowicz, Shimon C. Anisfeld, Nels Barrett, Alice Benzecry, Linda Blum, Robert R. Christian, Joseph Grzyb, Ellen Kracauer Hartig, Kelly Hines Leo, Scott Lerberg, James C. Lynch, Nicole Maher, J. Patrick Megonigal, William Reay, Drexel Siok, Adam Starke, Vincent Turner, Scott Warren. 2020. Hurricane Sandy Effects on Coastal Marsh Elevation Change. *Estuaries and Coasts* (2020). <https://doi.org/10.1007/s12237-020-00758-5>.

Eidam, E., Sutherland, D., Ralston, Dye, B., Conroy, T., **Schmitt, J.**, Ruggiero, P., and J. Wood. 2020. Impacts of 150 Years of Shoreline and Bathymetric Change in the Coos Estuary, Oregon, USA. *Estuaries and Coasts* (2020). <https://doi.org/10.1007/s12237-020-00732-1>

Carolyn Prentice, Katrina L. Poppe, Mira Lutz, Erin Murray, Tiffany A. Stephens, Angela Spooner, Margot Hessing-Lewis, Rhea Sanders-Smith, John M. Rybczyk, Jude Apple, Fred Short, Jeff Gaeckle, **Alicia Helms**, Catherine Mattson, Wendel Raymond, Terrie Klinger. 2020. A synthesis of blue carbon stocks, sources and accumulation rates in eelgrass (*Zostera marina*) meadows in the Northeast Pacific. *Global Biogeochemical Cycles*, 34, e2019GB006345. <https://doi.org/10.1029/2019GB006345>
*Adam DeMarzo and interns Ryan Scott, Madeline Poethke & Tanner Diebold helped collect, carry, and process heavy cores from field sites to lab.

Wasson, K., K. Raposa, M. Almeida, K. Beheshti, J. A. Crooks, A. Deck, N. Dix, C. Garvey, J. Goldstein, D. S. Johnson, S. Lerberg, P. Marcum, C. Peter, B. Puckett, **J. Schmitt**, E. Smith, K. St. Laurent, K. Swanson, M. Tyrrell, and R. Guy. 2019. Are Crabs Killing the Nation's Salt Marshes? *Bull Ecol Soc Am* 100(4):e01600. <https://doi.org/10.1002/bes2.1600>

Liz Boulding, **Shon Schooler**, Sylvia Yamada, Alan Shanks. 2020. Periodic invasions of BC by the lined shore crab, *Pachygrapsus crassipes*, following El Niño events and forecasted effects of a permanent range extension on poorly-dispersing indigenous species (*Littorina* spp.). *Canadian Journal of Zoology*. Accepted and in press.

Coastal Training Program

Sabra Comet, Coastal Training Program Coordinator

May 19 through July 16, 2020

Our new CTP coordinator is Sabra Comet – she most recently comes from NOAA headquarters in Silver Spring, MD. She has a B.S. in Zoology from Southern Oregon University, a Master’s in Environmental Management from Portland State University, and has worked with indigenous communities both as a researcher and tribal government staff with tribes in northern California and coastal Oregon.

Since the effects of COVID will be with us for the foreseeable future, Sabra is concentrating on topics and trainings that can be done virtually for the next 12 months. Looking further into the future, workshops that require in-person engagement, activities, and site visits are being discussed with partners, but will stay in the planning stages until such gatherings are feasible again.

Sabra has been contacting partners via a list left by John Bragg and conducting one-on-one and small group interviews getting to know the partners and their programs, and what topics are of interest for future CTP workshops. The interviews are ongoing, but when completed will be compiled into a list of potential workshop topics. From there the topics will be broken down into which workshops can take place within 2020 (virtually), and which will be offered further down the line creating a planning list for workshops for the next three years. The list will be a living document, responsive to new priorities and concerns from partners.

The conversations with partners are also generating ideas for projects that the CTP coordinator may be able to offer technical assistance, such as facilitating non-Reserve workshops, infographics, and virtual platform hosting how-to’s.

Date: 8 July 2020

From: Board of Directors, Friends of South Slough Reserve (FOSS)

To: South Slough Management Commission

Re: Activities Report to Commission and interested Public

Since our last meeting with the Management Commission, the Friends of South Slough Reserve Board of Directors has continued to provide support for the South Slough Reserve, much of this remotely. The following are summaries of activities.

Annual Meeting of Members:

We held our annual FOSS meeting in February and approved a revised by-law to meet the new guidance from the Oregon Department of Justice. We elected officers, and transferred fiduciary authority to the following members of the board of Directors:

- President: Christine Moffitt
- Vice President and Treasurer: Todd Buchholz
- Secretary: Maggie Bartholomew

Visitor Center Bookstore:

Before the emergence of COVID-19, we had determined to reduce the scope of the bookstore operations to provide more flexibility in the space allotted and reduce staffing needs. With the emergence of COVID-19 and closing of the VC to public we removed all product, and began a reassessment of the material on display, with a goal of downscaling the bookstore to a sustainable size and perhaps provide a flexible inventory, depending on the time of year. Regardless, these retail guidelines would have to fit those of the state of Oregon for retail operations.

Pledge of Financial Support for Land acquisition:

We pledged \$25,000 as match donation support for a proposal to acquire key property segments at the entrance of the reserve from Seven Devils Road. We will wait for all processes to be completed to initiate this transfer.

Strategic Planning and Meetings of the Board:

We have held virtual meetings of our Board to discuss strategic planning and program support via Zoom. The themes remain Policy, Resources, and Funding. Re-envisioning of the bookstore will be part of the revised strategic plan. We have hired a new bookkeeper and have moved to Quick Books On-Line accounting systems to allow for virtual assessment and booking operations.

Collaboration with PMEP and PEW

FOSS was invited to participate in a collaboration with the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP), and the Pew Charitable Trusts to support a synthesis of Eelgrass Restoration Techniques across the Pacific West Coast states of Washington, Oregon, and California. The funding contract for FOSS was put in place on 8 July 2020, and a request for

proposals for the synthesis product is now live with a closing date at the end of the month
<https://www.pacificfishhabitat.org/funding-opportunities/>

Letters of Support Written to the Following:

Oregon US Congressional delegation regarding the inclusion of language in America's Water Infrastructure Act of 2020 to improve the effectiveness and efficiency of the Army Corps of Engineers' Continuing Authorities Program (CAP) Section 206 for Aquatic Ecosystem Restoration.

Oregon Joint Committee on Ways and Means Subcommittee Natural Resources in support of HB 5035, DSL/South Slough Budget.