



Nisqually Reach Aquatic Reserve Community Action and Citizen Science

by Judy Murphy

The Nisqually Reach Aquatic Reserve Citizen Stewardship Committees are working to serve the interests of South Puget Sound communities. Meeting regularly over the past year, the committees at NRNC and on Anderson Island have forged ahead with citizen science projects, received training in community engagement, and identified and responded to issues of concern.

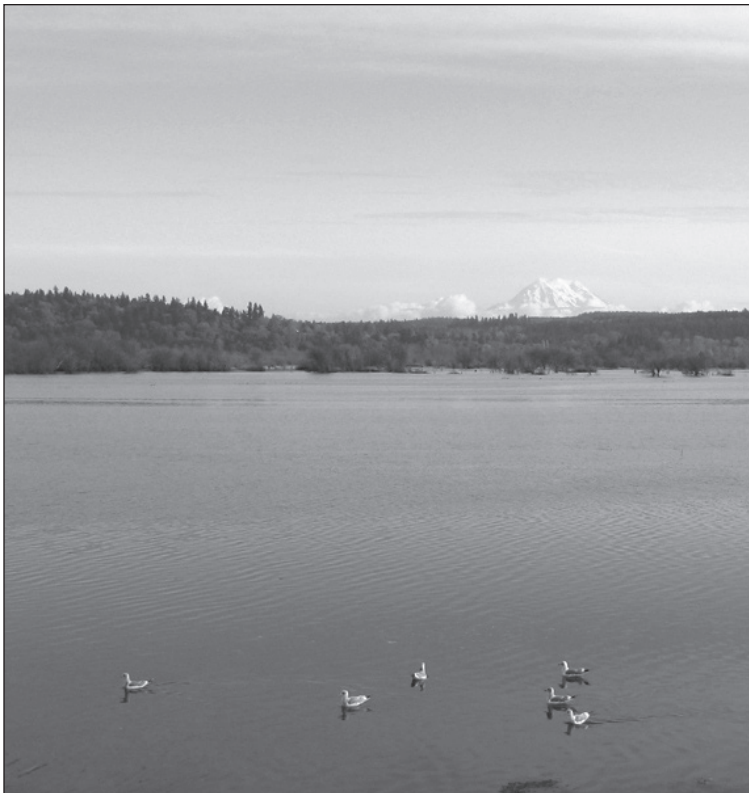
The Forage Fish Survey, Pigeon Guillemot Breeding Survey, and Visitor Use Survey are ongoing, with training and active volunteer participation in each, both on the mainland and on Anderson Island (see details on individual projects elsewhere in this issue).

Last October, representatives from the Washington Environmental Council (WEC) held trainings for Aquatic Reserve Citizen Stewardship Committee members to assist them in understanding their role as stewards of the Aquatic Reserve. WEC speakers provided an overview of the Aquatic Reserve Management Plan, discussed why Puget Sound is in trouble and needs our help, and suggested opportunities for responding to areas of concern.

Three letters have been sent to appropriate governmental agencies commenting
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Feast at the
Reach
It's coming!
Save the date!

We would like to invite you all to come to our Annual Fundraiser Feast and enjoy the good food, the good music, and the good times! In doing so, you will be supporting the environmental education, outreach and research programs of NRNC. Seatings for dinner will be at 3:30 and 5:30. Tickets are \$40 for members and \$50 for non-members.

Watch for further information regarding ticket sales on our website:

www.NisquallyEstuary.org

We look forward to having you join us for a wonderful meal and great fun as we watch the sun set over the beautiful Nisqually Reach and Mt. Rainier.

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Director's Note

I am pleased to say that summer is right around the corner, and the Center is accomplishing more now than ever before. It gives me a warm feeling to look back at our previous issues of the *Luhr Lore* and see that I have been sharing this message of steady growth for years. Now that the Nisqually Reach Aquatic Reserve is established, we champion two Citizen Stewardship Committees and three research projects, and pepper all of our educational programming with the importance of communities working together toward our conservation goals. With new monies secured through grants we have hired a scientific technician, Terence Lee, and an education specialist, Elizabeth (Betsea) Antonio. We also welcome Judy Murphy, our long-time volunteer and editor of *Luhr Lore*, to our Board of Directors.

In this time of growth our volunteers have gone above and beyond the call, helping us attain the excellence we strive for at the Center. Now is a great time to think about getting involved with the Center either by volunteering or supporting us with a donation. As we have for over 30 years, we will continue to bring our research and education messages to South Sound communities far into the future.

— Daniel Hull, NRNC Executive Director



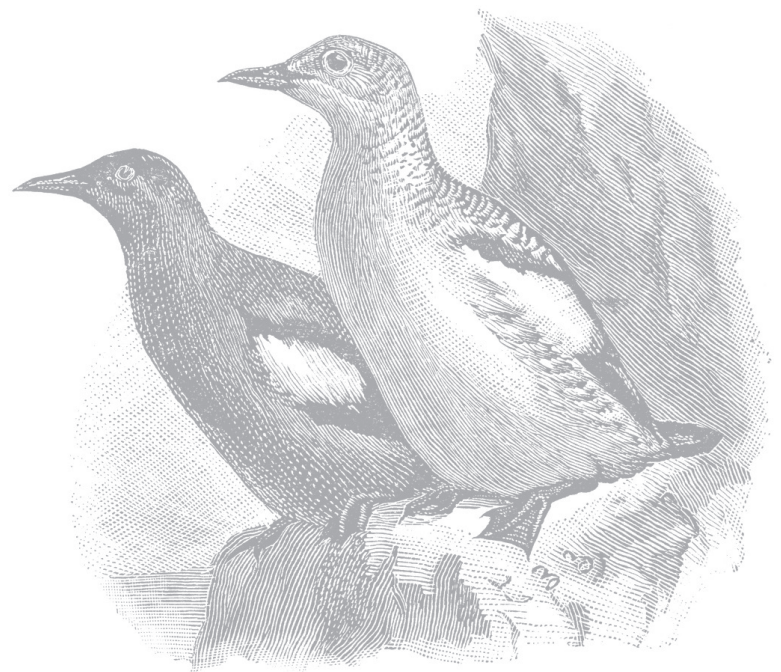
Curious About Pigeon Guillemots and Why We are Monitoring Them? by Anne Mills

Pigeon Guillemots are one of the only seabirds that breed in the South Puget Sound. They are considered to be an "indicator species" of the Salish Sea because their health is directly tied to the health of the marine environment as a whole. These birds survive on a variety of small fish and other marine creatures, which in turn survive on smaller plankton and shrimp. It is important that we gather baseline information about their population in order to assess whether their numbers remain stable, grow or decline in coming years. This citizen science monitoring effort began during the summer of 2013 and was carried out under the auspices of the Citizen Stewardship Committee of the Nisqually Reach Aquatic Reserve.

If you are interested in volunteering to participate in the Pigeon Guillemot Breeding Survey, please contact Anne Mills at (360) 867-1487 or by email at millsa@comcast.net.

Sponsored by: The Nisqually Reach Aquatic Reserve
Citizen Stewardship Committee

In partnership with: The Nisqually Reach Nature Center and the Washington Environmental Council



New Grants Expand NRNC Activities

by Daniel Krenz

In 2013, NRNC received grants totaling \$61,100 that will enhance our capabilities in both research and education. The Russell Family Foundation award of \$30,000 will provide support for our general operating expenses. The Russell Family Foundation has been one of our largest and most consistent supporters over the years, and their financial support in combination with our amazing volunteers are what have

allowed the Center to meet its goals.

In addition, our grant funding is contributing to this year of growth at NRNC. We are very excited about a grant of \$9,700 from The Nisqually Tribe for hiring an education specialist to head up our summer camps and assist in other educational activities. A big boost to our Aquatic Reserve Citizen Stewardship Committee was provided by a grant of \$11,700 from The Russell Family Foundation

and a \$9,700 grant from The Rose Foundation, enabling us to hire a part-time data technician to manage our Committee's research projects.

We at the Center are so appreciative of the support provided by our grantors. There are many organizations doing worthwhile work to improve and preserve Puget Sound, and we are proud to be among those receiving funds to continue these critical programs.

VISITOR USE SURVEY — BE A VOLUNTEER!

Three afternoons a week, volunteers log in the activity at Luhr Beach — people walking on the beach, boats coming and going, kayaks launching, anything and everything visible from the Center. All of this information is put into a database that constitutes the Visitor Use Survey.

Preliminary data already have been provided to the Nisqually National Wildlife Refuge and the Washington Department of Natural Resources to help them in planning.

In the process of watching, we see boats stranded in the mud at low tide, kayakers in need of rescue (there have been two just in the past couple of months), hunters setting off with their dogs in camo, even someone towing his dog behind his camouflaged kayak!

So if you'd like to help out and have some fun too, give us a call at (360) 459-0387. We conduct the survey on Wednesday, Saturday, and Sunday afternoons, 12-4 p.m.



NRNC Volunteers Wow Students at Green Congress

by Gordon Bellevue

NRNC Volunteers Wendy Eklund and Jacqueline Winter, assisted by Gordon Bellevue and Dahlia Mechell represented NRNC at the South Sound Student Green Congress on March 21, 2014. Students from 32 elementary schools around the Puget Sound came to The Evergreen State College to learn about ways to improve the watershed. About 35 of the students chose to attend NRNC's presentation "They came from the Intertidal Zone." The students learned about how the five tidal zones provide different habitats for various marine animals. The length of time each zone is covered and uncovered as the tides shift each day has a great impact on the chance an animal might dry out before the next high tide, as well as the availability of food, and the presence of predators.

Following the presentation students had an

opportunity to see up close, and even touch, a variety of the animals that live in the intertidal zones. Some of the kids were beside themselves with excitement, while others felt that actually touching something with pinchers, or "slimy" sea stars, was a bit too adventurous. They were able to watch barnacles eating, and then to use microscopes to actually see the tiny plankton that the barnacles were feasting upon. For many, this was their first opportunity to use a microscope. Once again, the reactions varied. Some students were fascinated by the number and variety of the organisms they could see in water that just looked "a little dirty" without the microscope, but for some, the microscopes couldn't match the excitement of actually holding a hermit crab in their hands, or making the salmon swim through the air. We can expect to see several of the students again in our summer camps, if they can get their parents as excited as they were.

NRNC Helps Students Cast an Eye on Nature

by Judy Murphy

In a discussion of the nesting habits of Pileated Woodpeckers, a 5th grade student in my Nature Mapping group at the Nisqually National Wildlife Refuge asked, "Is the word 'conifer' related to the word 'coniferous'?" She was among some 40 eager young observers from Washington Middle School in Centralia who gathered to learn about Nature Mapping, part of the Eye on Nature program sponsored by NRNC, the Refuge, Nisqually River Education Project, and the Capital Region Educational Service District 113. About half of the students had been to the Refuge before and were excited to visit again.

During the spring field trips to the Refuge, approximately 700 students from Lewis County will take part in Nature Mapping, in which a small group of students teams with a volunteer to observe and record everything they encounter in their walks along Refuge trails.

As a first-time volunteer, I attended a training session in April and teamed up with an experienced Refuge volunteer

for the day. The students in our group spotted a garden snake in the muddy wetland, a rabbit munching its way through grasses, a Western Painted Turtle sunning itself on a rock, and a bullfrog lying in the reeds, and many birds. Our volunteer leader Ellen knew where to spot nests built by Bushtits and Cliff Swallows, and we watched a robin sitting on eggs in her nest under the roof of the visitor center.

Davy Clark, an educator at the Refuge, found a Great Horned Owl in the trees and trained his spotting scope on it for all to see.

Half of the students nature-mapped wildlife while the other half engaged in ethnobotany walks. After lunch by the Twin Barns, where the students entertained themselves watching tree frogs, the groups switched.

Daniel Hull, NRNC Executive Director, wrapped up the program by asking students to comment on what they had seen. A number of questions from the students focused on stinging nettles, a very popular topic for discussion.

New Nature Mapping volunteers are always welcome!
Contact Daniel Hull at 459-0387 for more information.



Forage Fish Surveys: Enjoy a Walk on the Beach, and Do Science!

By Terence Lee

What are forage fish? Briefly, they are a key part of the marine food web; these small, mostly schooling fish feed on plankton and are in turn preyed upon by larger fish, birds, and marine mammals. Herring, sand lance, and surf smelt are just a few members of this group commonly found in Puget Sound.

When and where are forage fish spawning? Where on the beach are they spawning? How long is the spawning period?

These are key questions we hope to find answers to by conducting surveys. A training session was held in January for volunteers conducting forage fish surveys on beaches inside the Nisqually Reach Aquatic Reserve. Forage fish surveys happen twice a week at Luhr Beach and Tolmie State Park and have been ongoing since February. Surveys are also being done on Anderson Island at Amsterdam Bay every Tuesday morning.

The survey consists of both field and lab components. We collect several pounds of sand and gravel off the surface of the beach at multiple sites, then sieve the samples. Next is the fun and challenging part, panning for eggs. After we scoop

up some subsamples, they are analyzed under a microscope to detect eggs. The data collected through these surveys can be valuable in a couple of ways. It can help fill data gaps and it can validate previous survey data. Because the extent and location of spawning beaches in South Puget Sound are poorly understood, we are surveying beaches for eggs each week year-round. The two species we survey for are:

Surf Smelt (*Hypomesus pretiosus*): It spawns in the upper intertidal zone on coarse sand/fine gravel beaches; its habitat is heavily impacted by shoreline armoring and vegetation removal.

Pacific Sand Lance (*Ammodytes hexapterus*): These fish have a narrow, elongated body built for burrowing into sand-gravel, hence they are also known as candlefish; they spawn at night on fine, sandy beaches depositing microscopic, adhesive eggs in small, shallow pits.

To learn more about forage fish, see http://wdfw.wa.gov/conservation/research/projects/marine_beach_spawning/index.html

For more information and to sign up for surveys, email Terence Lee at leeterence16@gmail.com

Below: Terence Lee and volunteers set up for the forage fish survey.



Volunteer Corner - by Daniel Hull

The volunteer recruitment we have had over the last couple of months has been outstanding! We now have on our rosters 74 citizen stewards and nature center volunteers on the mainland and another 47 citizen stewards on Anderson Island connected with helping NRNC in its mission with the Nisqually Reach Aquatic Reserve. All this is possible due to the dedicated support of our two new staff members, Terence Lee, our scientific technician, and Elizabeth Antonio, our education specialist. We also have two new caretakers upstairs, in addition to Cris Peck, and of course our dedicated board. Here is a list of some of the new volunteers that have joined our ranks recently. Welcome to the team!

Our volunteer time is now nearly twice what it was at this time last year, with well over 1800 hours volunteered since the start of the year (and we have not even started our summer camps yet, one of our largest volunteer opportunities). It always inspires me to see so many spend so much of their time helping their community connect with the values integral to a healthy Puget Sound. This is the effort that makes a difference and can start the healing process that is greatly needed. If you or someone you know is interested in volunteering at NRNC and making a difference, please contact Daniel Hull at nrnc@nisquallyestuary.org for more information.

NEW NRNC VOLUNTEERS

Rachel Keys Brooks (caretaker)
Andrew Chase Dechaine (caretaker)
Martin McCallum
Christopher Montgomery
Robert Barrett
Lennah Shakeri
Manjit Nijjar
Blake Cantrell
Mary Verner
Greg Starling
Dominique Shorter
Wyatt Hersey
Emily Rhoades
Kirsten Miller



Rachel and Andrew join Cris as NRNC caretakers.

Aquatic Reserve (continued from page 1)

on concerns of committee members related to habitat and water quality within the reserve:

- Regarding the Anderson Island Dredge Disposal Site, which was used over the winter for depositing sediment dredged from Budd Inlet as permitted under the Management Plan. The Committee expressed its wish to be notified of future plans to use the site and suggested that pre- and post-disposal research be conducted to ensure that no harm resulted to benthic habitat.
- To the Department of Ecology regarding

proposed SEPA (Shoreline Environmental Policy Act) rulemaking.

- In support of the Petition from the Department of Ecology to the Environmental Protection Agency regarding a proposed ruling establishing a No Discharge Zone in Puget Sound.

The Nisqually Reach Aquatic Reserve website is now live on the web at:

<http://www.aquaticreserves.org/the-reserves/nisqually-reach/about-the-reserve/>

For more information, be sure to take a look at the Aquatic Reserve page on the NRNC website: <http://nisquallyestuary.org/aquaticreserve.html>

Sea Star Wasting Syndrome at NRNC

by Cris Peck

In August of 2013, scientists and coastal residents noticed sea stars dying in substantial numbers from northern Mexico to Alaska. Reports blossomed in communities along the Pacific Coast of carcasses washing up on beaches, intertidal zones strewn with colorless sea star corpses, and the general declining health and numbers of sea star populations.

In December 2013, we noticed lesions appearing on Ochre Stars (*Pisaster ochraceous*), one Giant Pink Star (*Pisaster brevispinus*),

and Sunflower Stars (*Pycnopodia helianthoides*) in our own aquariums. Within a few days both of our Sunflower Stars and one Ochre Star had died. The decline was swift and quite difficult to watch. These sea stars did not eat, had issues retaining water, and expelled their limbs within 24 to 48 hours. We immediately reported the case to the National Oceanic and Atmospheric Administration (NOAA) and to universities along the coast and to anyone monitoring the wasting syndrome. We soon realized, to our great dismay, that we were the first

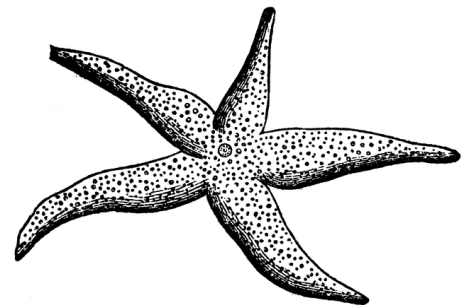
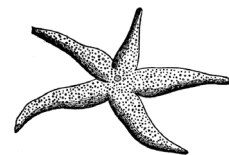
reported case in South Puget Sound.

This begs the questions: what is the cause of such a widespread wasting event? What is killing our sea stars, a keystone species in these marine ecosystems? The reality is that no one really knows the answer. There was a major die-off in the mid-1980s along the California coast of *P. ochraceous* which was attributed to warmer water temperatures along the coast. The syndrome seems to be affecting the genera *Pisaster* and *Pycnopodia* much more extensively than others.

On the bright side, there is definitely hope for sea star populations. There seems to be a form of resistance to the wasting syndrome. We had three Ochre Stars that became infected and have since recovered! The lesions have dissipated; the affected sea stars are eating, and they generally look healthier. There is extensive research being conducted at Cornell University, the University of California, and other major universities across the country. Recent studies have found it may be attributed to a bacterial pathogen here on the West Coast, but there are reports of major die-offs on the East Coast as well. All we can do is monitor our tanks and hope for the prolonged health of our sea stars.



The poster features a large sun in the upper left corner with rays extending across the top. In the upper right is the Nisqually Reach Nature Center logo, which is a circular emblem with a bird and the text 'NISQUALLY REACH NATURE CENTER'. The main title 'Nisqually Reach Summer Camp 2014' is centered in a large, bold font. Below the title, it says 'Camps run from 9 AM to 4 PM daily. Before- and after-care available.' To the right of this, it lists 'Sessions 1-4' with 'Members: \$80' and 'Non-Members: \$100'. Below that, it lists 'Citizen Science Academy' with 'Members: \$140' and 'Non-Members: \$160'. A central text block reads: 'Now in our 14th year of summer camp programming, our tried-and-true, hands-on activities will introduce campers to fundamental biological and ecological principles in a fun, science-based curriculum!' Below this is a white sign with a list of sessions: 'Session 1 - June 25-27..... Ages 7-9', 'Session 2 - July 9-11..... Ages 10-12', 'Session 3 - July 14-16..... Ages 9-11', 'Session 4 - July 23-25..... Ages 8-10', and 'Citizen Science Academy - August 11-15..... Ages 13-16'. The bottom of the poster shows a beach scene with a crab, a snail, and two fish. At the bottom right, it provides the address 'Nisqually Reach Nature Center, 4949 D'Milluhr Dr. NE, Olympia, WA 98412-2311', the phone number '(360) 459-0387', and the email 'Email: NRNC@NisquallyEstuary.org'. At the very bottom, it says 'Register for camps online at www.NisquallyEstuary.org'.



MEMBERSHIP Application



Name _____
Address _____
City, State, Zip _____
Phone _____
Email _____

On occasion, NRNC receives requests from like-minded nonprofit organizations for the use of our mailing list. If you do not want us to provide your address to others, please check the box below:

Please do not release my name to other organizations.

MEMBERSHIP CATEGORIES

PLEASE CHECK ONE

- Senior 20.00
- Student 20.00
- Individual 35.00
- Household 50.00
- Supporting 75.00
- Patron 100.00
- Benefactor 250.00
- Sponsor 500.00

The Nisqually Reach Nature Center (NRNC) is a private, nonprofit 501(c)(3) organization dedicated to environmental education, outreach, and research. All contributions are tax deductible. The Center is located at Luhr Beach on the west side of the Nisqually delta. Our facilities are provided by the Washington Dept. of Fish and Wildlife. No state funds are provided for the operation of the Center.

The Center is open to the public Wednesday, Saturday, and Sunday from 12:00 noon to 4:00 pm.

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NISQUALLY REACH NATURE CENTER

