



Citizen Science and Nature Mapping at NRNC

By Daniel Hull

For the last two years, NRNC has been participating in a citizen-monitoring platform called Nature Mapping. More than 10 years ago, I was fortunate enough to work with some of the founders of this program and have watched it take off over the last several years. As stated on the Nature Mapping regional website, the purpose of the Nature Mapping program is to promote “environmental stewardship of communities through school, community, agency, and business partnerships.” Its mission is “to protect biodiversity through data collection and dissemination.” Now we are exploring the possibility of uploading the Center’s historical student and citizen data to their website (<http://depts.washington.edu/natmap/>).

At NRNC, we are no strangers to citizen monitoring. We have championed several monitoring programs, including but not limited to:

- 1) Nature Mapping, two years;
- 2) Bird monitoring connected with estuary restoration in the Nisqually Delta, four years;
- 3) Invertebrate research in conjunction with estuary restoration, five years;
- 4) Luhr Beach biologic census work: via fish seine and quadrat surveys, seven years;
- 5) subtidal dive surveys, two years;
- 6) vegetation surveys in restored estuarine habitats, beach profile surveys, and plankton baseline surveys, one year.

(continued on page 4)



Inside this issue

Citizen Science	1
USGS Scanning the Delta	1
Director’s Note	2
Fishing Pier Closed by State	2
Fall Fundraiser Benefits Center Programs	3
Restoration of the Nisqually Delta	3
USGS, NRNC, and Saint Martin’s Combine Efforts	4
Summer Camp 2011	5-6
Volunteer Activity at NRNC	7
Membership Application	7
2011 Summer Camp Schedule.....	8

USGS Scanning the Delta

By Daniel Hull

The U.S. Geologic Survey (USGS) was out on the delta at the end of February, and as NRNC Executive Director, I was fortunate to have the opportunity to take a closer look at some of the research that USGS is conducting. Principal investigator Eric Grossman, a passionate scientist and excellent communicator, is working with a group of USGS specialists to help guide the R/V Parke Snavely — the 34-foot USGS research boat — in

bathymetric scanning of the delta to map its depth. Eric was accompanied by five others who assisted him with the research, including Dave Finlayson, Computer Bathymetry; Jackson Currie, Electronics Technician; Tom Reiss, Precise Navigation Specialist; Pete Dal Ferro, Engineering Technician; and Captain Jamie Grover.

The Sonar bathymetric equipment used on the Snavely is unlike more familiar equipment on other ships. The



USGS team uses a system called the Submetrix SwathPlus, a combination of swath bathymetry and side-scan system that creates a three-dimensional image of the sea floor topography and a backscatter picture. It takes a rack of computers to process all of the data and generate the maps.

Using this and other technologies, USGS hopes to: 1) map the bathymetry

(continued on page 6)

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Director's Note

Hello, dedicated supporters of NRNC! Coming into 2011, the Center is a hub of activity. In the midst of troubled times, in the worst recession since the 1930s, and with our pier closed last summer, we have not been deterred from our mission; if anything, we have become more determined than ever to accomplish our mission.

Again in 2010, we reached more than 2,500 youth with our educational programs, both at the Center and at other locations. The Nisqually Aquatic Reserve Plan is almost complete, and when enacted, it will create a 12,500-acre conservation easement for the next 90 years. We have successfully begun to participate in a regional citizen monitoring program called Nature Mapping (see front page story). Our invertebrate work in the Beachcrest restoration site is almost complete, and we have been assisting the U.S. Geologic Survey with monitoring efforts on the Nisqually Delta, post restoration.

To assist in carrying out all of these activities and more, our volunteers have given in excess of 2,000 hours of their time. It has been inspiring to see members and volunteers step forward in tough economic times with supporting monies and a willingness to help. Remember that all we accomplish at the Center cannot happen without you and your role at NRNC. So I ask, when you have finished reading this issue, consider passing it on to another so they can become a part of this great organization and be part of the change that is NRNC. Our members and volunteers are the best outreach we have in the community! We appreciate your helping NRNC achieve its goals by telling others about our work — your work — in protecting our beautiful natural resources here in the South Sound. — *Daniel Hull, NRNC Executive Director*



Fishing Pier Closed by the State

By Judy Murphy

On July 13, 2010, the Washington Department of Fish and Wildlife (WDFW) closed the fishing pier next to the Center. In a statement, WDFW said the 120-ft pier was closed "...after an inspection detected rotten support beams, deteriorated concrete and noticeable swaying in the decades-old structure." A fence was erected and locked at the entrance to the pier to protect the safety of the public.

The iconic structure, used on the masthead of *Luhr Lore*, has played a part in many NRNC programs, and hosts purple martin houses (see inset at right), the float mechanism for the Center aquariums, and a tide station. Daniel Hull, Center Director, was notified of the closing the Friday before a session of summer camp was scheduled to begin, leading to some alterations in the camp's activities and disappointment among campers fond of



fishing from the pier.

Sadly, July 13 also marked the passing of William (Bill) Luhr, Jr., whose father had built the pier and the building housing the Center, from which he had operated a boat rental business in the mid-twentieth century.

Many visitors to the Center have remarked on their fondness for the

pier, and families who enjoyed fishing and crabbing from it have stopped by to find out why it was closed. NRNC has a petition available for people to sign to show their support for the pier's restoration. If you would like to sign the petition, go to our website at www.nisquallyestuary.org.

Fall Fundraiser Benefits Center Programs

By Jeanine Toth

Our fourth annual pig roast was held on September 11, 2010, and was another great success. We raised over \$4000 at the event through donations and our fishbowl style raffle. This would not have been possible without the continual amazing support of our community. We had approximately 90 guests at the event enjoying the music, the Center, the pig, the raffle and each other. Thanks to all who supported us by coming to our event.

We would also like to thank all businesses and people who donated to our event to make it possible. We could not have done this without your generous contributions. Wildfire BBQ and Fishtale Brew Pub did the catering for the event, and Fishtale also provided the beer and cider. A special thanks to Michael Miranda of Wildfire BBQ for cooking our pig and his delicious BBQ sauce, Taylor Shellfish for donating the clams and Jeremy Lester of Fishtale for preparing the clams and the side dishes. We appreciate your hard work! We would also like to thank Gordon's Garden Center for their generous donation of mums as our centerpieces as well as everybody who donated shade awnings for our event. A heartfelt thanks goes out to Hernan Gonzalez for organizing all the wonderful music for our event as well as thank you to all of his musicians!!!!

We cannot forget to express our gratitude for the numerous local businesses that help make our fishbowl style raffle possible. Your generosity did not go unnoticed. Thank you to all the businesses listed below!

Batdorf and Bronson	Fireside Bookstore	Robert Allan Salon
Bayview School of Cooking	Fishtale Brew Pub	Sound Native Plants
Boston Harbor Marina	Gordon's Garden Center	The Tea Lady
Bruce Sanford Art	Massage Place	Traditions
Canvas Works	Massage Works	Walter Dacon Winery
Cascade Radiant Massage	Mary Lou Peltier	Wild Birds Unlimited
Compass Rose	Old School Pizza	Wild Thyme Farm & Nursery
Copper Moon Massage	Olympia Food Co-op	Wind Up Here
Eastside Club Tavern	Orca Books	Westport Winery



New boardwalk at Nisqually Delta. Photo by Judy Murphy. February 2011.

Restoration on the Nisqually Delta

By Judy Murphy

Looking out the windows of the Center, volunteers and visitors can now see the mile-long boardwalk recently completed at the Nisqually National Wildlife Refuge (NNWR). We have been watching the \$2.8 million boardwalk take shape over the past year, as the newly restored estuary has changed its face from riparian woodland to tidal marsh.

On the glorious sun-filled opening day, February 1, visitors crowded the paths leading to the boardwalk and strolled four miles roundtrip to watch the tide come in and engulf the mudflats. Small islands of grasses and reeds remain, where ducks, gulls, great blue herons, and a lone great egret congregate.

At high tide, the boardwalk is almost entirely surrounded by water, and at the endpoint the Center looks nearly close enough to swim to. The Tacoma Narrows Bridge can be seen northward as well as Anderson Island, and of course Mt. Rainier to the east is spectacular on a clear day.

The importance of this historic estuary restoration, however, goes far beyond beautiful scenery. Refuge biologists and their partners are monitoring changes in water quality, sediment composition, tide levels, nearshore habitat and other factors that influence the types and numbers of birds, fish, invertebrates, and vegetation in the estuary.

The Center is fortunate to be a part of this exciting and unprecedented undertaking, with invertebrate monitoring, bird monitoring, tidal measurements, and other activities. Working closely with the U.S. Geologic Survey, the Nisqually Tribe and NNWR biologists, Center Executive Director Daniel Hull and trained volunteers will have the opportunity to contribute to the data documenting the effects of habitat restoration.

To learn more about the restoration and view some fantastic photographs and color maps, go to: <http://nisquallydeltarestoration.org>.

USGS, NRNC and Saint Martin's Combine Efforts

By Daniel Hull

With help from Professor Mary Jo Hartmann at Saint Martin's University, NRNC has provided Eric E. Grossman, PhD Research Geologist

with the U.S. Geological Survey (USGS) Western Fisheries Research Center, with two interns, who will assist with a tidal flat substrate and

benthic sediment invertebrate community composition analysis within the Nisqually Delta. Their working hypothesis: invertebrate composition is closely linked to sediment grain size, and as sediment grain size changes across the tidal flats in response to

restoration and formation of 750 acres of new salt marsh and tidal prism, benthic communities will change and influence food prey resources for birds, forage fish and salmon. The goals of this project are to: 1) quantify the sediment grain size patterns and their change; and 2) characterize benthic invertebrate communities and their relation to grain size and elevation.

This is part of a close partnership that the Nature Center has fostered since the USGS first started working on the Nisqually Restoration project. It is the intention of all partners in this project to continue to develop connections among academia, community organizations, and researchers in order to augment our ability to create usable science that will further our understanding and management of the nature resources in the South Sound.



NRNC volunteers Emilee Eilefson and Melissa Young

Citizen Science and Nature Mapping (continued from page 1)

NRNC started citizen monitoring to satisfy a need to connect community members with their local beaches in a meaningful way, while collecting useable data to be considered in local management decisions. Some of the need for citizen monitoring can be summed up nicely in discussing the reasons why science professionals decided to implement the Nature Mapping platform in the first place.

WHY THE PROGRAM BEGAN:

- Data needed, especially for common species; public data useful in assessing gap maps;
- Rapid changes to the landscape, together with lack of available professionals to collect biodiversity data;
- Inadequate resources (i.e., funding and manpower) at natural resource management agencies to meet data collection needs;
- Natural resource agency focus on rare, threatened, endangered, and game species; needs of local

planners for current fish and wildlife data in making land use decisions;

- Hands-on learning experiences for members of public otherwise excluded from collection, analysis, and debate about biodiversity issues affecting their region and state.

Several years ago, professional scientists were skeptical that citizen-monitoring programs could contribute valid, usable data. Today, citizen-collected data are becoming more relevant in filling gaps in the scientific knowledge base. With increasing human populations in the Puget Sound region, pressures on our ecologic communities will amplify, and the need to understand and manage the effects of these pressures will be crucial. The scientific community has begun to reach out more to citizens through successful programs employed at centers like NRNC and programs such as Nature Mapping.

Recently, local Washington Department of Fish and Wildlife

(WDFW) scientists met with the founders of Nature Mapping and several local nature centers to help foster the process of citizen monitoring in a Washington Biodiversity Inventory Project. This is a statewide inventory of common species and species of concern using specific protocols designed by WDFW biologists. NRNC is on the forefront in assisting with programs like this by providing historical data and combining it with new research objectives that we can implement with our partners.

Participation in the Nature Mapping program fits hand in hand with NRNC's efforts connected to the creation of the Nisqually Aquatic Reserve, a 90-year conservation easement protecting approximately 12,500 acres of aquatic lands.

If you are interested in assisting with any aspect of citizen monitoring please contact Daniel Hull at nrnc@nisquallyestuary.org or call (360) 459-0387.

Summer Camp is Coming!

By Judy Murphy and Daniel Hull



Fish seining

Last year marked the 10th anniversary of summer camp at NRNC, and by any measure it was a great year! Thanks to a generous \$9,000 grant from the Pepsi Refresh program, awarded by L & I Bottling here in Olympia, we were able to pay two part-time instructors, buy T shirts and supplies for campers, and hold a culminating event.

The NRNC science-based curriculum, tailored for different age groups, emphasizes the importance of scientific data in monitoring the effects on the beach of environmental changes from year to year. In 2011, we will continue the summer camp data collection begun last year reflecting the restoration of the tideflats at the Nisqually National Wildlife Refuge.

In 2010, we had 6 sessions with nearly 100 students in all, ranging from age 7 to 13, and three to four volunteer counselors per camp. NRNC caretaker and instructor Jeanine Toth introduced a new program focusing on Purple Martins, in which campers learned about the behavior of these birds and why providing nesting sites is important for this increasingly threatened species. Students observed the nesting boxes on the pier and recorded flying, feeding, and other behaviors. The closing of the pier the Friday before our second camp did not dampen enthusiasm, but it

did eliminate the opportunity for campers to watch the birds at close range. However, we were able to view them with binoculars from the beach, and the students were very excited to see the babies still inside some of the nesting boxes.

Another popular activity dramatically demonstrated the importance of space as a critical component of habitat. Students were asked to figure out how many pairs of their feet could fit on an 8 ½ x 11 piece of paper, which, in the advanced science camp, revealed both their creative cooperation and their discomfort when all 16 students and 32 feet (or toes in some cases) crowded on top of the paper!

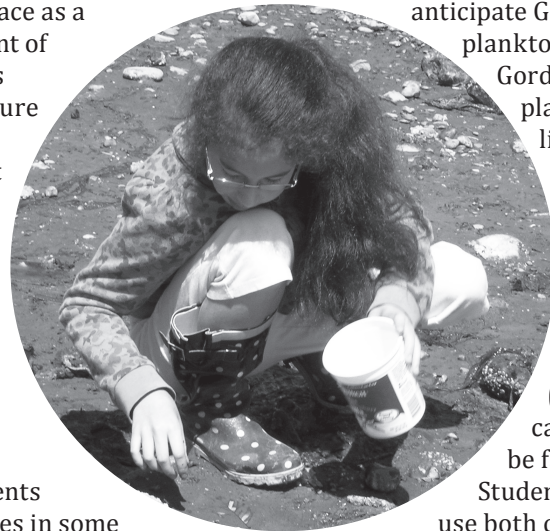
Daniel led the fish seining activity at each camp, which demonstrated, among other things, why replication is important in monitoring species: whereas the first camp's seining yielded very few fish, another camp had many fish and other species. The prize catch was an enormous gunnel

(an eel-like fish), larger than any of us had ever seen. Wide variability also occurred at an August session in which two groups found few bivalves during the survey on the beach while another group a few feet away unearthed more than 60 clams, which was a record for one quadrant.

Every year, campers eagerly anticipate Gordon Bellevue's plankton session, where Gordon explains why plankton in real life are vital to the food web in Puget Sound and are not as evil as the Plankton character on *Sponge Bob Square Pants* (which most campers seem to be familiar with).

Students learn to use both compound and dissecting microscopes, and by the end of the session, they have no trouble identifying and remembering the name of Gordon's favorite phytoplankton, *Ditylum brightwelli*.

We thank all of the parents for giving us an opportunity to spend time with their budding naturalists, and we look forward to seeing them again at summer camp this year.



My NRNC Summer Camp Experience

By Lewis Whiley

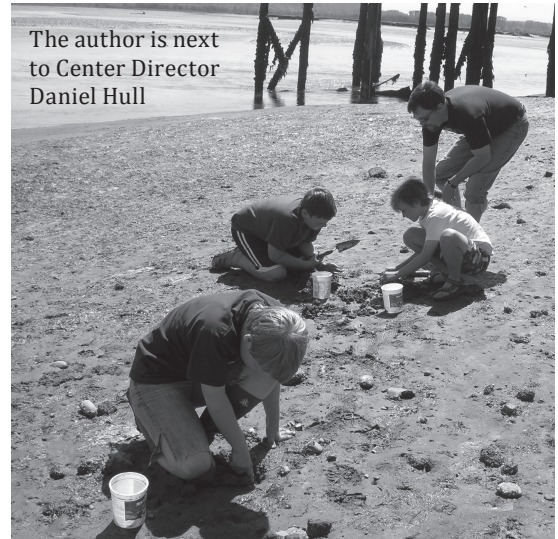
Nisqually Reach Nature Center is a great camp for all kids who love science and the ocean, and the shore life of Puget Sound! This year, we studied the Purple Martin, a type of bird living on the pier, and noticed that they were mostly out feeding and bringing food back to the bird boxes. We also collected lots of data for the surveys that were being done, which included the Luhr Beach crab survey, the insect (or “fish food”) survey, a bivalve survey, and the fish survey. In all of these surveys, we collected lots of data about the life of the animals that live at Luhr Beach.

The coolest activity I did at the camp was looking at the plankton — they were awesome in the fact that they were so small, the biggest less than a millimeter in length — and with many different shapes.

Another project we did was the fish seining, a very cool project because I really love fish. The fish seining is where one person, the anchor, stays on the beach while the other person, the runner, walks out into the water with the net, pulls it through the water and then back in to the beach. When it comes in, we collect the fish and measure and sort them by type. My favorite fish was a huge gunnel!

Also at the camp, there is an awesome activity called “free time” where you can do things like collect crabs, look for clams, and sketch wildlife. If free time is during low tide, and actually whenever you are on the beach it's low tide, someone almost always has the experience of getting stuck in the mud, which from my experience is not so much fun, but it sure gets a lot of laughs!

In all, Nisqually Reach Nature Center summer camps are a lot of fun and a great way to learn about environmental science in our very own Puget Sound!



The author is next to Center Director Daniel Hull

Summer Camp Culminating Event



Thanks to the Pepsi Refresh program grant, we were able to hold a culminating event on August 28, 2010, as a follow-up to summer camp for parents, volunteers, and students. About 25 people gathered on a cloudy Saturday to chow down on charcoal-grilled hot dogs and delicious cake. Daniel presented an overview of the camps, along with some of the data the campers had collected and recorded, including bivalve surveys, plankton and invertebrate collection, and fish seining. Campers participated by answering questions, contributing comments, and showing their parents some of what they had accomplished. To provide parents a hands-on activity, Daniel conducted a fish seining following his presentation, with student assistance. Great job, campers!

USGS Scanning the Delta (continued from page 1)

elevations of the entire delta to create continuous onshore-offshore elevation models with a focus on channel bathymetry; 2) collect recent bathymetry for video ground truth (verification of sea floor habitat found during bathymetry) to be conducted this spring; 3) compare to previous bathymetry to fill gaps and note changes.

We at NRNC are excited to participate in this important research that will help us understand the complex changes occurring on the delta.

Pictured: Jackson Currie; Dave Finlayson; Pete Dal Ferro; Eric Grossman.



Volunteer Activity at Nisqually Reach Nature Center

By Janice Donovan

As Director Dan is fond of saying, "Volunteers bring life to the Nisqually Reach Nature Center." Without our volunteers, we would not be able to perform the many functions and services that are our mission. A few of our volunteer responsibilities are invertebrate monitoring, public relations outreach, summer camp, Visitor Center staffing, the watershed festival, *Luhr Lore*, maintenance of the Center, education programs, and board meetings. This is just a small sampling of the duties and responsibilities of a volunteer at the Nisqually Reach Nature Center. The year 2010 ended with almost 2,000 hours of volunteer time shared by fewer than 45 people. This shows a deep commitment to the Center by these volunteers that is truly treasured by us all.

In this issue, we would like to share information about two of our volunteers – Floyd Smith and Terry Michel. Floyd has been a long-time volunteer, a steady, reliable Visitor Center staffer on Wednesday afternoons as far back as the eye can see. As a retired science teacher with 38 years of experience, Floyd is an important part of educational programs and summer camp. He has been a volunteer for more than ten years following his retirement from teaching. He is active in a local rock club and is a collector of sand from all parts of the world. Floyd is also a member of a barbershop quartet.

Terry is a newer volunteer, who is now sharing Wednesday



Nisqually Reach volunteers
Floyd Smith (left) and Terry Michel (above)

afternoons with Floyd. After moving here from Michigan and retiring as a teacher and social worker, Terry discovered the Puget Sound and fell in love with it. She is now a regular volunteer and has also helped with summer camp.

Many of our volunteers lead very active lives, but because of their love of our environment make the time to contribute to the upkeep of our surroundings and the Nisqually Reach Nature Center. We cherish them all.

MEMBERSHIP Application

Name _____

Address _____

City, State, Zip _____

Phone _____

Email _____

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

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.



Nisqually Reach Nature Center 2011 Summer Day Camp

Join us this summer for estuarine adventures at the Nisqually Reach Nature Center! Now in our tenth year of summer camp programming, our tried-and-true, hands-on activities will introduce campers to many fundamental biological and ecological principles in a science-based curriculum.

NRNC Member Fee — \$85 per camper
NRNC Non-Member Fee — \$95 per camper

Summer camps run from 9:00 AM to 4:00 PM.

Complete information and registration forms available at our website:
www.NisquallyEstuary.org

Session	Dates	Ages	Grade Level
1	June 27-29	7-9	1-3
2	July 13-15	9-11	3-5
3	July 27-29	11-14	5-8
4	August 1-3	8-10	2-4
5 (Advanced)	August 15-17	11-14	5-8

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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