



The Current

December 2010

SERVICE • EDUCATION • ADVENTURE
Empowering Youth, Enhancing Communities

SEA promotes engagement with the natural world and fosters spirited environmental stewardship by connecting youth, adults and communities in meaningful service and learning on Puget Sound and throughout the Pacific Northwest.

Dear Friends of SEA,

We wish you the best this holiday season and we thank you for your partnership! 2010 was SEA's first full year of programming, and what a vibrant year it has been. Picture a middle school student working with scientists aboard SEA's program vessel *Indigo* in Puget Sound, collecting samples of microplastics and water samples for water quality testing. Students light up as they learn about the issues impacting the Sound and what they can do in their daily lives to make a positive impact. These are the moments of powerful teaching and learning that happen on every SEA expedition. Together we are making a real difference for students and teachers, for our human and ecological communities, and for the precious waters of Puget Sound. Please enjoy this look at what we've been up to lately. We hope in 2011 you'll join us on the water!

-Susie Richards and Chris Burt, SEA Co-Executive Directors



Dr. Nat Scholz, NOAA scientist, works with a student aboard the August 2010 Whidbey Waldorf School SEA expedition.

"I am so inspired by what [SEA] offered us this summer. It has literally transformed our program and the results have been overwhelming to me! Thanks again for all you do for our youth."

-Lisa Brouwer, Teacher, Highlands Middle School at Kennewick School District

2010 by the Numbers

Students served on the *Indigo*: 1,200

Teachers/adults served: 1,100

Number of Puget Sound voyages: 90

Participant-hours dedicated to environmental service-learning (e.g. removing invasive species and plastics, citizen science): 7,000

Service-learning presentations delivered throughout Washington State: 25

Vision

Whulj, the indigenous coastal Salish name for Puget Sound, means "the saltwater we



Dr. Fritz Stahr, Chief Scientist with the Ocean Inquiry Project reviews data collected aboard a SEA / OIP research expedition

know." SEA is committed to creating connections and learning opportunities so that this jewel of the Pacific Northwest can be the water that we truly know, enjoy and care for. As stewards of Puget Sound, we work so that current and future generations can enjoy and benefit from this remarkable environment. SEA brings together students, scientists, teachers, schools, universities, businesses, community organizations and the general public to engage with and learn about this precious resource. With the 65-foot vessel *Indigo* as our floating classroom, we lead "journeys with a purpose", engaging in real-world learning, hands-on citizen

science, meaningful service to protect and restore our environment, and conversations that leave participants informed, inspired, nourished and connected. Our 3 main programs are Discovery Voyages (for students of all levels, as well as professional development programs for teachers and schools), Puget Sound Eco-Voyages (for the general public), and Research Voyages (for scientists and research organizations). SEA is unique in providing year-round marine-based educational programming throughout the Puget Sound, from Olympia to Port Angeles, from Hood Canal to the San Juans.

SEA-nergy: Partnerships and Collaborations

So many remarkable things emerge from collaboration, and this is one of our organizational strengths: SEA plays well with others. We are in a cultural and economic moment in which organizations, communities and individuals absolutely must share resources in order to make good things happen. Here we spotlight recent collaborative work with some tremendous allies. You can find a fuller partner list later in this newsletter.

1. Microplastics: Students on the Frontier of Environmental Research



UWT Scientist Julia Masura aboard the *Indigo*

How much plastic is in Puget Sound? What is its impact on the environment? Scientists can't yet answer those questions, but they have yet to gather a single Sound water sample that is free of plastics. "The stuff is everywhere," says University of Washington-Tacoma (UWT) researcher Julie Masura. Plastic particles smaller than 5mm, known as microplastics, come from sources like industrial abrasives or fillers, and breakdown of larger plastic marine debris. As part of a developing partnership between SEA and UWT, students have begun to participate in cutting-edge microplastics research during Discovery Voyages on the *Indigo*. Working with Julie Masura, using a special collection net she adapted from a large-scale manta net, students are carrying out original citizen science as they conduct water quality research and gather needed data. SEA also works with youth to educate them about healthy alternatives to plastics-based products.

In October, SEA participated in the Jetty Island

Microplastics Sampling event, a model service-learning project for the Northwest Sustainability Initiative. The Fellowship Program was coordinated by Dr. Tom Murphy of EDCC Leaf School and the Washington and Oregon Campus Compact, and the beach-based plastics field investigation at Jetty Island was led by staff from Port Townsend Marine Science Center, a local leader in marine plastics issues.

SEA presented aboard the *Indigo* to participants (professors, city managers, and community partners from Oregon, Idaho, and Washington) who traveled to Jetty Island to engage in microplastics sampling and to observe as Julie Masura demonstrated sampling techniques. Teachers on this voyage brainstormed ways to address the plastics problem in educational settings. In November, UWT held the 2nd International Research Workshop on Microplastic Debris. Expert scientists from the US, Japan, Netherlands and the UK gathered to better understand the potential risk of microplastic debris to our ocean ecosystems. SEA brought these leading scientists onto Puget Sound waters to explore the water they study so closely. Dr. R.C. Thompson of the University of Plymouth, UK, writes that "large items of plastic debris are known to have potentially harmful effects on over 260 marine species, principally via ingestion and entanglement. Because of their size microplastics have the potential to be ingested by a much wider range of organisms including relatively small invertebrates."

SEA and our youth participants are committed to working with scientists to better understand and address the presence of plastics, including microplastics, in Puget Sound. The goal of the UWT project is to collect samples from the surface water, sea floor, and beaches. These samples will be processed in the laboratory, by students or scientists, to determine the amount of plastic in the environmental samples. Data will be used to better understand the concentration and distribution of plastic in the Puget Sound. Results will be posted online and mapped for anyone to see. The goal is to not prevent everyone from using plastic, but to encourage citizens to think about ways to re-use and lessen the amount of plastic debris introduced into the environment.



Stay tuned for our upcoming work in partnership with UWT. To learn more about microplastics in Puget Sound, check out these stories:

- UW Tacoma Website, [Microplastic = macroproblem](#)
- June 2010, U.S. News and World Report, [Emerging Ocean Concern: Tiny Plastic Particles](#)
- November 2010, King 5 News - [A little plastic in every scoop of Puget Sound](#) (profiles SEA partner Julie Masura)

2. ECO Net: Building Puget Sound Connections

The Puget Sound Partnership's (PSP) ECO Net (Education, Communication and Outreach Network) is a Sound-wide network that builds and strengthens relationships among organizations working to advance public awareness of Puget Sound issues and cultivate practices that benefit the Sound. SEA was one of only 10 ECO Net members from the Puget Sound region to receiving funding through a recent PSP initiative to localize and enhance the Puget Sound Starts Here (PSSH) message. As a member of the Whidbey ECO Net, our project focus is the Join Whidbey Initiative, designed to focus local energies on the Puget Sound Starts Here (PSSH) campaign priority areas. This is a pilot project which will serve as a Sound-wide model when complete. (Learn more about the [PSSH campaign](#))

Through another ECO Net-supported program in Spring, SEA was funded to implement expeditions with local organizations. In June we partnered with WA Department of Natural Resources to coordinate the first public visit to the new Aquatic Reserve for Smith and Minor Islands. Visitors included representatives of: Big Brothers/Big Sisters, 4-H, Island County (all the Commissioners), Department of Natural Resources, Oak Harbor (Mayor, City Planners), People for Puget Sound, Island County Beach Watchers, Island County Marine Resource Committee, U.S. Fish and Wildlife Service, U.S. Navy, Washington State Parks, and Whidbey Shore Stewards. Other ECO Net expeditions included an elected officials/stakeholders program focused on shoreline and watershed issues in Island County, a Shore Stewards-coordinated expedition, Marine Resources Committee expedition, and three youth programs for local home school students, 4-H members and students engaged in Big Brothers/Big Sisters of Island County.



3. Gettin' WWETT: The Washington Watershed Education Teacher Training (WWETT) Program

With grant support from the National Oceanic and Atmospheric Administration (NOAA), the Washington Watershed Education Teacher Training (WWETT) Program was delivered by SEA in partnership with [Edmonds Community College](#) (EDCC), in order to support teachers in the development and implementation of meaningful watershed educational experience curriculum with their students. Between October 2009 and September 2010, we partnered with EDCC to offer 16 marine-based professional development workshops, an online curriculum development course and support for meaningful watershed education activities with 163 educators involving 52 community partners and 75 college students and staff. The educators collectively serve more than 3,000 students and represent 77 different educational institutions. 163 educators, 41 community partners and 18 college students and staff participated in one of 12 two-day marine-based workshops aboard the Indigo. 23 teachers enrolled in an online two-credit course in Sustainable Design. 65 college students and staff have received 80 or more hours of training involving an additional 11 community partners.



EDCC and SEA have been funded for a second year of WWETT programs which will run through October 2011 and provide 6 marine-based programs for educators and community partners across the state. To learn more about dates and locations of these no-cost 2011 workshops, see the [SEA's BWET webpage](#). To learn more about NOAA's BWET program, which supports our WWETT program, please visit [NOAA's website](#).

4. Piloting a Partnership: Foss Waterway Seaport, Point Defiance Zoo and Aquarium, and SEA

With grant support from a local foundation, SEA piloted an exciting collaboration in November with Foss Waterway Seaport and Point Defiance Zoo and Aquarium, blending the unique resources of each partner. For this series of Discovery Voyages providing hands-on learning opportunities to students, SEA coordinates the marine-based voyage, Point Defiance Zoo and Aquarium provides free admission to the zoo, and sends an educator to join the Discovery Voyage on the *Indigo*, while Foss sends their History Instructor to educate students about the maritime history of Commencement Bay, with a focus on the environmental implications of Commencement Bay's transition from the fishing industry to the shipping industry. The pilot program for this exciting collaboration was filmed and broadcast regionally by King 5 News.



"My students and I had a great learning experience and will not forget your generosity. My principal and I decided that the only fair way to determine what 30 students would go on the field trip is to select students with the highest grades for first quarter in my science class. As I announced this plan to my students they all seemed eager to improve their grade. By the end of the week I had about 20 students with A's or A-'s. This is a huge increase, as normally I only have about 7-8 students with A's in my class because science is hard for most students. This field trip was a huge motivation to my students to improve their grades. Overall, this was a great opportunity and improved learning in my classroom!"

- Mrs. Kelly Nelson, 8th Grade Science Teacher, Jason Lee Middle School, Tacoma, November 2010 Curriculum Development

5. Pacific Education Institute And SEA: Research-Based Curriculum Development

[Pacific Education Institute](#) (PEI), with support from Puget Sound Partnership, is partnering with SEA through the participation of PEI educator Pat Otto in our WWETT workshops, with a focus on PEI's rigorous research-based Field Investigations curriculum. Also in collaboration with PEI, SEA and our partner Edmonds Community College hosted 12 curriculum directors and community partners from South Sound School Districts for a dialogue about curriculum standards related to environmental education aboard the SEA vessel *Luna*.

6. Learn and Serve in Washington State

SEA is a regional leader in the field of service-learning, and part of our charge from the Office of Superintendent of Public Instruction (OSPI) through a \$25,000 Learn and Serve grant is to serve in a supervisory role for schools throughout Washington State, guiding them in meeting standards and increasing expertise in service-learning curriculum and activity implementation. Toward that end, SEA's Co-Directors travel the state providing supervision and offering training presentations. We have the privilege of partnering with staff from many schools in both micro and macro contexts. In June, SEA presented to educators and staff from schools around the state at the 21st Century Afterschool Learning Conference on the theme of integrating service-learning into afterschool programming. On a more local level, we supported school staff in Paterson, on the Columbia River, in launching a service-learning-based school-wide plant propagation business in which all academics will be linked to the plant propagation project. Please contact us to learn more or to set up staff presentations and workshops.

"In the heat of late July, Edmonds Community College Learn-n-Serve Environmental Anthropology Field (LEAF) School teamed up with SEA in a 3-day action-packed eco-voyage that allowed students the opportunity to explore the beautiful Sucia and Jones Islands, all while working towards a more sustainable community. There is nothing quite like standing on deck of the Indigo and feeling the Puget Sound winds brush against your face. The experience was truly one of a lifetime. We spent our days helping Washington State Parks complete maintenance tasks such as trail-building on Jones Island and helping to install sustainable decomposing bathrooms. We learned that Sucia Island once served the Lummi Indians in their seal hunting days, and...we were challenged to learn more about the culture of Salish peoples and how they have shaped the history of the island and landscape. Along with running watershed education stations aboard the Indigo, we were encouraged to look at sustainable and ethically responsible ways for current land management. Our eco-voyage with SEA led not only to meaningful education experiences on the water, but it allowed my peers and me to build a relationship and gain further appreciation for the work that Washington State Parks performs. We were able to be a part of helping to preserve and maintain the islands for future generations."

- Valerie, LEAF School student, July 2010



Edmonds Community College students create original music as a reflection activity during their SEA San Juan Island Service Expedition

Getting The Word Out: Regional Presentations

SEA offers presentations in many school and district settings as well as at regional conferences. In July we presented at the **Sustainability Education Summer Institute (SESI)**. Located on Bainbridge Island, IslandWood is a unique outdoor learning center designed to inspire life-long environmental and community stewardship. SESI 2010 enabled 150 participants, including 18 youth, to develop a deeper understanding of sustainability education. SEA was honored to present on-board the Indigo during this rich and vibrant opportunity for educators, and all our workshops were completely booked. We look forward to presenting at SESI 2011 (July 25-27 - save the dates!). Learn more at www.islandwood.org. In October, SEA presented an on-board workshop as part of the South Sound **Storming the Sound Conference**. The conference, for environmental and sustainability educators in the South Puget Sound region, had as its theme "Sound Sustainability - Greening the Future", and set out to explore and foster models and best practices for Puget Sound environmental and sustainability education.

Evaluation: Teacher Data

SEA administers regular surveys and analyzes data to assess program impact. Our Looking Back Survey assesses the impact of our WWETT program for teachers. The table below shows average participant responses on a scale of 1-5 (1=Strongly disagree, 5=Strongly agree), (n =111). These data clearly point to the positive impact of SEA programs. Anecdotal feedback was also strongly positive, with participants declaring that hands-on learning experiences with experts is what worked best about the workshop.

Looking Back Survey Item	Average - Before Participating	Average - After Participating	Average Change in Response
1. I have a deep understanding of regional and local watershed	3.14	4.26	+1.12

issues.			
2. I have strong skills in developing curriculum to address authentic local watershed issues.	2.77	4.10	+1.33
3. I have the knowledge and ability to access watershed education resources through NOAA, local organizations and other environmental stakeholders.	2.55	4.59	+2.04
4. I am committed to developing and implementing curriculum that includes meaningful watershed educational experiences.	3.56	4.59	+1.03
5. I am committed to engaging in collaborative online networks focused on watershed/ environmental education, in order to build linkages with other teachers, stakeholders, and students.	3.00	4.33	+1.33

By Kids, For Kids: SEA Solutions - A New Activity Coloring Book

After engaging in on-board Puget Sound Awareness learning rotations, students have been creating original artwork to be published in the SEA Solutions activity coloring book. This book, by students and for students, will help spread the word about solutions and actions we all can undertake to restore and enhance the health of Puget Sound. This book will be published in June 2011 and distributed throughout the region.

"This was one of the most fun trips I've ever been on. I liked how we scooped the water in the net and looked for plankton under microscopes."
- George Johnston, Puyallup student, August 2010



Summer + SEA = Really Cool Science Camps

In July, SEA teamed up with Pierce-Tacoma Metro Parks and Tacoma Public Schools to deliver their summer science camp. In August, 34 students from South Whidbey School District participated in a Discovery Voyage, funded by Sno-Isle Libraries through their Wonders of Water program, in which kids read all summer and then learned and explored aboard the *Indigo*. During that same week, SEA led a learning voyage to Jetty Island for students, in coordination with South Whidbey Parks and Recreation. SEA also led an on-the-water learning adventure for youth participants in the Hood Canal Salmon Enhancement Summer Science Camp and participated in a science camp sponsored by Foss Waterway Seaport.



Puget Sound Eco-Voyages...Let the Voyage Begin!

In August, SEA led our first Puget Sound Eco-Voyage, open to the general public, in partnership with Whidbey Island Kayaking Company. 12 participants enjoyed this remarkable summer evening adventure, with Voyage + Kayaking or Voyage Only options. Participants traveled 12 nautical miles aboard the *Indigo* from Langley Harbor Marina to Possession Point, where kayakers explored the surrounding waters, led by guides Ed Young and Nick Horton of [Whidbey Island Kayaking Company](#). All participants were able to engage in on-board environmental learning rotations, including Marine Science, Puget Sound Awareness, and Pilot House. Our second Eco-Voyage celebrated a community member's birthday, complete with live musical performance by the Shifty Sailors. Participants celebrated, learned, and explored Puget Sound. To learn more or to book your 2011 Eco-Voyage, please see [SEA's website](#) or email Susie and Chris at seaprograms@gmail.com.



A Splash Heard 'Round the Sound: SEA in the News

November 2010, King 5 News - [New marine science class boasts floating classroom](#)

June 2010, Everett Herald - [Teachers learn aboard 65-foot research vessel](#)

August 2010, Puyallup School District Connections - Students learn marine science aboard floating classroom:

<http://www.puyallup.k12.wa.us/ourdistrict/pubs/Connections/1011/10-08AugCX.pdf>

SEA 2010 Discovery Voyage Participants and Partners

Schools and Districts	Community Partners	
Anacortes School District	Cama Beach State Park	Port of Tacoma
Arlington School District and nearby districts	Citizens for a Healthy Bay	Port Townsend
Clallam Bay School District	City of Everett	Marine Science Center
Edmonds Community College LEAF School	City of Lynnwood	Puget Sound Voyaging Puget Sound
Edmonds School District and nearby districts	City of Seattle Parks & Recreation	Soundkeepers Alliance
Eton School	City of Tacoma	SeaTac Area State Parks
Everett School District and nearby districts	EnviroChallenger	Snohomish County
Garfield High School	Conservation Northwest	Snohomish Tribe of Indians
Giaudrone Middle School	Colville National Forest	Sound Citizen
Jason Lee Middle School	Daybreak Star Indian Cultural Center	Sound Experience
Kettle Falls School District	Deception Pass State Park	South Whidbey Good Cheer
Komachin Middle School	Earth Corps	South Whidbey Parks and Recreation
North Thurston Public Schools	Feiro Marine Life Center	Stilly-Snohomish Fisheries Enhancement Task Force
Oak Harbor School District and nearby districts	Foss Waterway Seaport	Sucia Island State Park
Pasco Educational Service District	Green Seattle Partnership	Suquamish Tribe
Port Angeles School District and nearby districts	Jefferson Land Trust	Tulalip Tribes
Port Townsend School District	Jones Island State Park	Washington Campus Compact
Quincy School District	King County	WA Department of Fish and Wildlife
	Longshoreman's Union	WA Department of Natural Resources
	National Oceanic and Atmospheric Administration	Washington State
	Northwest Association of Networked Ocean Observing Systems (NANOOS)	
	Northwest Maritime Center	
	North Olympic Salmon Coalition	
	Ocean Inquiry Project	
	Olympic National Forest	
	Olympic National Park	
	Pacific Education	

Sequim School District
Snohomish High School
Tacoma Public Schools and nearby districts
Suquamish High School
Seattle Public Schools

Institute
Pacific Rim Institute
Padilla Bay National Estuarine Reserve
People For Puget Sound
Port of Everett

University Extension
Whidbey Island Kayaking Co.
Whidbey Institute
Wilderness Awareness School
Whidbey Watershed Stewards

Join Us In Making A Difference For Youth And Puget Sound

By becoming a Friend of SEA with a tax-deductible donation, you are making a difference in the lives of young people and helping to protect and preserve the Puget Sound/Salish Sea environment.

Please give generously today!

You can make a secure online donation on [our website](#) or by check payable to "SEA":
SEA, PO Box 1512, Edmonds, WA 98020

You can also dedicate your donation to needed items that our students could really use:

Two Flip UltraHD Video Cameras - \$200 each. Students can shoot video as they learn, study, serve and explore on the waters of Puget Sound.

Bushnell 7x50 Marine with Illuminated Compass & Rangefinder Reticle Binoculars. \$150 each. Students can use binoculars to observe natural surroundings and marine life.

SEA is a Washington State 501(c)3 tax-exempt non-profit organization and all gifts are fully deductible up to the amount permitted by law.

A Little Help Goes A Long Way: Volunteer with SEA

Are you ready to grow your SEA legs, working shoulder to shoulder with scientists, community leaders and top educators from across the region? We rely on the support of our energetic volunteers and are always eager to have you aboard! Regardless of your skills or background, we can find a place for you as we share our passion for educating young people and reinvigorating the health of the Puget Sound. We need assistance with Indigo marine science programs, vessel maintenance, educational and scientific research, donor outreach, planning and coordination of special events.

Do you have another skill that could support SEA's work? Please let us know! Please contact Erin Way at ErinWay@ServiceEducationAdventure.org for more information on becoming a donor or volunteer. Thank you for your support!

SEA Staff

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