



# Padilla Bay Newsletter

A Joint Publication of the Padilla Bay Foundation and Padilla Bay National Estuarine Research Reserve

Summer 2007



**Padilla Bay**  
National Estuarine Research Reserve

Padilla Bay National Estuarine Research Reserve is managed by the Washington State Department of Ecology under the National Estuarine Research Reserve System established by NOAA.

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The Padilla Bay Foundation is a membership-based non-profit organization formed in 1987. Its mission is to help preserve the Padilla Bay estuary in Skagit County, Washington, through support of Padilla Bay National Estuarine Research Reserve.

Padilla Bay Foundation  
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Publication No. 07-06-002



## Ten Years of Map Making for Padilla Bay's GIS

While finishing up her Masters Degree project mapping the intertidal vegetation of Padilla Bay, Suzanne was hired at the reserve in 1997 to set up the digital mapping facility. GIS stands for Geographic Information Systems—a system for capturing, storing, analyzing and displaying data which are spatially referenced to the earth. After setting up the lab her next project was to “rescue” historical water quality and fish data in studies done within Padilla Bay. “A Study of the Preoperational Marine Environment in the Vicinity of the Texas Company Refinery Puget Sound Works Anacortes, Washington” by Sylvester and Clogston is one such study published in 1958 from which water quality sampling locations and oyster beds locations were converted to GIS data layers. Suzanne now has her hands in many projects, assisting Padilla Bay’s research, education, and stewardship programs, and working jointly on projects with the state Department of Ecology and other local groups.

Suzanne is currently working with the Skagit Conservation District, the Skagit County Health Department, and WA State Department of Ecology, on a project to examine water quality in the Samish Bay Watershed. The goal of the study is to protect and expand areas of Samish Bay that are safe for recreational and commercial shellfish harvest, swimming and boating. Suzanne’s experience with the similar Padilla Bay Watershed and her knowledge of the data resources available through Department of Ecology and county have been a huge asset to

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## Padilla Bay Foundation Bids Farewell To Board Member Dave Reed

Dave Reed, Manager of Tesoro Refinery in Anacortes, will be transferring to the Los Angeles area. Dave has been a welcome addition to the Foundation Board. Recently, Dave arranged for the donation, from Tesoro, of new computer equipment to assist the Foundation's membership data management. The Foundation Board of Directors wishes Dave a smooth transfer and much success with his new responsibilities.

## Two Opportunities to Multiply Your Gift and Support the Padilla Bay Reserve

### Foundation Establishes Endowment Fund

Padilla Bay Foundation has received seed money and a 2-year matching pledge to establish a \$25,000 Endowment Fund with the Seattle Foundation. Padilla Bay Foundation's current challenge is to raise \$11,500 by April 2009. The Foundation is very excited about this opportunity to create a lasting legacy of endowed support. We extend sincere thanks to the donors who have initiated this challenge and to those wishing to contribute to this solid asset. Supporters wishing to contribute to this fund, can contact Padilla Bay Foundation office at: [foundation@padillabay.gov](mailto:foundation@padillabay.gov) or (360) 757-3234. Please mention that you are interested in the Endowment Fund.

### Benefactors for the Bay Race to the Finish

There is still time to contribute to this capital campaign that ends this fall. The National Oceanic and Atmospheric Administration will match donations 2.3:1, which means that a \$100 donation will grow to \$330! Support to this campaign will fund the seemingly endless "finishing touches" to recent construction projects, including the Breazeale barn and house remodels and the Bunk House. Our goal is to raise \$30,000 before fall.



Padilla Bay's Bunkhouse: Ready for Occupancy



Padilla Bay Foundation

## How You Can Help

Grassroots involvement is the core of Padilla Bay Foundation's commitment to protect Padilla Bay and support the Padilla Bay Reserve.

Membership in the Foundation means you are contributing directly to environmental education and research right here in Western Washington.

Categories of membership are:

Senior/Student	\$20
Individual	\$30
Family	\$40
School/Organization	\$50+
Supporting	\$60
Sustaining	\$100+
Small Business	\$100+
Sponsor	\$250
Patron	\$500
Steward	\$1000

Send your contribution to:  
Padilla Bay Foundation  
PO Box 1305  
Mount Vernon, WA 98273  
(360) 757-3234  
a 501 (c) 3 organization

## Foundation Board Members

President: Gail Smith  
Vice-president: Charlie O'Hara  
Secretary: Tom Richards  
Treasurer: Deb Canon  
Past-president: Richard Treston

Lyn Bishop  
Paul Dinnel  
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Sue Krienen  
Cort Liddell  
Tim Manns  
Patsy Martin

Terry Stevens - Advisory Member  
Kay Reinhardt - Administrator



**Padilla Bay**

National Estuarine Research Reserve

# Summer Events

## Presentations for June, July and August

### Wild Edible Plants

Come and experience summer's bounty. Join naturalist Marlee Osterbauer in this search for wild edible plants. She will share her extensive knowledge of plant uses and folklore. Weather may be chilly, so dress appropriately. You may want to bring a notebook and pencil. **Saturday, June 9, 2:00-4:00.** Please register online or call the Interpretive Center.

### Summer Bird Songs

Enjoy a morning of bird watching and listening with naturalist, Libby Mills. Early summer is a great time to observe young fledglings while still catching plenty of breeding activity and singing. This class moves slowly, so dress in warm layers and consider bringing a folding chair. **Tuesday, June 12 and Wednesday, June 13, 8:00-12:00.** Call to register, or register online

### Mud Flat Safari

Padilla Bay's summer low tides uncover an amazing world of estuary animals and plants just waiting to be discovered. Come and explore with Padilla Bay Reserve's mud flat experts. This program is designed for all ages. Whether you're more comfortable on a firm, sandy beach, or squishing through the ooze, program leaders will accommodate your level of adventure. Bring a jacket for the windy beach and snug boots or old shoes. We will meet at the Interpretive Center and end at Bay View State Park. **Friday, June 29, 10:00-12:00**  
**Friday, July 13, 10:00-12:00**  
**Tuesday, July 31, 12:30-2:30**  
**Thursday, August 9, 10:00-12:00**  
**Saturday, August 25, 10:00-12:00**



### Seeing the Forest Through Einstein's Eyes

Discover new ways of seeing our temperate rainforests through the lens of science and through the eyes of a genius. This fun and interactive forest slide presentation will take

you on a journey into a world of dynamic possibilities, beauty, and hope for the future. Terri Dix is a certified heritage interpreter through the National Association for Interpretation, and has taught environmental education for twenty years. Presently she works as a freelance educator, musician and storyteller. **Saturday, June 16, 1:00-2:30.** Please call or register online.

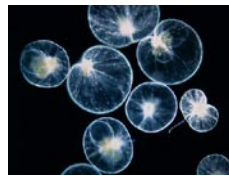
### Sketching the Natural World



Bring your sketchbook or journal and favorite pen or pencil, and take time to look more deeply at the world. Artist and naturalist, Libby Mills will teach the basic techniques of quick field sketching while walking slowly and carefully, sitting quietly, and observing closely. Bring book and pencil or pen, a folding chair, and lunch. You may register for one class, or come for both to build on what you learn. **Saturday, July 21 and Sunday, July 22, 9:00-1:00.** Please call or register online.

### Ocean Drifters

Teeny, tiny, microscopic and so very important! Though they resemble fantasy space creatures, drifting plankton form the base of life on our planet. People of all ages are welcome to this interactive presentation about plankton. Padilla Bay educator, Annie Horner will be looking at live plankton straight out of our estuary as well as bioluminescent plankton cultured in the lab. Discover the secret, miniature life of estuary drifters. **Saturday, August 18, 1:00-2:30.** Please register online or call the Interpretive Center.



The Breazeale Interpretive Center is open  
Wednesday-Sunday, 10:00-5:00.

Closed July 4

Register online or by phone.

[www.padillabay.gov](http://www.padillabay.gov)

(360) 428-1558

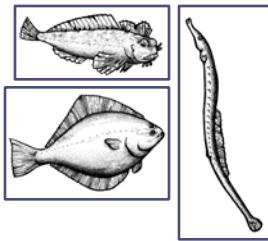




### Beach Seine Programs

This popular program will introduce you to the fish and invertebrates in Padilla Bay's eelgrass meadow. Using a small rowboat, educators set a seine net in the eelgrass. You can help pull the net onto the beach and see why estuaries are called nurseries of the sea. There is no need to register for this program. Just meet on the beach at Bay View State Park.

- Wednesday, June 27, 2:00
- Friday, July 6, 1:00
- Thursday, July 26, 1:00
- Friday, August 17, 2:00
- Thursday, August 23, 11:00



### Videos: Sundays at 1:00 & 4:00

June	3	Forage Fish/Tiny Tails of Survival (29)
	10	Winged Migration (85 min)
	17	Secrets of the Salt Marsh (20 min)
	24	Seasons in the Sea (55 min)
July	1	Where Have all the Orcas Gone? (40)
	8	The Intertidal Zone (17 min)
	15	The Rivers (54 min)
	22	Heron Cove (60 min)
	29	Days of Salmon Traps (30 min)
August	5	Padilla Bay (20 min)
	12	Seasons in the Sea (55 min)
	19	Creating Future for People/ Salmon
	26	Estuary! (15 min)

### Padilla Bay by Kayak

Enjoy paddling along the shores of the bay with an Island Outfitters guide and a Padilla Bay naturalist. No experience necessary. Minimum age is 12, with people under 18 accompanied by a parent. Please meet at 10:30 at the Padilla Bay Reserve for a brief orientation, with launching from Bay View State Park. Fee is \$65 per person, with proceeds benefitting the Padilla Bay Foundation. **Call Island Outfitters at 299-2300 for information and to register. Saturdays, June 23, July 21, August 18, and September 1, 10:30.**

## Monthly Youth Programs Offer Fun Learning

**Mini Explorers** are the 3-5 year old learners. We look at a new topic each month, with stories, games, hands-on observations, art projects, and plenty of action. Call the Interpretive Center to register or register online.

June 20 & 21, 10:00 & 1:00  
*Awesome Algae—Sometimes green, sometimes red or brown, algae offers food and shelter to estuary animals.*



July 11 & 12, 10:00 & 1:00  
*Mud Flat Safari - Head for the mud to see what lives beneath the tide in Padilla Bay. Come with a jacket and snug boots or old shoes that tie for this trek to the beach.*

August 15 & 16, 10:00 & 1:00  
*Wiggling Worms- There's more to a worm than slime and wiggles. Meet these important characters up close and see how life goes on under the ooze.*



**Junior Ecologists** are 6-9 year olds who have fun exploring the estuary. Excursions to the beach, science experiments, games, art projects, and studying life in the bay—this program is guaranteed fun! Summer programs all include a trip to the beach, so wear snug boots or old shoes that tie, and bring a jacket. Call the Interpretive Center or register online.

June 22 & 23, 10:30-12:00  
*Elegant Eelgrass—Padilla Bay's pride and joy is 8000 acres of wonderful eelgrass. June's low tides will let us explore the meadow up close.*



July 27 & 28, 10:30-12:00  
*Crusty Crustaceans—Learn all about the estuary's armored animals, from the tiny amphipod to the mighty Dungeness crab.*



August 10 & 11, 10:30-12:00  
*Mud Flat Safari—Come explore all the plants and animals that the tide leaves behind.*

## Dungeness Life Stages



zoea



megalops



megalops



juvenile

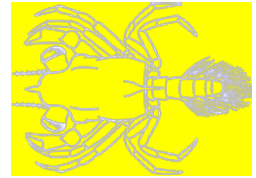


adult

## Graduate Researcher Studies Effects of Macroalgae on Crabs

by Liz Leavens

True crabs, such as Dungeness crabs, go through an intricate life cycle. They molt, or shed their skin many times as planktonic larvae floating in the water column and undergo a metamorphic molt to what is called the megalopae stage. To learn more about this, one needs only to sit down with the recipient of a Padilla Bay NERR Graduate Research Fellowship award, Elizabeth Harvey.



With her Bachelor's in Marine Science from the University of Maine under her belt, Liz is pursuing a Master's degree in Environmental Science from the Huxley College of the Environment at Western Washington University in Bellingham. With guidance from her graduate advisor, Director of Shannon Point Marine Center, Dr. Stephen Sulkin, Ms. Harvey has developed a research project addressing the effects that large algae or "macroalgae" in high densities may have on true crabs.

During the megalopae stage in their life cycle, true crabs settle from the water into a habitat suitable for juvenile existence. Previous research has shown that megalopae prefer settlement in complex habitats such as eelgrass, oyster beds, and high-density macroalgae. Yet, certain chemicals, such as dopamine, associated with the decaying of some macroalgal species are toxic to invertebrates. Along with this, macroalgae often creates low-oxygen conditions harmful to the aquatic community, including juvenile crabs. So, researchers question why megalopae settle in a habitat that is potentially detrimental to their survival.

Liz conducted her research in both the laboratory and the field. Megalopae were collected from Padilla Bay and the surrounding area and brought back to the lab to observe settling behavior (macroalgae versus sediment) and dopamine effects. Field studies took place within the Padilla Bay Reserve. Crabs were collected from high-density macroalgae and the sediment underneath for comparison. Quantity and size variation of the crabs was recorded.

Preliminary research from the summer of 2006 showed there were more crabs in the macroalgae than in the sediment beneath. This trend held true for two of the collection days when the macroalgae was in full bloom. Twelve days later on the third sampling date, there were very few crabs in either the decaying macroalgae or the sediment. Lab results also show that dopamine had an adverse effect on the crabs used in the study.

This research indicates that the environment under macroalgae is not suitable for juvenile crabs. So why **do** they settle there? We're still wondering.



the project.

### Ten Years of Map Making - continued from page 1

Picture a satellite photo of the Samish Watershed. Add roads. Add streams. Where are the forests? How is agricultural land being used? Where are we monitoring water quality? Where are the homes and towns? How about parking lots, dairy farms, and septic systems? Where are the conservation areas? Linking all this information and presenting it visually is a task that has Suzanne Shull's brain and computer humming.

Nonpoint source pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. When rain moves over the ground, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. These pollutants include: excess fertilizers and pesticides from homes and farmland; oil, grease, and toxic chemicals from pavement; sediment from improperly managed construction sites, crop and forest lands; and bacteria and nutrients from livestock, pet wastes, and faulty septic systems.

With such complex and disparate factors contributing to water quality problems, Suzanne's "maps" can help agencies, managers, and the public better understand the big Samish Watershed picture and work together to clean and protect this valuable resource.

### Simple Things You Can Do to Protect Water Quality in your Watershed

- Make sure your on site septic system is in good working order by having it inspected every 1-3 years.
- Protect the natural vegetation along streams and lakes.
- Bag pet waste & put it in the garbage.
- Use natural fertilizers and avoid using pesticides on your lawn and garden.
- Use proper waste management when you are boating, fishing, hunting, hiking, & camping.
- Call the Spill Hotline if you see a spill or illegal dumping: 800-OILS-911.

#### Check Inside for:

- Presentations
- Mini Explorers
- Junior Ecologists
- Films



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