Padilla Bay Newsletter

A Joint Publication of the Padilla Bay Foundation and Padilla Bay National Estuarine Research Reserve Autumn 2009

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.

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Inside

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Nearly 8,000 harbor seals call the San Juan Islands and eastern bays (including Padilla Bay) home. Unlike other mammalian predators in this area, harbor seals are abundant, nonmigratory, and able to consume a wide variety of prey, including commercially valuable fish species. Populations of many commercially harvested fish (including salmon, herring, and rockfish) have suffered sharp population declines in recent decades due to habitat loss and over fishing. Marine protected areas (MPAs) targeting rockfish habitat are being considered for the area encompassing the San Juan Islands, Padilla Bay, and surrounding bays. While the establishment of MPAs relieves some of the pressure from human fishing, those 8,000 harbor seals are still consuming rockfish and other threatened species. Could harbor seals prevent threatened fish populations from recovering?

Figuring out how many fish of each declining population are consumed by the harbor seals of the San Juan Islands and eastern bays requires complex mathematical modeling that ties together numerous field and laboratory studies. Sarah Howard, as a part of her M.Sc. thesis, developed a bioenergetics model that can be used to determine just how many rockfish, salmon, herring, and other species are being consumed by the entire seal population of the San Juan Islands over the course of a year. A bioenergetics model takes into account differences in energy density of prey items, differences in energy consumption between individual predators, and other factors influencing how energy flows through a population within an ecosystem. The amount of energy consumed by a harbor seal equals the amount of energy expended by the seal through its daily

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activities (field metabolic rate), excretion, growth, and reproduction. The energy requirements of a seal vary with sex, age, and season. Sarah's bioenergetics model classified seals into six age/sex classes: Adult males and females, subadult males and females, and male and female pups. Rates of energy usage were determined for both breeding (mid-June through mid-September) and non-breeding (mid-September through mid-June) seasons.

Seals were tagged with satellite transmitters at three sites (including one in Padilla Bay) to monitor their time spent hauled out, swimming in shallow water, and diving during breeding and non-breeding seasons. Each of these activities requires a different expenditure of energy. For both sexes, diving activity increased in the non-breeding season and shallow water activity increased in the breeding season. Both adults and subadults used more energy in the breeding season, with the highest rate of energy usage for adult females during the breeding season.

Proportions of six fish populations (rockfish, salmon, herring, pollock, and shiner perch) in the diets of the seals were determined by examining harbor seal scat. The energy densities of these prey species were determined from scientific literature. Herring and salmon constituted the majority of the harbor seals' diets in both the breeding and non-breeding seasons. While these species are not specifically targeted by the proposed MPAs, other conservation efforts aimed at protecting these species must take into account seal predation. Rockfish made up only a small part of the seals' diets, but it is possible that even low levels of predation could impact rockfish populations.

Sarah Howard presented her thesis, "Energetic Requirements and Prey Consumption of Harbor Seals in the San Juan Islands, WA" on July 27th at Western Washington University. Her thesis work was completed as part of her Master of Science degree program under the direction of Dr. Alejandro Acevedo of WWU's Biology department. Sarah received a Padilla Bay Research Assistantship in 2008.

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	$25
Individual	$35
Family	$50
School/Organization	$50+
Supporting	$75
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
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Foundation Board Members

Padilla Bay Foundation News

Save These October Saturday Dates!

October 3rd from 3:30-7:30PM, join us here at the Reserve for the Foundation's Annual Meeting & Dinner. A delicious, diverse smorgasbord will be served, along with a presentation and short business meeting. $15 per person. RSVP please at www.padillabay.gov or 360-428-1558.

October 24th from 1:00-3:00PM, the Foundation will co-sponsor the Smith/Aguero Trust Presentation on the Environment. Greg Hood, senior research scientist with the Skagit River System Cooperative in LaConner will present Tidal Beavers in the Skagit River Delta. In his hunt for intact tidal scrub habitat and its signature plant, sweetgale, Greg found some fascinating evidence of North American beavers helping restore salmon habitat through their dam building techniques. Light refreshments will be served. RSVP please: www.padillabay.gov - or - 360-428-1558.

Book Review–*Cascade-Olympic Natural History: A Trailside Reference* by Daniel Mathews

No single book can have everything about each tree, flower, mammal, bird, reptile, amphibian, fish, insect, and rock you might see on a hike in the Cascades or Olympics, but there is one that makes a truly inspired try: Daniel Mathews' *Cascade-Olympic Natural History: A Trailside Reference*. In 623 compact pages weighing just a bit over a pound, Mathews addresses all these areas of natural history and more. It's a happy bonus that he goes far beyond the details of identification and presents well-chosen information in an engaging style.

Take for example Mathews' pages on the Douglas-fir, a tree familiar to us all from parks and forests, the Padilla Bay upland trail, and perhaps our own backyards. After a brief technical description, we learn this tree's superlatives (including world's tallest), its ecological role and utilitarian importance, and a brief biography of its namesake, botanist and explorer David Douglas. There's a color photo of the Douglas-fir's distinctive bark too. In many cases, Mathews presents characteristics for identifying several related species followed by an essay on their shared behaviors, ecological roles, and other aspects.

Besides all the Trailside Reference's species information, Mathews has scattered special essays throughout. Topics range from Antlers, Eighteenth Century Naturalist George Steller, and Fish Habitat Destruction to Moths vs. Butterflies, The Fungus/Root Symbiosis, Rock Flour, and more.

Now 10 years in print, this second edition is fast becoming a classic with a place on the bookshelf and in the backpack of anyone interested in Northwest nature. Take it along on your next hike. When you sit down for lunch, take your handy volume out and learn about the world around you. You'll find this book, known simply as "Mathews" among Northwestern naturalists, an excellent companion. And it's available at the Breazeale Interpretive Center! ($24.00) *-review by Tim Mann*

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Volunteer Opportunities

Join the Skagit Stream Team

Get intimate with Skagit County's waterways. The Skagit Stream Team is looking for volunteers to monitor the quality of water in the Samish and Skagit River watersheds. Teams of 3 to 4 people check a stream's temperature, salinity, dissolved oxygen, and depth once a month. Samples are then brought back to the Padilla Bay lab where another volunteer tests for fecal coliform and turbidity. The goal is to collect 9 months of accurate water quality data to share with interested agencies. The program provides hands-on learning about natural systems, land-use impacts, and stream/estuary health. Orientation and training will be at the Interpretive Center on: **September 8 and 9, from 6:00-8:30PM and Saturday, September 12 from 9:00AM-3:00PM.** If you'd like to volunteer or have any questions, call Susan Wood at 360-428-1066 or Kristi Carpenter at the Skagit Conservation District, 360-428-4313.

Volunteers and Kids Needed: Puget Sound Kids Day September 26

Since 1992 Padilla Bay has been helping kids and parents celebrate Puget Sound with its annual Kids Day celebration. The event has been a favorite from the start, and each year a wonderful group of energetic volunteers and staff brings activities, songs, door prizes, and t-shirt printing to over 100 children.

Padilla Bay will be celebrating Kids Day on **September 26 from 1:00-3:00.** We need adult and high school volunteers to make it all happen, so call Alex at the Interpretive Center to help out. 360-428-1070. Invite your friends and family, bring a T-shirt to decorate, and come celebrate our great Puget Sound. Kids Day is held jointly with People for Puget Sound.

Climate Stewards

Global climate change may seem a daunting challenge, but every individual has the power to be a part of the solution. Climate Stewards are trained volunteers who work with their local communities to educate their neighbors about climate change and demonstrate how simple changes in our lives can make huge differences in our communal carbon output.

Climate Stewards receive 36 hours of FREE professional training. Participants become familiar with the science of climate change, impacts of global warming and actions that reduce global warming pollution. In exchange, participants return at least 36 hours of volunteer service over the next eight months. They develop and implement outreach projects in their communities with training and support. They participate in meaningful community projects that promote energy conservation and other strategies to reduce global warming emissions. Projects are geared toward the interests of the volunteers.

Next training: **Thursdays, 9:00 am - 3:00 pm starting October 15 and ending November 19.** Call Padilla Bay for an application. Be part of the solution!

Padilla Bay Foundation Membership

Grassroots involvement is the core of Padilla Bay Foundation's commitment to protecting our estuaries and supporting the Padilla Bay National Estuarine Research Reserve.

Members of the Padilla Bay Foundation contribute directly to environmental education and research at Washington State's only Estuarine Research Reserve.

Memberships can be for multiple years. Please consider payment of 2 or 3 years at a time, as this will save the Foundation considerable labor and mailing costs and insure that your dues work harder supporting the programs you care about.

Please fill out the reverse side of this form and join today.

Membership Categories

Senior/Student	$25
Individual	$35
Family	$50
School/Organization	$50
Supporting	$75
Sustaining	$100
Small Business	$100
Sponsor	$250
Patron	$500
Steward	$1000
Benefactor	$2000

Hand cast brass critters, mounted at the Interpretive Center, are available to donors of $1000 and above who would like to be acknowledged in this way.

Padilla Bay
National Estuarine Research Reserve

Autumn Events

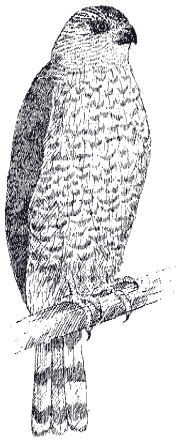
Presentations for September, October, and November

Home Composting Workshop

Want to take out the trash less often, stop hauling grass clippings to the dump, and use your food and yard wastes to feed your garden? Start composting! This workshop will cover the basics of bin building, worm composting, what to add (and what not to add) to your pile, how compost happens, and more. Presenter Cynthia Hansen is a Padilla Bay AmeriCorps member and a Skagit Master Composter/Recycler. **Sunday, September 13, 2:00-4:00**. Please call or register online.

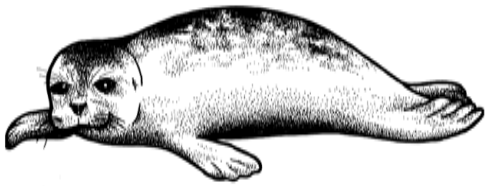
Fall Birding by Sight and Sound

Though the wild summer singing is done, fall is a great time to focus on newly arrived migrants and those persistent locals that stay through the winter. Join naturalist, Libby Mills, for a morning of watching and listening for birds around Padilla Bay. We'll begin near the Interpretive Center and end up carpooling to local spots on the Skagit Flats. Wear warm, outdoor clothing, and pack binoculars, field guides, and snack or lunch. The class is offered twice, with each class limited to 15 participants. Please call or register online. **Saturday, September 26 or Sunday, November 15, 8:30-12:30.**



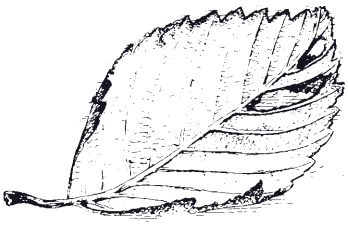
Wild Edible Plants in Fall

Northwest naturalist, Marlee Osterbauer joins us once again for a popular program on wild edible plants. Marlee has a wealth of knowledge and stories about native plant uses and traditions. Weather may be chilly or wet, so dress for the outdoors. You may want to bring a notebook and pencil along with your appetite. **Saturday, October 3 or Sunday, October 4, 1:00-2:30.** Please call to register.



Dolphins, Whales, Seals and Bears of the Polar Regions

The vast ecosystems of northern and southern high latitudes are home to an array of amazing mammals that have much to tell us about the status of the world's climate and oceans. Wildlife biologist David Drummond of the Merlin Falcon Foundation has first hand experience in the polar regions, collaborating with top marine biologists. Powerful images of uncommonly observed Antarctic and Arctic wild animals will offer opportunities for us to explore and discuss this "hot topic." **Saturday, October 17, 1:00-2:30**



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

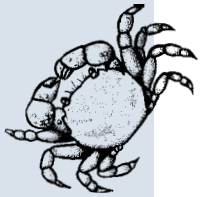
Staff are available 7 days a week.

Closed November 11, 26, & 27.

Register online or by phone.

www.padillabay.gov

(360) 428-1558



Skagit Living Green Lecture Series

Burlington Public Library, 820 E. Washington St

September 10, 7PM, **Farm Power! Clean energy from Washington cows**. Learn about how turning manure into energy helps farmers, electricity users and the community. Kevin & Daryl Maas, founders of Farm Power, LLC

October 8, 7PM, **Renewable Energy for Your Home**. Explore renewable energy technologies, energy efficiency, conservation strategies and make a difference! Ian Woofenden, Senior Editor, Home Power Magazine

October 14, 7PM, **Energy Efficiency Workshop**, Save energy! Save money! Reduce your carbon footprint! Eric Chen, Skagit County Climate Steward

November 12, 7:00PM, **Create Holiday Traditions with Local Food**. Discover delicious recipes and practical tips to make your holiday meals special and green. Meet local farmers and producers and sample their Skagit-grown fare. Terry Burkhardt, Slow Food Skagit River Salish Sea

December 3, 7PM, **A Waste Wise Holiday**. Reduce, Reuse and Rethink your holiday experience in this fun and festive workshop with tips on re-gifting, smart shopping, decorating and no-waste wrapping. Maribeth Crandell, Oak Harbor Environmental Educator

Sponsored by Northwest Clean Air Agency, Padilla Bay Reserve, and WSU Skagit County Climate Stewards in partnership with the Burlington Public Library.

Lectures are free to the public and open to all ages. For more information about the series and Skagit County Climate Stewards call 428-4270, ext 223 or visit our website www.padillabay.gov/ClimateStewards

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.

September 23 & 24, 10:00 & 1:00
Life on a Rock–*Here's a habitat loaded with plants and animals. Learn all about the critters who call a rock home.*

October 21 & 22, 10:00 & 1:00
Cider Pressing–*Turn the crank and enjoy a fall day in the Breazeale family orchard. Don't forget warm clothes!.*

November 18 & 19, 10:00 & 1:00
Songs and Stories–*Join us for the best of our wonderful estuary songs and stories. This will be an action-filled program.*

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! Call the Interpretive Center or register online.

September 18 & 19, 10:30-12:00
Salmon II–*Continuing last spring's class, we're offering lots of brand new, fun activities about our favorite fish, the salmon.*

October 23 & 24, 10:30-12:00
Cider Pressing–*Spend a fall afternoon out in the orchard, and learn about the Breazeale family farm.*

November 13 & 14, 10:30-12:00
Wild about Water–*Wet, wonderful, wild water. We'll experiment and play and see how to take care of the water we can't live without.*

An indicator of overall ecosystem health, the Great Blue Heron is an important subject to continue monitoring. As changes to the ecosystem occur, the protection of heronries becomes ever more crucial.

Great Blue Heron nests in the March Point heronry near Anacortes

Herons of Padilla Bay

Great Blue Herons, *Ardea herodias*, are tranquil and serene wading birds and have sparked artistic inspiration and admiration for centuries. In Padilla Bay, we are fortunate to have one of the largest groups of Great Blue Heron populations in the State. Unlike Great Blue Herons in other regions, our unique subspecies (*Ardea herodias* fannini), whose range extends from Alaska to southwest Washington State, is a year-round resident. This may be due to the temperate climate of the Pacific Northwest, which provides ideal foraging conditions all year.

Great Blue Herons feed in a variety of habitats, including marine and estuarine intertidal areas, wetlands, riparian forests, and upland fields and forests. Their diet consists of fish, invertebrates, small mammals, and some amphibians and reptiles. Herons nest in isolated coastal forests, or "heronries," which are located adjacent to foraging grounds.

Padilla Bay is an ideal setting for these wading birds to forage. With approximately 12,000 acres of intertidal habitat including mudflats and eelgrass meadows, this area provides vital habitat for aquatic prey species. There are several local heronries located near Padilla Bay, including March Point, which supports some 600 nests, and a smaller colony of about 200 nests located on Samish Island.

Recent studies have shown that there has been a shift over the last decade or more, from many smaller Heron colonies, to fewer, larger colonies. As of 2007, there were four major heronries in the Salish Sea, representing 50% of the total breeding population. The largest of these is the March Point heronry, which is presently the single largest heronry in the Salish Sea, accounting for 11% of the total heron population in the region. Reasons for this consolidation may include increased predation by a growing Eagle population, disturbance from humans, and pollution.

One of the Great Blue Heron's natural predators is the Bald Eagle, which often nests near or sometimes within Heron colonies. While protecting their own nests, the resident Eagles may provide Herons and their young some protection from other predators including crows, ravens, and raccoons, but, as a result of this close association, Heron nestlings, juveniles, and more rarely adults, often fall prey to Eagles. As Bald Eagle populations continue to rise (currently 10% annual growth), there could be an associated rise in Heron predation by Eagles.

The concern with fewer, larger Heron colonies is that environmental and human-induced disturbances have the potential to impact more of the population if they are all concentrated in one area. Skagit Land Trust owns the land which supports part of the heronry and has developed conservation agreements with neighboring landowners and the City of Anacortes to protect about 80% of the nesting habitat.

"Planning for Climate Change" Workshop Focuses on Adaptation Strategies

Okay, we know that climate change is happening. Now what? That is the question addressed by a recent workshop offered in Mt. Vernon and Olympia to 85 shoreline planners by Padilla Bay's Coastal Training Program. Instructors from the University of WA's Climate Impacts Group, King County, WA Sea Grant, and WA State Department of Ecology laid the foundation for the class with current research findings and anticipated impacts (including flooding, damage from storm surge, drought, and sea level rise). They then addressed the fundamentals of how to plan for climate change, how to conduct a vulnerability assessment, how current state regulations address climate change, and how other governments are taking on the challenge of preparing for climate change. Instructors helped students become familiar with key data sources and covered specific strategies for engaging stakeholders in climate change preparedness. Each participant received a copy of the authoritative guidebook Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments.

Coastal Training Program Coordinator, Cathy Angell, was pleased with survey responses from the training class. "Collectively, 93% of the participants said that their knowledge increased and 93% claimed that they plan to apply this knowledge in their work."

This workshop is the result of a national grant from NOAA's Coastal Services Center. It was designed to be customized and used by other reserves in the National Estuarine Research Reserve System. All workshop materials and PowerPoint presentations are posted on the NERRS national website (www.nerrs.noaa.gov). The final product includes streaming video of each of the workshop sessions.

COASTAL TRAINING PROGRAM Washington

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