SHORE STEWARDS NEWS

January 2006 Island County, Washington **Issue No. 15**

Water Conservation and Your Septic System

It may seem unusual to be reading an article regarding water conservation during one of the rainiest winters on record. We usually think of conserving water to reduce the impact on our precious aquifers or to stop overuse that may result in salt water intrusion in our wells. The primary reason to conserve water during a rainy winter, though, is to extend the life of our septic systems and to minimize the chances of having our septic systems polluting our environment.

Water use during the winter is usually indoors. There is no need to water our lawns and gardens, and few of us wash our cars out in the cold and rain. A family of 4 typically uses about 260 gallons of water a day, according to the University of Minnesota Extension, with about 75% being used in the bathroom: 40% being used by toilets and 35% by the faucets and shower/bath. Kitchen use accounts for about 15%, and another 10% is used in washing clothes. Unless you are served by a municipal sewer, this water flows into your septic tank, with an equal amount flowing from the tank into your drainfield. Much of the water that flows into your drainfield percolates down through the soil, losing its toxicity as it flows towards the aquifer. This can take up to several years, depending on how permeable the soil is beneath the drainfield. Some of the water evaporates, or is absorbed through the root systems of vegetation planted over the drainfield, transpiring into the air. During long periods of rain, however, the soil over the drainfield may become saturated, reducing the evaporation process and thereby reducing the ability of our drainfield to do its job. During times like this it is very important for us to help our septic systems by reducing the amount of water that flows into them.

Reducing Water Use in the Kitchen and Utility Room

Washing clothes and dishes, along with other water uses in the kitchen, accounts for about a quarter of our household use. The most obvious way to cut back on water use here is to not wash dishes or laundry when we only have partial loads. A typical top loading washing machine uses 50-60 gallons for older models, and about 40 gallons for newer models. That is up to twice the amount of water used in a half full bathtub! A dishwasher can use 12-15 gallons in an older model or 6-9 gallons in a newer model. The pre-rinse cycle can add another 3-5 gallons to this total. You can see how waiting until you have a full load can save the amount of water that flows into your septic system. When you are in the market for a new washing machine, consider buying a front loading machine. A new front loading machine typically uses just 17-28 gallons of water.

When our household water flows into the septic tank it churns up the liquid that is already in the tank. There is a sludge layer on the bottom of the tank and a scum layer in the top of the tank, typically separated by water. When too much wastewater enters the tank, these layers can be disturbed, moving sediments into our drainfield. One way that we can reduce this churning is to limit our number of wash loads. Rather than delegating one day of the week as “wash day”, it is suggested that you spread out the use of your washing machine and dishwasher throughout the week. It is recommended that you wash only one load of clothes or dishes a day. If you are using a water softener that is connected to the septic system, be aware that recharging your system as infrequently as possible will avoid overuse of water and overloading of your septic system.

Water Use Reduction in the Bathroom

Federal and state standards regulate the amount of water that can be used in newly-installed toilets and showers. New toilets, for example, use only 1.6 gallons of water per flush. High efficiency toilets are also available, including dual-flush and pressure-assist models, and which use at least 20% less water than the 1.6 gallon models. The 1.6 gallon models that first appeared on the marketplace when these new regulations went into effect were not nearly as efficient as the models they replaced, but new technology has taken care of that. Replacing your older toilet with a new model will save almost two gallons of water per flush. If you want to keep using your old toilet, devices are available to reduce the amount of water used. These include displacement bags, toilet dams, or adjustable flappers. Never try to reduce water use by placing a brick in the toilet; bricks will eventually dissolve and tiny pieces may clog your plumbing.

Install a water efficient showerhead that uses no more than 2.5 gallons of water per minute, which is the current standard. A standard shower head uses 5 - 10 gallons of water per minute. There are several manufacturers, however, who are selling showerheads for spa-like upscale bathrooms that exceed federal and local regulations and use a tremendous amount of water. These models may be in the form of huge “rain” showerheads, multiple showerheads, and showerheads with dozens of high-power jets. Many of these showerheads are technically illegal to sell, but high demand has prompted some manufacturers and retailers to skirt the law. Though your shower experience may be intense, with up to 13 gallons per minute being used by a twelve inch “rain” showerhead, you will also quickly drain your hot water tank. That is a very large amount of water to enter your septic tank in a short time period!

If you don’t already have them, install low-flow aerators on your kitchen and bathroom faucets. These reduce splashing and water use, and are easy to install. Recommended flow is 2.2 gallons per minute for kitchen faucets and 1.5 gallons per minute for bathroom faucets.

Leaks: The Hidden Water Waster

Leaks are often a hidden user of water that may have a big impact on your septic tank. If you have a water meter, turn off all water in your house and take a reading. Don’t use any water for a half hour and check the meter again. If your meter shows that water was used, you have a leak that needs to be repaired.

Leaking faucets can usually be repaired by simply replacing worn washers. A slow, steady drip of 100 drops per minute will put 350 gallons of extra water into your septic system per month. A small stream can result in 2,000 – 2,700 gallons per month – a huge impact on your system!

Do you hear your toilet “running”? If so, it can use up to two gallons of water per minute! Up to 7,000 gallons of water can be wasted per month by a silent toilet leak. Leak detectors can be purchased at most plumbing supply stores or hardware stores. A simple test can be done by putting some food coloring in the tank. After ten minutes, check the inside of the bowl. If the water in the bowl is colored, you have a silent leak. These leaks are usually caused by a worn flapper valve (the rubber-like stopper in the bottom of the tank that lifts up when the handle is pushed) or a fill valve. These are inexpensive and are relatively easy to replace by most do-it-yourselfers. Instructions are printed on the packages.

Reducing water use in your home by installing efficient appliances and fixtures, modifying your water use habits, and eliminating wasteful leaks will extend the useful life of your septic system and drainfield, which will lessen your chances of polluting the Sound and harming marine life on your beach.

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Conservation Plant Sales

Looking to add native plants to your landscaping? Every year thousands of tree and shrub seedlings are sold at conservation district sponsored plant sales for wildlife habitat, reforestation, wind/visual screens and erosion control. Below are a few of the sales in the north Puget Sound region. If you go to the website of the Snohomish Conservation District below, you will find information for sales in the counties of King, Pierce, Kitsap, San Juan, Thurston, Jefferson and Clallam.

WHIDBEY ISLAND CONSERVATION DISTRICT SALE

The Whidbey Island Conservation District is currently taking orders for the 2006 Native Plant Sale. Order Forms are available by calling the district office at (360) 678-4708 or online at www.whidbeycd.org. The sale is by pre-order only. Must pay in full by February 1st. Pick-up dates are February 23rd and 24th, 2006.

SNOHOMISH CONSERVATION DISTRICT SALE

March 3rd and 4th is the 21st Annual Conservation Sale sponsored by the Snohomish Conservation District at the Monroe Fairgrounds. Pre-sale only. For more information or a copy of their catalog, go to their website at http://www.snohomishcd.org , or call them at 425-335-5634, ext. 4. The Snohomish Conservation District serves Snohomish County and Camano Island.

SKAGIT CONSERVATION DISTRICT PLANT SALE

Order sheet can be found at http://www.skagitcd.org/plant_sale.htm. Plant sales are on a first-come, first-serve basis at the open sales on Friday, March 17th from 9 a.m. to 5 p.m., Saturday, March 18th from 9 a.m. to 1 p.m. and Saturday, April 8th from 9 a.m. to 1 p.m. Preorders are not accepted. For further information, please call the Skagit CD at 360-428-4313. Sale is in Bow.

WHATCOM CONSERVATION DISTRICT PLANT SALE

March 18th, 8 am – 3 pm. Information can be seen at their website, http://www.whatcomcd.org . Plant sales are on a first-come, first-serve basis on day of sale. Pre-orders require 50% pre-payment and must be received in the District office by March 13, 2006. For further information, please call the Whatcom CD at 360 354 2035 ext 3. Sale is in Langley.

Calendar of Events

Wednesday, January 18th, 7:00 pm: Beavers. Backyard Wildlife Habitat program: Jake Jacobsen, Watershed Steward for Snohomish County Surface Water Management, will review the characteristics and habitats of beavers, the clever engineers of the natural world, at the Camano Multipurpose Center, 141 East Camano Drive. Learn how their dams help create extended habitat for other species and benefit us by slowing destructive floodwaters, reducing erosion, and improving water quality. Jacobsen, considered the "beaver expert" for Washington State, will share methods that have been developed to mitigate conflicts and coexist with beavers in order to promote restoration of wetlands and maintain a healthy environment. FOCIP members will guide a follow-up field trip on Sat., Jan. 21, to view beaver dams on Kristoferson Creek and at Iverson Spit Preserve. Meet at 9:30 a.m. at the Beach Watcher Office, 121 N. East Camano Dr, next to the Camano Island Annex.

Saturday, January 28th, 9:00 am - 4:00 pm: "Ways of Whales" workshop held at Coupeville Middle School Performing Arts Center, Whidbey Island. The region's best experts on whales. Cost: $20.00. For additional information, go to www.orcanetwork.org, or contact Susan Berta at susan@orcanetwork.org, or at 1-8666-ORCANET, or 360-678-3451.

March 2, 2006: WSU Beach Watchers training on Camano Island and Whidbey Island. Training will be held on Tuesdays and Thursdays from 9:00 a.m. to 4:00 p.m. On Camano, training will be March 2nd through April 27th. Registration for Camano Island training is now full. On Whidbey, training will be in March and in October, with a break in the months between. You receive 100 hours of university level training that is free in a large variety of subjects. There is a $25 fee to cover the cost of reproducing the training manual, which every trainee receives. There are several field trips during the training.

In return for training, Beach Watchers are expected to volunteer 50 hours each year for two years. There are many ways to volunteer, and volunteer hours add up quickly. Volunteers have a lot of fun working together, and enjoy monthly meetings and occasional field trips. For additional information, you can contact Scott Chase at contact number below.

Saturday, April 22nd, Noon – 5 pm: Camano 101. Join Shore Stewards, WSU Beach Watchers, WSU Waste Wise, and several other groups at Four Springs Park on Camano Island for an afternoon of fun and entertainment! Groups will give demonstrations in this beautiful new Island County park, with several activities for the public to join in! Additional details to follow.

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Island County Shore Stewards is a program of the WSU Beach Watchers, and is supported by the Washington State University Extension in Island County and the Island County Marine Resources Committee, with grants from the Washington Department of Fish and Wildlife, Puget Sound Action Team, the Salmon Recovery Funding Board, Northwest Straits Commission, the Washington State Department of Ecology, and the Camano Island Watershed Management Program.

Website: www.shorestewards.org email: shorestewards@wsu.edu
Contact: Shore Stewards Coordinator Scott Chase at schase@wsu.edu, or phone 360-629-4522, ext. 6012 (Camano), 360-321-5111, ext. 6012 (South Whidbey), or 360-678-5111 (North/Central Whidbey).

SHORE STEWARDS NEWS

February 2006 Island County, Washington **Issue No. 16**

Bulkheads and Your Beach

Bulkheads. Seawalls. Riprap revetments. These are all words that describe man-made structures that contribute to the *armoring* or *hardening* of the shorelines of Puget Sound. This issue of the Shore Stewards News looks at these structures and the potential damage they may cause to the beach, along with some of the alternatives being tried in our region.

Much of our shoreline consists of bluffs, which often erode due to the constant action of waves and storms. Sometimes you will find a large beach in front of the bluff where the high tide never comes close to the bluff's face, due to an accumulation over the centuries of sand, driftwood and vegetation that serve as natural protection against erosion. Most likely, though, the high tides reach the bluff face and cause erosion. This is a natural process that serves to feed our beaches with sand and gravel. If you walk along the beach in front of a bluff that does not have a bulkhead you can look up and see that the gravel and sand on the face of the bluff is the same that you find on the beach. Long term erosion rates are generally quite slow, averaging one foot per decade, though some locations of Puget Sound that experience more dynamic wave action have a higher erosion rate. If this erosion occurred at a constant rate it would not be as much of a concern to property owners, as they could easily gauge the rate at which their property is eroding. The erosion usually does not occur at a given constant rate, however, and one can experience little erosion of their property until a landslide removes a large piece of their property at one time. Sometimes these landslides are not caused by erosion from wave action, but due to heavy rains, as happened around the region in the holiday of 1996/97. Information on these can be found at: http://www.ecy.wa.gov/programs/sea/landslides/about/shallow.html

When a large slide occurs due to wave action, a property owner may seek to slow this erosion by building a bulkhead. This bulkhead may consist of wood pilings, large boulders stacked to form a wall, or a seawall built of concrete or another hard substance. This is referred to as shoreline hardening, and approximately 30% of Puget Sound's shorelines are hardened by bulkheads or other man-made structures. While this bulkheading may serve to protect the bluff against erosion, the energy of the wave activity may be diverted elsewhere. In some instances this energy is directed towards the bottom of the bulkhead, scooping away sand until the bulkhead begins to lean towards the water. We've all seen leaning bulkheads or seawalls and tried to guess how many years it will take until they fall. More often, though, the wave energy is directed back towards the beach, scouring away the sand and small gravel and leaving larger gravel and sometimes bedrock in place of the once sandy beach. . When several homes or a community have hundreds of feet of bulkhead along the beach, this effect may be more dramatic. The finer sand and gravel may end up being moved from in front of the bulkheads to sites at one or the other end of the bulkheads, due to littoral drift. Next time you are walking along the beach in front of a bulkheaded community, look at the beach composition where the bulkheads end. You may see a change in the makeup of the beach materials.

Often wood bulkheads use pilings that are creosoted. Creosoted logs can be toxic to nearby marine organisms; see the November edition of this newsletter for more information on creosote.

Bulkheading and the Living Beach

The effects of bulkheading and hardened beaches are not restricted to just a simple change in beach characteristics. Important species of forage fish such as surf smelt and sand lance deposit their eggs on the beach and depend on specific compositions of sand and gravel. When these compositions are altered, the beach may no longer be a reliable spawning beach for these forage fish. See the June 2005 edition of Shore Stewards News for more information on forage fish.

These beaches may also no longer support eelgrass beds, which are important habitats for forage fish and other marine organisms. Pacific herring, an important forage fish, deposit their eggs on eelgrass blades. Larger fish like salmon depend on healthy eelgrass beds for their survival, as do Dungeness crabs and several other marine species. Over the past century there have been significant reductions in the size and number of eelgrass beds in Puget Sound.

Soft Shore Alternatives to Bulkheads

As scientists and researchers have come to understand the significance of the effects of shoreline hardening, they have sought out alternatives to bulkheads. Some of these methods are known as *soft shore protection.*

Jim Johannessen of Coastal Geologic Services, Inc. has been one of the foremost advocates of this approach in the region. In his article *Soft Shore Protection as an Alternative to Bulkheads – Projects and Monitoring,* Johannessen describes several projects that included different soft shore approaches. On Blakely Island, the community of Driftwood Beach was protected by removing non-native materials and debris from the upper berm and backshore area, importing washed, rounded gravel via barge to offload to the upper beach, and planting native vegetation in the backshore area. This established more realistic beach slopes to an area that had been mined of its original gravel in the past. For further information on this and other projects, go to the link in the bibliography.

Johannessen teamed with Elliott Menashe of Greenbelt Consulting to create a soft-shore alternative called the Root Wall. Menashe describes the root wall in this way: "A root wall will mimic naturally occurring accumulations of marine driftwood, which protect shorelines and prograde beaches...The root wall employs large tree root masses, trunk and root masses, and other large woody debris (LWD) as primary structural components to provide immediate toe protection and bluff stabilization. LWD to be used as structural components exposed to wave attack would be of durable tree species resistant to rot and abrasion... The planting, establishment, and development of trees and shrubs behind the structure are integral to the root wall system's design. Incorporating planned vegetation elements in the engineering design provides short term and long term erosion control, as well as long term structural and environmental benefits..." Besides being aesthetically more pleasing, the root wall reduces the reflection of wave energy, minimizing the scouring of the beach in front of the structure. It also provides better habitat for wildlife and, as Menashe describes, "Encourages rapid naturalization of backshore and lower bluff." More information on the root wall approach can be seen by linking to the article in the bibliography.

There are several other alternative methods of soft shore protection. Please check the bibliography for an extensive list of publications and links. Please know that soft shore protection does not work for all locations. If you are interested in this alternative, first consult with an expert to see if this method of shoreline protection would be advisable for your property.

Future of Soft Shore Protection

Soft shore alternatives are promoted by several agencies and organizations throughout the Puget Sound region. However, as the methods of soft shore protection are relatively new, some are taking a more cautious approach. In 2005, Kathy Taylor, Ph.D. with the Puget Sound Action Team, stated in a paper for the Proceedings of the 14th Biennial Coastal Zone Conference, "Although there is an interest in using soft shore protections and bioengineering in place of bulkheads, there is a lack of monitoring data on these alternatives. So, it is difficult to promote regulatory implementation. There is also a lack of training for geologists, contractors and engineers who consult and propose solutions to shoreline landowners. The site-specific nature of each problem and solution make it difficult to provide standards or specifications for bioengineering solutions."

There are complications to consider when contemplating the soft shore alternative. Many who have sought out local contractors who are familiar with soft shore alternatives are left with few choices. Contractors who have traditionally installed bulkheads but are seeking information on how to use soft shore methods have few avenues available to obtain this knowledge. Homeowners who have considered soft shore protection as a way to replace their failing bulkhead have found the cost for an individual to be prohibitive, as the engineering costs for such a system are more affordable for a community-shared project. As more communities install soft shore protection and the method becomes more widely known and understood, the number of contractors who know how to install such systems and engineers who can design a proper soft shore system would likely increase. Until then, you will likely see continued installation of bulkheads and other hardening methods and the resultant problems with such installations.

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Calendar of Events

Saturday, March 18th, 9:00 am – 3:00 pm: Recycle Your Junk Tires! Volunteers from WSU Beach Watchers and WSU Waste Wise programs, with help from the Island County Health Department, will help you get rid of that junk tire problem. Prices are $2 for each off rim passenger or light truck tires, or $3.75 on rim. Large truck tires are $6.75 off rim, and $15.75 on rim. No tractor, plane, or other very large tires. They should be relatively clean and free from contamination. On Camano, go to the Camano Road Shop on Can Ku Road, behind the CASA Animal Shelter. On Whidbey, location is at the Coupeville Solid Waste Facility, 20018 SR 20, behind the Recycling Facility. For details, contact Janet Hall halljn@wsu.edu, or call her at 678-7974 or 321-5111, ext. 7974. Phone number on Camano: 629-4522, ext 7974.

Saturday, April 15, 10:00 am – 5 pm: Welcome the Whales Day. Celebrate the spring arrival of resident gray whales at the Langley Waterfront. For more info, contact the Orca Network: (360) 678-3451, or email info@orcanetwork.org

Saturday, April 22nd, Noon – 6 pm: Camano 101. Join Shore Stewards, WSU Beach Watchers, WSU Waste Wise, and several other groups at Four Springs Preserve on Camano Island for an afternoon of fun and entertainment in celebration of Earth Day! Groups will give demonstrations in this beautiful new Island County park, with several activities for the public to join in! Additional details to follow.

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SHORE STEWARDS NEWS

March 2006 Island County, Washington Issue No. 17

This issue of the Shore Stewards news focuses on marine bird decline in Puget Sound and on the Pigeon Guillemot, a nesting seabird who lives in our bluffs. These two fascinating articles were guest written by respected local contributors, and were printed with full permission of the contributing authors. Hilary Culverwell, who writes about marine bird decline, is a Regional Liaison for Puget Sound Action Team (PSAT), covering Skagit, Whatcom and San Juan counties. This article was previously printed in the Puget Sound Action Team newsletter, Soundwaves, which is published quarterly and can be viewed at http://www.psat.wa.gov/Publications/soundwaves/soundwaves.htm Hilary Culverwell can be contacted at hculverwell@psat.wa.gov, or by phone at 360-676-2233.

Frances Wood and Phyllis Kind, who write about Pigeon Guillemots, are WSU Beach Watchers from Whidbey Island. This article was also published this month in the Beach Log, the monthly newsletter of the WSU Beach Watchers in Island County.

Marine Bird Decline in the Puget Sound Region

Over 100 species of marine birds, from the prehistoric-looking cormorant to the dainty sandpiper, are either part or full-year residents of Puget Sound. These birds display an astonishing array of survival skills and migration patterns. The common murre, for example, routinely dives to depths of 200 feet seeking fish, squid and crustaceans. Western sandpipers, the most abundant shorebird in Washington, migrate thousands of miles each year between their breeding grounds in W. Alaska and E. Siberia to their wintering grounds in N. and S. America. Flying in huge, lock-step formations that Blue Angels pilots would envy, these tiny migrants spend only 2-3 days in the region, where they refuel by feeding on tiny organisms in N. Puget Sound mud flats.

Recent research by John Bower at Western Washington University largely confirms what prior research had already concluded: precipitous declines have occurred in a number of marine bird populations since the 1970s. These include a 70% decline in surf scoters, an 81% decline in western grebes, and a 91% decline in common murres. The total number of marine birds in the region has declined by 47% during this time. "Think about it," says regional bird researcher and PhD candidate Eric Anderson of the University of Wyoming, "in just about two decades—a blink of the eye in evolutionary time—we've lost over half of the scoters that winter in our backyard!"

Why the decline?

Researchers point to a variety of reasons for these declines. Pollution, climate change, nonnative species, and collisions with man-made structures have all been blamed. So have derelict fishing gear and some fishing practices, which can trap and drown marine birds. Food sources are also a factor. Anderson found that the fattening rate of surf scoters is correlated with the availability of herring. Decreases in herring have occurred almost simultaneously with dramatic decreases in surf scoters, indicating that availability of herring is a potential limiting factor in surf scoter abundance. Yet another factor is the recovery of some predator populations. Peregrine falcon populations have increased within Boundary Bay at the same time that sandpiper populations, a favorite falcon food item, have declined. According to Washington Audubon, however, it is the loss of habitat from human population growth and landscape alterations that poses the greatest threat to birds.

Why are these birds important?

Birds have fascinated humans for centuries. Their sounds and images have been captured in the art, poetry and literature of almost every culture on almost every continent. “Spring would not be spring without bird songs,” said Teddy Roosevelt. Today, bird watching is the fastest growing form of recreation in the U.S. Birding is a $25 billion/year industry in North America, employing more people than the steel industry.

Their importance within the greater Puget Sound ecosystem is equally important. “Most of our marine birds are at or near the top of the food chain,” says Anderson, “and thus can have very powerful impacts on shaping communities of plants and animals they consume or otherwise affect.” Birds are effective indicators of ecosystem health as well. Birds that use marine resources have been used as indicator species for monitoring the health of both marine feeding and terrestrial breeding ecosystems and for studying how environmental degradation affects wildlife populations.

Finally, our birds connect us to the rest of the world in a way that few other species can. Puget Sound is a critical stop on the Pacific Flyway, the “bird highway” linking the Arctic to South America that migratory Pacific Coast birds take to find breeding, feeding, and over-wintering grounds. The same snow goose grazing in the Skagit delta has fed from the hand of a Siberian peasant woman; the same sandpiper wading through the mudflats of Birch Bay has visited the Andes and beyond.

What we know and what we don’t

Considerable research has been done on Puget Sound’s marine birds. For example, Washington Department of Fish and Wildlife (WDFW) is entering its final year of a four-year study on surf and white-winged scoters. So far, they found that scoters exhibit considerable “site fidelity”, often returning daily and yearly to the same location; that they use different daytime and nighttime habitats; and that surf scoters breed near the Beaufort Sea to North Saskatchewan, where they mix with other scoter populations. “We thought that our birds were separating out, but it turns out that there is overlap with other scoter species in the breeding grounds” says lead researcher Dave Nysewander of WDFW. However, much remains to be learned. What is the main cause of decline of the western grebe? What are the specific seasonal prey items of many marine bird species? What is the relative impact of hunting on marine duck populations? “For each of these species, I think that the ultimate question is whether the factors leading to these declines are found all or in part in Puget Sound (vs. on breeding or migration areas elsewhere)” says Anderson. “Once we have targeted a suite of factors in Puget Sound affecting these declines, subsequent efforts would need to address how they affect these birds, and how and whether we can initiate policy changes to stem the declines.”

Conservation efforts

Efforts are underway to better understand the declining populations of marine birds in Puget Sound and to attempt to reverse this trend. For example, commercial shellfish growers have historically treated scoters as a threat to their oyster and clam production and prevented them from foraging in their growing areas. Now, shellfish growers are working with Washington Department of Natural Resources to seed nearshore areas apart from commercial beds with clams expressly for the birds to feed on. In September, 2005, the SeaDoc society, with support from the Puget Sound Action Team (PSAT), convened a group of 34 scientists and resource managers to begin to identify gaps in the science, research and management of marine birds. To learn more, download a summary of the September meeting at: www.psat.wa.gov/bird_report. Finally, PSAT recently added at-risk marine birds to its list of priority issues and will begin focusing increased attention to the issue.

Who Lives In Your Bluff?

When walking the beach this spring or summer, you may see a person sitting quietly, staring intently through binoculars at the water, the bluff and then taking copious notes. If so, you've probably encountered a volunteer with the Pigeon Guillemot Breeding Bird program. The study, which is designed to assess the productivity of Pigeon Guillemots on Whidbey Island, is sponsored by Whidbey Audubon Society and the Marine Resources Committee.

Pigeon Guillemots are the only true seabird to breed on Whidbey Island. They're charming, black pigeon-shaped birds, with white wing bars and bright red feet, which are visible when they dive to catch fish. Guillemots nest colonially in burrows in the bluffs where they lay 1 or 2 eggs.

Volunteers count the birds, record their behavior and locate their nesting burrows. Early in the season the birds reestablish their pair bond (they mate for life) by billing and singing. Later on we watch them apartment hunt. The established pairs go to their previous burrow if it was not destroyed by winter storms. Newly bonded pairs hunt for unoccupied burrows to establish a new nesting site. After incubating the eggs for about 30 days they begin to bring small fish to their chicks. They leave the bluffs in early September after the chicks have fledged.

Last year about 28 volunteers visited 18 colonies, counted 792 pigeon guillemots and identified 153 burrows. Each volunteer chose a site and visited the colony at least 6 times during the breeding season (June through August). We plan to continue this project for several years in order to track the Pigeon Guillemot population. Since these birds are near the top of the food chain, their vitality will be a good indication of the overall health of Island County's Marine Stewardship Areas.

We're now recruiting new volunteers to participate in the program on Whidbey or perhaps to organize a similar program on Camano Island. It's grand fun, a great excuse for walking a beach and an opportunity to contribute to a citizen science project. We have a training program so there is no requirement for experience. If you're interested, contact Frances Wood, 360-341-2326, wood@whidbey.com, or Phyllis Kind, 360-331-6337, phizhawk@whidbey.com or just come to our training and organizational meeting at 7 p.m. on Thursday, May 4, at Trinity Lutheran Church in Freeland.

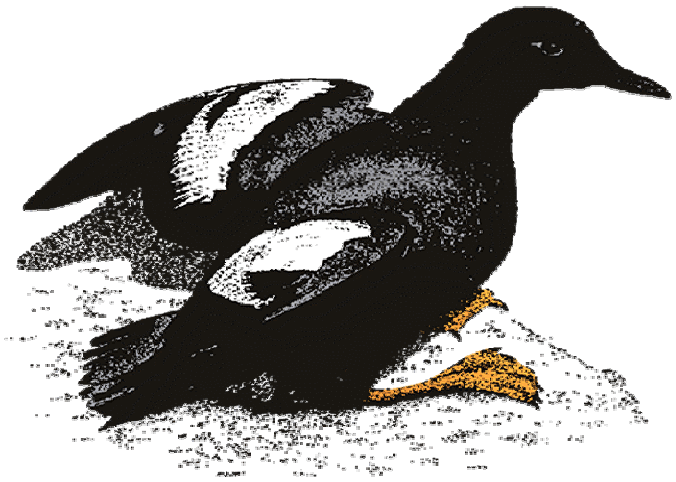

Image Courtesy of Washington Department of Fish and Wildlife, Darrell Pruett

Calendar of Events

Friday, April 7th, 5:00 – 7:30 pm: Italian Night! Enjoy lasagna, bread, salad, dessert and drinks at the Coupeville Middle School Performing Arts Center. Tickets available at the WSU Extension office in Coupeville: 679-7327 (N/C Whidbey) or 321-5111, ext 7327 (S. Whidbey). All proceeds support WSU Extension programs.

Saturday, April 15, 10:00 am – 5 pm: Welcome the Whales Day. Celebrate the spring arrival of resident gray whales at the Langley Waterfront. For more info, contact the Orca Network: (360) 678-3451, or email info@orcanetwork.org

Saturday, April 22nd, Noon – 6 pm: Camano 101. Join Shore Stewards, WSU Beach Watchers, WSU Waste Wise, and several other groups at Four Springs Lake Preserve on Camano Island for a day of fun and entertainment in celebration of Earth Day! Fun for the whole family, including kids activities & tree planting, geo-caching, birding and nature hikes, games and prizes, food and refreshments! Free admission. Four Springs Lake Preserve is located at 585 Lewis Lane, off Camano Hill Road. Look for signs.

Wednesdays, May 3rd , 10th , 24th & 31st , 8:30 – 4 pm: WSU Waste Wise Training on Camano. Free training helps you learn about recycling, septic system care & water conservation, household hazardous waste & alternative cleaning solutions, composting, and sustainable living. Teach others in your community! For information, call 629-4522, ext 7974, or email halljn@wsu.edu

Saturday, May 21st, 9:00 am – 3:00 pm: Recycle Your Junk Tires! Volunteers from WSU Beach Watchers and WSU Waste Wise programs, with help from the Island County Health Department, will help you get rid of that junk tire problem. Prices are $2 for each off rim passenger or light truck tires, or $3.75 on rim. Large truck tires are $6.75 off rim, and $15.75 on rim. No tractor, plane, or other very large tires. They should be relatively clean and free from contamination. On Camano, go to the Camano Road Shop on Can Ku Road, behind the CASA Animal Shelter. On Whidbey, location is at the Coupeville Solid Waste Facility, 20018 SR 20, behind the Recycling Facility. For details, contact Janet Hall halljn@wsu.edu, or call her at 678-7974 or 321-5111, ext. 7974. Phone number on Camano: 629-4522, ext 7974.

To view archived copies of past Shore Stewards Newsletters, go to www.shorestewards.org

Island County Shore Stewards is a program of the WSU Beach Watchers, and is supported by the Washington State University Extension in Island County and the Island County Marine Resources Committee, with grants from the Washington Department of Fish and Wildlife, Puget Sound Action Team, the Salmon Recovery Funding Board, Northwest Straits Commission, the Washington State Department of Ecology, and the Camano Island Watershed Management Program.

Website: www.shorestewards.org **email:** shorestewards@wsu.edu
Contact: Shore Stewards Coordinator Scott Chase at schase@wsu.edu, or phone 360-629-4522, ext. 6012 (Camano), 360-321-5111, ext. 6012 (South Whidbey), or 360-678-5111, ext 6012 (North/Central Whidbey).

SHORE STEWARDS NEWS

April 2006 Island County, Washington **Issue No. 18**

Shore Stewards Expands to Four New Counties!

We are excited to report that Shore Stewards will expand to four new counties in 2006: Skagit, Snohomish, Whatcom and Clallam, thanks to a new PSAT grant obtained by the Northwest Straits Foundation! Puget Sound Action Team (PSAT) will fund this expansion through their Public Involvement and Education (PIE) Fund. Out of 76 proposals for their 2006-2007 funding period, 15 were chosen, including this grant to the Northwest Straits Foundation to expand the program as part of the WSU Beach Watchers program in each county. As stated in PSAT's announcement, "The Shore Stewards program will recruit and help 350 shoreline landowners adopt best management practices and develop a stewardship ethic for waterfront living". PIE funding is provided "to educate and involve the public in protecting and restoring Puget Sound." For additional information on Puget Sound Action Team and the PIE funding, you can check PSAT's website at http://www.psat.wa.gov/ and click on "PIE recipients announced" in the right hand column. To see what else PSAT is doing around Puget Sound, check out PUGET SOUND NEWS at http://www.psat.wa.gov/News/ps_news.htm

Shore Stewards began as a pilot program on Camano Island. Island County's WSU Extension Director Don Meehan and Island County Marine Resource Committee's Executive Director Gary Wood came up with the exciting idea of creating a stewardship program designed for properties located along the shoreline. Starting in late 2002, WSU Beach Watchers on Camano researched and wrote the book, application, and original website. Many of these Beach Watchers still volunteer on the Shore Stewards Committee. Much of the original funding for the Shore Stewards in Island County came from Puget Sound Action Team, the Salmon Recovery Funding Board, and the Northwest Straits Commission. Further funding has come from the Washington Department of Fish and Wildlife and the Washington State Department of Ecology, and the Island County Marine Resources Committee continues to be a strong supporter of the program. In January of 2005, Shore Stewards in Island County expanded to Whidbey Island, and three counties along Hood Canal (Jefferson, Kitsap and Mason) began the program under the WSU Extension in Jefferson County. Links to many of the programs listed in this paragraph are included on page four.

Coordinators of the program for the different counties have been meeting to determine how the program should grow, with an emphasis on a regional approach to many of the key elements of the program. Puget Sound Action Team is designing a regional Shore Stewards book, and the website and newsletter may also take on a more regional look in the near future. With expansion comes change to some of the original "requirements" of the program. In Island County, membership was originally restricted to households along the shoreline, which was soon changed to include those who lived in communities with shoreline or beach access. When Jefferson County adopted the program, they included property owners who live along their beautiful streams and rivers as well, as these property owners also have a significant impact on nearshore water quality. Island County has no real rivers to speak of, and our streams are small and seasonal when compared to those in the other counties, so inclusion of property owners along our streams was not originally considered. We do have salmon streams on each island, though, so property owners alongside streams in Island County will now be eligible to join Shore Stewards.

Shore Stewards welcomes the addition of Clallam, Whatcom, Snohomish and Skagit counties, and we will keep our members updated on any regional changes as they happen!

Arsenic: New Standards Now in Effect

Do you have arsenic in your drinking water? Many wells in Island County do. As described in the 2003 WRAC paper on Arsenic (see bibliography), "Arsenic occurs naturally in rock and soil, water, and plants. A series of glacial events created the groundwater aquifers utilized in Island County. These glaciers deposited sands and gravel containing naturally occurring arsenic. As groundwater moves through these aquifers it dissolves some of the arsenic in these deposits."

Long-term arsenic consumption has been linked to cancers and other adverse health effects. How much arsenic is considered too much is a matter of opinion. The standard set by the Environmental Protection Agency (EPA) and which was used from 1975 through the end of 2005 was 50 parts per billion (ppb) or less. In 1999, the National Academy of Sciences suggested a new standard at 5 ppb. The EPA established a new standard of 10 ppb, which became enforceable by the Washington State Department of Health Office of Drinking Water (ODW) on January 23, 2006. According to the 2003 WRAC report, of the 1327 wells that were sampled for arsenic, 235, or 18%, had levels higher than the 10 ppb standard. You can see a map of Island County wells and their arsenic concentration by linking to their report in the bibliography.

How does this affect your water system? According to the ODW, "this new water quality standard applies to community and non-transient non-community water systems that have at least one non-purchased source". If your community receives its source from surface water like a river, a sample for arsenic must be collected by December 31, 2006. Groundwater (well) sources must collect a sample by December 31, 2007. These samples are taken after treatment, but before they enter your distribution system. Water systems that show the highest excessive arsenic levels in the state will be the first ones targeted for enforcement, with the two major components of the compliance strategy consisting of quarterly monitoring of each sampling point and assisting those systems that exceed levels to bring their levels within compliance. Compliance can come about as a result of treatment, or by using a non-treatment method that may include blending, developing a new water source, or tying in with a neighboring system that is within acceptable arsenic levels. To help with the costs of implementing compliance, financial support is offered through the federal Drinking Water State Revolving Fund. Information may be found at http://www.doh.wa.gov/ehp/dw/our_main_pages/dwsrf.htm . See the bibliography for links to publications on arsenic treatment technology.

What is Missing From Your Water

Most of those who are reading this newsletter have moved to Island County from elsewhere, many from cities or other locations that have municipal water systems. Water from aquifers and wells is a new concept for many of our readers, and there are differences that we all struggle to take into consideration. One way in which our situation differs from living in a city is that our water is not fluoridated. Unless you drink water from the Oak Harbor or Naval Station water systems on Whidbey Island, your water is not fluoridated. This may be a good thing or a bad thing to you, as fluoridation is a very controversial subject on which Shore Stewards takes no position. If you check the web, you will see strong opinions on both sides of the issue. Many cities in the U.S. fluoridate their water, while some (like Bellingham) repeatedly vote down fluoridation.

If you favor fluoride but do not have it in your water, you should consult with your dental professional. The companies who sell bottled water are starting to produce fluoridated water, though it is hard to find. A recent scan of the bottled water aisle of a large grocery store found eight 8-ounce bottles of a *fluoridated* popular brand at $2.99. You should see more in the future.

Rain Barrels and Cisterns

Our rural great-grandparents (and their parents and grandparents) who lived on farms realized how precious a commodity water was, and did not waste a drop if they could avoid it. Most farmers harvested not only crops, but also harvested the rain in rain barrels and cisterns. Water captured from roof runoff could be used in the garden during the dry summer months, saving much of the well water for other uses. With increasing populations on the islands in Puget Sound, which receive the majority of their water from aquifers, the use of this "old" technology is once again becoming familiar. How much water can you save? Consider that for every inch of rain that falls on a thousand foot catchment area, you can expect to collect about 600 gallons of rainwater. Your roof catchment area is equal to the total square feet of the main level of your house plus the extension of your eaves. A typical plastic rain barrel holds from 50 to 80 gallons; you can increase the amount of saved water by having a rain barrel for each downspout, or by linking two or more rain barrels. To save larger amounts of water, you could install an underground cistern, which is typically a concrete structure designed to store much larger quantities of water.

Where do you get a rain barrel? If you are able to obtain a clean plastic barrel that has not contained toxic chemicals from a restaurant or other source, you can build one cheaply using materials available at any hardware store. You can also buy a manufactured unit from your nursery or any number of other gardening outlets. Check with your library or the bibliography below for instructions on building your own rain barrel or where to buy one, if you can't find one locally.

Bibliography

1. **2003 Water Resource Advisory Committee (WRAC) Report on Arsenic**: http://www.islandcounty.net/health/Envh/wrac/TopicPapers/Arsenic5.pdf

2. **Other Island County WRAC topic papers you may find of interest:** http://www.islandcounty.net/health/Envh/wrac/TopicPapers/TopicPapers.htm

3. For publications on arsenic treatment, go to the Office of Drinking Water publications website, http://www4.doh.wa.gov/dw/publications/publications.cfm and click on "Alphabetically by Title". See the following publications:
   Arsenic treatment technology: Evaluation handbook for Small Systems (EPA Pub. 816-R-03-014), and
   Arsenic Treatment for Small Water Systems (ODW Pub. 331-210)

4. **How to Make a Rain Barrel** City of Ottawa, 2006. http://www.ottawa.ca/city_services/water/efficiency/rain_barrel_en.shtml

5. **Rain Barrel Information and Sources**: King County. Everything from how to build your own rain barrel to where to get supplies or where to buy ready-made rain barrels. http://dnr.metrokc.gov/wlr/PI/rainbarrels.htm

6. **Rain Barrel Fact Sheet:** Whatcom County Master Recycler/Composters. Good information on how to stack and link multiple rain barrels, as well as another way to make your own. http://whatcom.wsu.edu/ag/compost/rainbarrel.htm

Links

Island County Marine Resources Committee (with link to Northwest Straits Commission): http://www.islandcountymrc.org/

WSU Beach Watchers (regional site; click on Island County): http://www.beachwatchers.wsu.edu/

Island County WSU Extension: http://www.island.wsu.edu/

Hood Canal Shore Stewards (Jefferson County WSU Extension): http://jefferson.wsu.edu/OPWW/8-shore_stewards.html

Calendar of Events

Saturday, May 21st, 9:00 am – 3:00 pm: Recycle Your Junk Tires! *Volunteers from WSU Beach Watchers and WSU Waste Wise programs, with help from the Island County Health Department, will help you get rid of that junk tire problem. Prices are $2 for each off rim passenger or light truck tires, or $3.75 on rim. Large truck tires are $6.75 off rim, and $15.75 on rim. No tractor, plane, or other very large tires. They should be relatively clean and free from contamination. On Camano, go to the Camano Road Shop on Can Ku Road, behind the CASA Animal Shelter. On Whidbey, location is at the Coupeville Solid Waste Facility, 20018 SR 20, behind the Recycling Facility. For details, contact Janet Hall halljn@wsu.edu, or call her at 678-7974 or 321-5111, ext. 7974. Phone number on Camano: 629-4522, ext 7974.*

Tuesday, May 23rd: Whidbey 101: Living on the Island

Are you a recent newcomer to the island? Or an established islander and want to know how to live more wisely on the island? This is a lively introduction to the unique community resources available to you to enhance your island life. Includes information on fun community events and festivals; local clubs and organizations; caring for your septic system; emergency preparedness for earthquakes and tsunamis; easy ways to reduce your solid waste; alternative transportation; and ways to build and support your local community. Heller Road Fire Station in Oak Harbor. Time and further information in the May newsletter.

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SHORE STEWARDS NEWS

May 2006 Island County, Washington **Issue No. 19**

Marine Mammals on Your Beach

When considering the Shore Stewards guideline titled "Respect Intertidal Life", most of us immediately think of crabs, clams, anemones, sea stars, urchins, and the other animals that inhabit shoreline tide pools. These are the types of living creatures that we most often encounter on our beach walks. There is another type of marine animal that is encountered on the beach and in the water near the shoreline, though, and that is the marine mammal. This edition of the Shore Stewards News covers the marine mammals you will most often encounter when boating or beach walking and what to do if you encounter a marine mammal that is on the beach, whether it is resting, sick or dead.

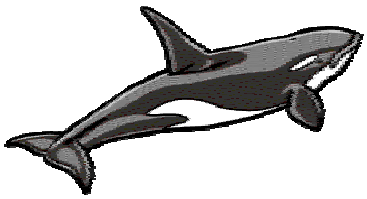
Throughout this newsletter will be references to marine mammals that are "stranded". According to the NOAA Fisheries Marine Mammal Stranding Handbook, a stranded marine mammal is one that is dead, on the beach or in the water within 200 miles of the coast. Or alive, and on the beach or shore and cannot return to the water. It also includes marine mammals that are in water so shallow that the animal is unable to return to its natural habitat under its own power, such as a beached whale.

The most common marine mammals you will encounter will be the pinniped, which includes our seals and sea lions. Pinnipeds divide their lives between foraging at sea and coming ashore to rest, thermo-regulate, mate, give birth, suckle their young, and/or molt (shed their old hair). Northwest pinnipeds are classified in two families. Otariids (sea lions and fur seals) have external ear flaps and can rotate their hind flippers under their pelvis to walk on all fours on land. Phocids (seals) have no external ear flaps. They drag their hind limbs, moving like an inchworm on land.

Cetaceans in Puget Sound

Cetaceans include whales, dolphins and porpoises. The ones you will most often find stranded are the Odontocetes, or toothed whales, dolphins and porpoises. These include the Harbor porpoise, the Dalls porpoise, and the Orca (Killer Whale).

Mysticetes are whales that use baleen rather then teeth, and include the Gray whale and the Minke whale. These are less frequently stranded, but the Gray whale often gives the appearance of being stranded in shallow waters where the sandy beach has a high ghost-shrimp population. The whale will come into shallow waters, scooping a large amount of the sand into its mouth and filtering out the shrimp using its baleen. Beaches that are frequented by Gray whales will often have very large divots in the sand. Gray whales usually come into Puget Sound during their migration, using their prolonged stay as a time to feed and rest.



Seals You May Encounter

Though you may occasionally find a Northern Fur Seal or an Elephant Seal on the beach, the seals you will find most often on the beach or in the waters of Washington State are our Pacific Harbor Seals. These are also the only seals that give birth to pups in our area, from late May through August. The pups remain with their mothers during the 4-6 week nursing period, and are abruptly weaned when they reach a weight of 50-60 pounds. The color of the harbor seal can range from white (Lanugo, premature) to black, and it is the only local seal with spots. The male will grow up to 6.3 feet long with a weight up to about 370 pounds, and the female will grow up to about 290 lb and 5.7 feet long. (Folkens)

When the mother gives birth to a pup, she will often leave it alone on the beach while she goes out to find food. Like any baby, the pup will sleep and thermo-regulate. The most frequently reported encounter with seals out the water involve pups that are too young to have developed protective wariness (escape response). Well-intentioned humans may bring fish for the pup, pour water on it, or in some instances take it home. If the mother sees humans, human activities, or dogs on the beach, near her pup, she will flee to the water, and may leave the pup behind.
She returns to reclaim her pup once the disturbance near the pup goes away. If activity continues near the pup, the female may eventually give up trying to return. The best thing to do when you find a pup on the beach is to keep your distance (100 yards.) and to make sure other people and dogs stay far away. This will help ensure that mom will come back for the pup, nurse it, and take it back out to the water.

California Sea Lions

The large Steller Sea Lion is occasionally found in northern Puget Sound, but is pretty rare to find in Island County. The sea lion most often found here is the California Sea Lion, males. Ranging in color from dark brown to black, the male is most often found in Puget Sound, and can get up to 7.10 feet in length with a weight up to 860 pounds. They have a dog-like snout and have a distinctive bark. The males develop a large bump (Sagittal Crest) on their forehead at about five years of age. Sea lions walk on all four flippers, and sometimes rest on the surface of the water with their flippers exposed (to conserve heat), giving the appearance that they are "waving" to you. (Folkens)

When Marine Mammals Are Sick, Injured or Dead

If you see any marine mammal on the beach, keep your distance, but note details. It may be a mother or pup, or it may merely be resting. If it is sick, make note of details (description, size, etc) and report it immediately, especially in high traffic areas. Seals may have Brucella or other diseases, so keep your children and dogs away. Some diseases are infectious to both dogs and seals, and may pose a risk to humans as well if they come in direct contact with an infected animal. Seal pups can die from infections caused by dog bites. Sometimes a seal may be dead from a transient Orca bite. (Puget Sound orcas eat salmon. Transient orcas who are visiting from the Pacific Ocean and coast will eat seals.) Boat propellers may cause injuries or death to marine mammals, and they can also die from drowning if they get caught in fishing or crabbing gear. Many seals and sea lions die from gunshot wounds.

If you encounter any sea lion on the beach, get away quickly. It may be resting, but if it is injured or sick it can be a real danger to your well-being. A sea lion can move much faster than you. It is as large as a bear in size and weight, and could cause serious injury if provoked or angry.

Marine Mammal Stranding Network

The Northwest Marine Mammal Stranding Network was established by NOAA Fisheries / National Marine Fisheries Service under the Marine Mammal Protection Act of 1972. It is designed to respond to marine mammal stranding events along the Washington and Oregon coasts and is part of a nationwide network. The network is composed of cooperating scientific investigators and institutions, volunteer individuals and organizations, wildlife and fisheries agencies, and state and federal enforcement agencies. These participants are experienced and knowledgeable in the methods of handling beached and stranded marine mammals and volunteer to either respond directly or provide expert advice to those at the stranding on how to handle the incident. Data are collected from such events and entered into a national database that is used to establish baseline information on marine mammal communities and their health.
(From the website of the Olympic Coast National Marine Sanctuary. Website may be seen at:
http://olympiccoast.noaa.gov/living/marine_wildlife/marine_mammals/strand.html
www.nwr.noaa.gov – Office of Protected Resources)

The Central Puget Sound Marine Mammal Stranding Network was formed in 2002 as the Island County Marine Mammal Stranding Network, and consists of a group of trained, local volunteers who respond to and investigate reports from the public about stranded marine mammals, dead or alive. The majority of these volunteers are WSU Beach Watchers. As the WSU Beach Watchers have spread throughout seven counties in north Puget Sound, other counties have also trained volunteers, or plan to do so in the near future.

The Central Puget Sound Stranding Network is authorized by NOAA Fisheries, under the umbrella of the WSU Beach Watchers in Island County and the Orca Network. The official letter holder for Whidbey Island is Matt Klope, Wildlife Biologist, Susan Berta Orca Network, and Sandy Dubpernell, Beach Watcher. Official letter holder for Camano Island is Sue Murphy, Wildlife Technician, Pilchuck Wildlife Center.

When dead marine mammals are found, they are measured and the cause of death is determined, if possible. Samples are taken, and occasionally necropsies are done. Carcasses are usually left where found, to be reclaimed by the sea or nature. On rare occasions these will be disposed of, often at cost to the property owner at their request, though there are no funds or obligations for any responders to do so.

Marine Mammals are protected by the federal Marine Mammal Protection Act. It is a violation of this law to harass, touch, move, feed or kill any marine mammal. You should not remove any marine mammal bones that you find on the beach. Fines can range up to $10,000 per violation. If you are in a boat, it is also a violation to harass any marine mammal. Guidelines require that you do not approach whales within a 300 foot zone. If you see any person or boat harassing a marine mammal, you should get a description of the violator (boat registration number) or take a photo of the incident (as good as a witness), and report them to authorities. The NOAA Fisheries Service Enforcement Hotline number is 1-800-853-1964.

Who Should You Contact in Island County?

If you see a seal or sea lion the beach, or is in distress, contact the Central Puget Sound Marine Mammal Stranding Network. Also contact them if you find a dead marine mammal. On Whidbey Island, you can contact Susan Berta with Orca Network at (360) 678-3451, or you can also contact Sandy Dubpernell at (360) 678-3765. On Camano Island, contact Sue Murphy at (360) 387-8299. Due to high human traffic areas on Camano beaches, Sue wants to be contacted on first sighting of any stranded marine mammal. You can also report a stranding to 9-1-1.

For Additional Information

Soundwatch Boater Guidelines: Best Practices for Viewing Marine Wildlife:
http://www.whale-museum.org/downloads/soundwatch/SWguidelines_02.pdf

Orca Network: http://www.orcanetwork.org/

Calendar of Events

Saturday, July 29, 2006. Day on the Prairie! *WSU Extension will be hosting this afternoon and evening program on Whidbey Island that includes farm visits, historical tours, agricultural and natural resource classes, kids activities and games, BBQ supper, and a barn dance with the Wild Coyote Blues Band! All proceeds from this fund-raising event will go to support your WSU educational programs in Island County. Further details in the June newsletter.*

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SHORE STEWARDS NEWS

June 2006 Island County, Washington Issue No. 20

Non-Point Pollution: A Problem We All Share

We are all familiar with pollution sources that can be observed: smoke coming out of a factory smokestack, oil seeping from a hole in a tanker, or sewage pouring out of a pipe. There is another source of pollution, however, that is just as dangerous, but not usually seen or noticed by the casual observer. This is the pollution that is created from our everyday activities, whether as a household, business or farm. We call this pollution ***non-point pollution*.** This is pollution that cannot be traced back to a single origin or source. It is also a very big concern in the Puget Sound region, where pollution is threatening the health of our fish, shellfish and marine mammals, and killing the habitat and food sources on which they depend.

Where Does Non-Point Pollution Come From?

Much of the most dangerous non-point pollution comes from our home, and the biggest culprit is our septic system. With proper maintenance, inspections and regular pumping, a septic system will work well and does little to harm the environment. When not maintained or pumped, a failed system can be a source of raw sewage. Besides being a health hazard, this sewage can be carried from your yard to the Sound during heavy rains. Human waste, though, is not all that leaks from a failed system. We often put chemicals into our septic system: washing machine and dishwasher soaps and additives, bleaches, cleansers, disinfectants from hand soaps and water softener treatments. Pharmaceuticals and their chemical compounds enter our septic tank when they pass through our bodies and are eliminated with our other wastes, or when outdated medicines are dumped into the toilet. When combined with thousands of other failed septic systems around the region, all adding their contribution of raw sewage and chemicals, the cumulative effect can take a serious toll on the health of our marine ecosystem.

Other household practices also add to the non-point pollution that enters the Sound. We have many impervious surfaces around our homes. Driveways, paved walkways and patios help channel the water that would normally have soaked into the ground into drains, gutters or swales, all leading to the shoreline. Washing your car on a driveway can contribute to this pollution, as can ignoring an oil or coolant leak, since whatever chemicals are on your driveway will eventually be carried away by the rains. Tight lines that carry runoff from your gutters and downspouts down to the beach also carry chemicals from your roofing materials, including moss killers and fire retardants. Excess chemicals in your garden and yard, such as pesticides, herbicides and fertilizers, may be carried off during a heavy rain. Dumping yard waste onto the beach carries not only the chemicals from that waste, but the nitrogen caused by decomposing organic matter. Domestic animal poop in your yard, whether from dogs or cats, adds to this pollution. And when you take your boat out for a spin, pollution can range from the oils and lubricants in your motor to the gas you pour into your motor while on the boat.

Farms, schools, golf courses and businesses also contribute to our non-point pollution. They may be fewer in number when compared to households, but make a larger contribution due to their size.

How You Can Minimize Your Pollution Contribution

One of the first steps that can be taken to minimize the amount of non-point pollution you contribute to your beach is during construction or remodeling. Driveways, sidewalks and patios all help to channel rain water towards the beach, along with the chemicals the water picks up along the way. There are several ***low-impact development*** steps you can take during construction to minimize this impact. One is the use of pavers instead of concrete or asphalt, as the water can percolate into the soil between the pavers instead of running off in sheets. Another is through the use of new permeable pavements that allow water to soak through. These should be available through local sources. For more information on these products, you can check the website of PATH at http://www.toolbase.org/techinv/techDetails.aspx?technologyID=98
Other information on Low Impact Development products and innovations can be seen at http://www.toolbase.org/secondaryT.asp?TrackID=&CategoryID=1873 Puget Sound Action Team also has a wealth of information on Low-Impact Development that can be found on their website. This includes information on a tour of Snoqualmie Gourmet Ice Cream Company's Low Impact Development on Wednesday, July 19, 2006: http://www.psat.wa.gov/Programs/LID.htm

A slight change in your daily household practices can also go a long way towards reducing your contribution to non-point pollution. Have your septic system inspected and pumped on a regular basis, and keep in mind what you put into the tank. Human waste, toilet tissue, and normal bathing and washing wastewater should be all that goes into the tank. Do not use septic tank additives advertised on the TV and radio; they do not do a thing to help your system. Avoid chemicals when scrubbing your sink or toilet; natural alternatives are cheaper and work just as well, but do not harm your system. Do NOT clean paintbrushes in your utility sink; latex paint residue clogs your system, and paint thinners will kill the helpful bacteria in your system. Do not pour old pharmaceuticals or other chemicals down the drain or into the toilet; these also kill helpful bacteria, and may eventually make their way to the Sound or to your groundwater.

Changing your outdoor behavior can also help keep our Sound healthy. When cleaning the driveway, use a broom, not a hose or pressure washer. Taking your car to the carwash is best, but if you wash your car or boat by hand, do it over the grass, not the driveway. If you change your own oil, use a proper oil change receptacle and take it to an auto parts store or the Transfer Station to recycle the oil. When filling your boat motor with gas, don't do it over your driveway, and DON'T do it over the water! Use a proper funnel to minimize spillage. Don't pour old paint, thinners or other chemicals onto the ground or into storm drains; take them to the Transfer Station for proper and safe disposal.

If at all possible, channel your downspout runoff onto the ground. Only channel it through tight lines leading to the beach if you have a situation where having it soak into the ground will add a destabilizing amount of weight to your bluff during heavy rains. If you have a pool or hot tub, do not drain it in a way that the old water will make its way to the Sound. Water in pools and hot tubs is often chlorinated, and the chlorine can kill the shellfish and other marine life on your beach.

In the garden and yard, minimize the amount of pesticides, herbicides and fertilizers you use. Follow directions and use sparingly. Use organic time-release fertilizers if available. Never use chemicals before a rainstorm. Compost and mulch when possible, and use a mulching mower if you have a lawn. Let your lawn go "brown" during the summer; it will rebound in the fall. Don't use plastic sheeting in your garden for weed control, as it will channel water in the same way concrete does. Instead, use burlap or a porous garden cloth material. Replace lawns with drought-resistant native plants where possible; this will reduce your need for chemicals and watering. And whenever you find animal poop in your yard or garden, put it into a plastic bag and toss it into the garbage.

Schools, Golf Courses, Farms and Businesses

Farms have special circumstances that need to be taken into consideration. Soil that is washed off fields into nearby streams and then into the marine waters can cloud the water. This may reduce the sunlight available to aquatic plants, and could smother forage fish eggs on the beach. Chemicals and nutrients that are attached to the soil also wash into the water, causing algal blooms which deplete the oxygen in the water. Farmers and ranchers can reduce this sedimentation by applying management practices that control the runoff water flow and volume, keeping the soil in place and out of the streams. When a large number of farm animals are present, animal waste can be a problem, potentially causing water quality contamination and depleting oxygen from the marine environment. Storing and managing wastewater and runoff with a proper waste management system can significantly reduce this pollution source. Overuse of irrigation water can also be a problem in causing erosion, as well as transporting chemicals and nutrients to the Sound. Increased efficiency can be realized by measuring actual crop needs and only using that amount of water. Higher efficiency equipment is also a good choice. In trying to minimize the amount of pesticides, farmers can use Integrated Pest Management (IPM) techniques. These encourage natural barriers, limiting pesticide use. Farmers who are looking for assistance in reducing their output of non-point pollution through Best Management Practices can usually turn to their Conservation District for expert help. The Snohomish Conservation District helps farmers on Camano and in Snohomish County; information on what they offer can be seen at http://www.snohomishcd.org/long_range_plan.htm. The Whidbey Conservation District helps farmers on Whidbey, and can be seen at http://www.whidbeycd.org/. With the exception of animals, many of the same problems experienced with farms are also present with golf courses and schools.

Businesses contribute to non-point pollution in much the same way households do, and can minimize their contributions through similar methods. One large difference, though, is that many businesses have large expanses of pavement for parking, including storm drains that flow to the Sound. One alternative is to use permeable pavement where possible, minimizing the amount of runoff into storm drains that carry all of the cumulative dripped oil and antifreeze from the hundreds to thousands of cars that park in the lot between rains. At Bayview Corner near Langley on Whidbey Island, a permeable parking lot was made using a mix similar to concrete, but with no sand. Air spaces in the pavement allow water to pass into the soil underneath. Charity or benefit car washes should also think twice about using a paved business parking lot, as the chemicals from the cars and soap will eventually make it into the storm drains and out to the Sound. If carwashes must be held, they should use the lawns next to the parking lot, where the water can soak into the ground, and preferably use organic or “safe” soaps.

Some Causes of Non-Point Pollution.. Image Source: Ohio State University Extension

Bibliography

1. Best Non-Point Source Documents, Environmental Protection Agency, January 2001 - 2004. A large number of in-depth documents covering the following topics: agriculture, forestry, marinas, urban settings, stream restoration, non-point source monitoring, funding, and outreach. http://www.epa.gov/owow/nps/bestnpsdocs.html

2. Eating Well to Save the Sound, Washington State Magazine, Summer, 2006. Good article on non-point pollution and Washington's shellfish industry. Also features Shore Stewards program in Hood Canal! http://washington-state-magazine.wsu.edu/stories/2006/May/eatingwell-4.html

Calendar of Events

Saturday, July 29: A DAY ON THE PRAIRIE
Smith Farm, Coupeville. Join the staff and volunteers of Washington State University (WSU) Extension at this fun-filled family event and fundraiser in the biggest barn on Whidbey Island, overlooking Ebey's Landing. Historical tours, farm visits and classes include: Clamming on the Beach, Penn Cove Shellfish Company Tour, Admiralty Head Lighthouse and Ft. Casey Tour, History of Island County Agriculture, Birds of the Prairie, Lavender Wind Farm Tour and Whidbey Ancestors Lying About Cemetery Tour just to name a few. There will also be prairie games and other kids' activities. We will finish off the day with a BBQ supper featuring locally-grown, grass-fed beef, with beverages available at our beer & wine garden. Then we will kick up our heels at a barn dance with the "Tasty Rock & Cookin' Blues" of the Coyote Blues Band. This is a fundraiser for WSU Extension, with a generous local contributor matching every dollar earned! 1-5 pm, tours and classes, $20 per person; prairie games and kids activities $10 per child 12 and under; 5-7 pm BBQ supper, $20 adult, $10 child 12 and under; 7-10 pm barn dance $25 couple, $15 single, $5 kids 6-18, 5 and under free. Smith Farm is located at 399 S. Ebey Road, Coupeville.
For information or to sign up for classes, go to www.island.wsu.edu or call 360-240-5558.

To view archived copies of past Shore Stewards Newsletters, go to www.shorestewards.org

Island County Shore Stewards is a program of the WSU Beach Watchers, and is supported by the Washington State University Extension in Island County and the Island County Marine Resources Committee, with grants from the Washington Department of Fish and Wildlife, Puget Sound Action Team, the Salmon Recovery Funding Board, Northwest Straits Commission, the Washington State Department of Ecology, and the Camano Island Watershed Management Program.

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