SHORE STEWARDS NEWS

July 2005 Island County, Washington **Issue No. 9**

New Shore Stewards Website!

We are pleased to announce the unveiling of the new Shore Stewards website! Unlike the old website, the new site will be updated regularly, and has a number of exciting features and links that you should find helpful: News, Events, Resources, a Newsletter archive, etc.! Many thanks to the expert work of Phil Williamson (ZigZag Creek Web Works), a Coupeville graphic designer with extensive experience creating websites, and Dan Pedersen (Communications Manager, Island County Marine Resources Committee), who spent many hours fine tuning the website to its current look. Please take the time to check it out at http://www.shorestewards.org/, and feel free to forward it to any friends, neighbors or relatives you feel could benefit from the program. The updated book and application can be found online as well. If you have any comments or suggestions, or have anything you'd like added to the website, we'd love to hear from you!

Nutrition and Shellfish

The low tides of summer find many of us out on the beaches gathering clams and crabs for a delicious meal. Most of us are aware of the nutritional value of salmon and some other fatty fish, which are rich in the "good" fats that are called omega-3 fatty acids, and which can improve our cholesterol profile. What many of us do not know, however, is that many of our shellfish species are not only low in saturated fat, but have beneficial levels of these fatty acids, and can contribute to the overall recommended daily intake of about 2 grams of omega-3 fatty acids. For example, though a sockeye salmon has 1.17 grams of omega-3 fatty acids per 100 gram portion, the blue mussel is close behind at 0.84 grams and the manila clam at 0.67 grams. The Dungeness crab requires a larger portion, as the concentration is 0.38 grams, but who needs justification for eating more crab?

Shellfish is an excellent source of protein, and is also a good source of iron, zinc, copper, and B-12. The Washington Sea Grant Program published a great 8 page report on this subject in 2001. Titled THE NUTRITIONAL VALUE OF SHELLFISH, this publication was by Faye M. Dong, a Professor at the U.W.'s School of Aquatic and Fishery Sciences. You can view this online at: http://www.wsg.washington.edu/publications/online/nutritional.pdf, or you can order it from the Washington Sea Grant Program: (206) 543-0555.

Red Crab, from NOAA's Historic NMFS Collection

Beach Etiquette

We teach our children important lifetime values when we introduce them to the wonders of nature and instill a sense of respect and stewardship toward all life. The following Beach Etiquette guidelines were borrowed from the WSU Beach Watchers website, courtesy of Island County Coordinator Dot Irvin. Please visit the website at http://www.beachwatchers.wsu.edu/

A marvelous window opens for us during spring and summer low tides. This is when we can explore the rich diversity of intertidal life otherwise out-of-sight and out-of-reach on our favorite beaches. Good beach etiquette calls on us to respect these creatures, their dwelling places and all life. A meaningful way to learn about marine life is to take photographs or draw pictures, being careful not to poke, injure or disturb creatures and not to remove them from their natural setting.

We recommend the following "beach etiquette" be observed by adults and children during spring and summer low tides. Feel free to copy and distribute to kids and houseguests:

Please leave all living organisms in their native habitat, where you find them on the beach.

Walk with care to avoid injuring plants and seaweed. Plants and seaweed prevent erosion, provide habitat and hiding places for intertidal organisms. They also provide food for many animals and insects.

Step on bare spots as much as possible, walking slowly and at a safe pace.

Overturn rocks with care, if doing so. When finished looking, return them gently to their original position to avoid crushing anything that lives underneath.

Kneel quietly by tidepools, taking care not to walk in them or put your hands into them.

Fill any holes you may create if digging for clams. Piles of sand left on the beach can smother other organisms.

Leave creatures attached to rocks, rather than removing them for study, since removal may kill them. Since it is natural for them to be attached, more can be learned about them by observing where and how they choose to live.

Enjoy anemones without prodding them. Anemones will often squirt water if poked, but sadly this can kill them because they need that water for survival until the next tide covers them.

Spartina in Island County

Spartina anglica is a cordgrass that has spread aggressively throughout Puget Sound since it was innocently introduced by a farmer in 1961. According to a Washington Department of Agriculture report in 2004, three counties accounted for 99 percent of the north Puget Sound and Hood Canal infestations: Island County (35 solid acres), Skagit County (350 solid acres), and Snohomish County (370 solid acres). Spartina is also found in Jefferson, Kitsap, Clallam, King, and San Juan counties. Though concentrated in the north and central Sound, state and county agencies are working with local organizations and volunteers to help remove the problem before it spreads to other areas of Puget Sound.

This dull-green grass with pale yellow flowers at the end of multiple spikes looks like a natural grass in its coastal environment. Without a natural grazer or predator, however, the plant accumulates sediments around it's roots, and transforms marshes or mudflats into spartina meadows. Migratory waterfowl, who depend on a large diversity of native plants, lose important habitats. Commercial shellfish growers are also affected, losing valuable shellfish acreage and harming our state's economy. Juvenile salmon foraging areas are also disrupted as spartina colonizes eelgrass meadows affecting commercial and recreational fishing. Spartina can change the ecosystem of the areas it invades, so that native plants and animals no longer find it suitable. Besides producing seeds that float on the water, spartina stores nutrients in large underground root masses which can withstand efforts at eradication by hand-pulling and mechanical removal. "Clones" that grow in different parts of an invaded area can grow to a size where they meet, creating a spartina meadow. (Another species of spartina, Spartina Alterniflora, has created similar problems in the Willipa Bay area of Washington. Spartina densiflora is a species that has been found in the west end of Grays Harbor.)

Eradication of spartina is a multi-agency and multiple method process. One method of removing spartina is hand-pulling, which is particularly successful with younger plants that are not as established as larger ones. Various volunteer groups have contributed to this labor-intensive effort, including a group of WSU Beach Watchers on Whidbey Island working alongside Starbucks employees this past May, who filled a dumpster and a half of this nasty invader in the Oak Harbor area. People for Puget Sound are having an Island County Spartina Dig Day at Oak Harbor on August 6th, following a July 23rd dig near La Conner. On a larger scale, spartina is removed by herbicide spraying (air and land), mowing, and crushing. These methods, usually done by governmental agencies, often need to be repeated over a three or four year period to be effective, and timing is crucial. Mowing and herbicide spraying needs to be done early in the growing cycle, July, before the seed production and new growth have taken place. State, county and tribal groups are all working together to help eliminate this problem. In Island County, the Marine Resources Committee has also been instrumental in assisting spartina removal along the county's 212 miles of shoreline. Judy Feldman, Coordinator of the WSU Extension's 4-H Program, recently involved Middle School students in the Spartina Education and Eradication Project, a combination of both digging spartina and educating the public. Susan Horton, who heads Island County's Noxious Weed Control Board, has also been quite active in helping eradicate the problem. With a continued multi-part attack on spartina, we can be hopeful that the problem may be controlled in Island County and Puget Sound.

Calendar of Events

Summer is here, and unlike the full page of events that we featured the past few months, the number of community events and programs has dwindled to almost none. As fall approaches, expect a full page of events and programs on Whidbey and Camano. Thank you for your support in attending the events that we have sponsored these past few months; they were a success due to your interest in the shoreline environment!

Thursday, August 4, 10:00 a.m. & Thursday, August 18, 9 a.m. : Digging for Dinner at Zylstra Road (Whidbey Island). An opportunity to learn everything you ever wanted to know about clams, including how to make sure that there will always be more to eat. Eugene Thrasher will take you and your bucket to the beach to learn how to dig carefully and how to replace the smaller clams properly so that they will continue to grow and not drown. You'll also learn about limits and general clam lore. Participants should come equipped with a shellfish license (obtainable at most outlets that sell fishing licenses) and appropriate clothes. Proper clamming tools and a bucket are helpful. A parking permit is also required for this location and can be purchased along with the shellfish license. For more information call Beach Watchers at 360-679-7391. (**For Camano residents**, the only public beach for gathering shellfish is at Camano Island State Park. The Park is presently closed to shellfish gathering, so there is no shellfish gathering instruction on Camano.)

Saturday, August 6th, 10 am – 3 pm: "Spartina Dig Day". Spend a rewarding day on the beautiful shoreline of Oak Harbor digging up Spartina and removing it from an important shorebird habitat area. Snacks, drinks, and tools are provided - bring a friend and have some fun! Contact: Britta Eschete, People for Puget Sound, 360-336-1931, or beschete@pugetsound.org.

Sunday, August 14, 1-4 pm: With 511 certified Backyard Wildlife Habitats, Camano Island is now the 10th Community Wildlife Habitat in the nation. Help celebrate the program receiving certification and recognition from the National Wildlife Federation. Four-Springs Lake Preserve, Camano Island. Certification at 2 pm. Guided walks of park trails. Nature programs. Open House of park rental facilities. Directions: South on East Camano Drive, west on Camano Hill Road, north on Lewis Lane.

Thursday, August 18 – Sunday, August 21st: Island County Fair, Langley. A wonderful weekend of fun in beautiful Langley! Exhibitors, parade, animals, events, carnival, entertainment – what more could you want? Fun for young and old! Come and check out the WSU Extension booth! For more information, call 360-221-4677, or go to http://www.islandweb.org/fair/

Island County Shore Stewards 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

September 2005 Island County, Washington Issue No. 11

Mushrooms, Fungi and Your Property

Fall rains bring forth a variety of mushrooms on most Puget Sound properties. Some people may look at them as a problem that needs to be eliminated. Many see them as an attractive native species. Others as a gourmet food source. What most people do not know, though, is that mushrooms are the visible fruiting body of certain fungi, out of almost 100,000 different fungi species. Many of these are not visible in the form of mushrooms and have beneficial effects on your property you may not recognize. This issue of the Shore Stewards News will give you a basic understanding of fungi and the benefits to your garden, trees and beach or bluff.

There are three primary categories of fungi, based on their relationship to their environment. Some are *parasitic fungi*, feeding on living organisms. These include the most serious fungus pests, but thankfully are relatively few in number. These include the wheat rust; species that feed on insects and insect larvae and pupae; species that feed on trees; and species that feed on tree roots. We will not feature these in this newsletter, as they are of no benefit to your property. The second category is what we call *saprophytic fungi,* which feed on dead or decaying matter and get their nourishment from their surroundings, releasing their nutrients back into the environment. The third category consists of *mycorrhizal fungi*, which form a mutually beneficial and symbiotic relationship with the rootlets of plants and trees. The second and third categories will be covered in this newsletter.

Fungi reproduce through the release of microscopic *spores*, often consisting of just one cell. If you've ever stepped on an old puffball, you released millions of spores into the air. The spores are dispersed in many ways, can travel far distances, and are everywhere. When they have found a compatible place to grow, these spores typically form tubular filaments called *hyphae*, whose walls are often strengthened with *chitin*. As the hyphae grow into an interwoven mass, we refer to that mass as *mycelium*. Go to a wet part of your yard or woods, pick up an old piece of wood that has been on the ground awhile. You'll probably see a white weblike substance on the bottom of the piece of wood or on the ground beneath it. That is mycelium, and mushrooms are the fruiting bodies that grow out of mycelium. (Not all mycelium produce mushrooms, however.)

The Role of Fungi in Decomposing Litter and Debris

As mentioned, *saprophytic fungi* are found on dead and decaying matter: wood, soil, humus, manure, grass, and other debris. These fungi decompose dead organic matter, helping rot wood and making nutrients available to plants, and returning the resulting organic matter to the soil. There are saprophytic fungi to be found on seaweed, kelp, and eelgrass, breaking them down and feeding their nutrients to varied marine life. If it weren't for these fungi, our yards, forests and beaches would be covered by huge piles of debris. The best role of these species of fungi is their ability to decompose the structural portions of plants, especially cellulose and lignin, which are the major components of the walls of plant cells. Your compost pile is a good example of how fungi works to decompose your old grass, dead leaves, small twigs, etc.

Fairy Rings and Woodpeckers

One of the most visible examples of saprophytic fungi is the "fairy ring" seen on lawns, which grows outward when there is an even distribution of nutrients. Many fairy rings seen on our lawns are a mushroom called *marasmius oreades*. The mycelium grows outward at a similar rate in all directions, with the mushrooms making themselves visible overhead. Each year, the ring grows larger as the mycelium consumes the nutrients in the ring and moves outward, only stopping when a lack of food impedes it's progress. Some fairy rings in the Midwest prairies have been estimated to be several hundred years old.

Another example of saprophytic fungi is the rotting forest snag, which provides a home or food to a large variety of animals, birds and insects. In a recent study by the Wildlife Conservation Society and Arkansas State University, it was found that over 60 percent of woodpeckers nesting in tree cavities had a variety of wood-inhabiting fungi in their beaks. As the woodpeckers puncture dead and dying trees looking for wood-boring insects, the holes they create serve as infection sites for airborne fungal spores. When they return to feed or to make a nest, the fungi gets picked up in their beaks, and then is spread when they forage on other dead or dying trees.

Symbiotic Relationships Between Fungi, Plants and Trees

Mycorrhizal fungi form a mutually beneficial relationship with plants and trees called *mycorrhiza,* from the Latin words *myco* (fungus) and *rhiza* (root). The mycelium forms a sheath of hyphae that surrounds the roots of the tree or plant, and they can then exchange nutrients. The fungus, which does not benefit from photosynthesis, gets carbohydrates and moisture from the plants or trees. In return, the fungus provides the trees or plants with an increased ability to pick up water and soil nutrients, such as phosphorous, zinc, inorganic nitrogen, and other minerals, particularly nonmobile nutrients. This is also helped by increasing the root surface area. Another benefit is that the mycorrhizae help the plants and trees by providing increased resistance to soil borne diseases. It has been found that mycorrhizal fungi can serve as conduits for nutrients between different plant species as well. Gardens with a healthy population of mycorrhizal fungi can be much better than those whose growth is stimulated through chemical fertilizers. Similarly, trees can grow taller and stronger in poor or exposed soils if they have a good mycorrhizal relationship. (One researcher found over fifty species of different mycorrhizal mushrooms under a single Douglas fir. One species found under Douglas firs in the Northwest is a truffle. Not quite as good as expensive European truffles, but still quite tasty.)

Soil Erosion Control for Beach and Bluff Properties

As the mat of mycelium grows and thickens beneath the soil, it binds sand, soil and small rocks together. This helps to prevent erosion similar to the way tree roots help with erosion control. Which is one good reason not to poison or remove mushrooms and mycelium on bluff or beach properties. The mycelium also slows the movement of water through the top layers of soil, reducing the eroding effects of rain and surface water.

Clean Water Through Pollution Control

Fecal coliform from farm animal manure and waste from pets, birds and wildlife can eventually migrate from the surface of your property to the waters off your shoreline, contaminating shellfish and other marine life, and making swimming a hazardous pursuit. Over a period of time it can also travel downwards towards your aquifer, particularly with shallow wells. The mycelium mat in your soil can help control this non-point pollution naturally by filtering this pollution, converting it into nutrients that are then "fed" to neighboring plants and trees. Paul Stamets of Fungi Perfecti, a mail-order mushroom kit supply firm here in Washington, wrote an interesting article on "mycofiltration" for the periodical Mushroom, The Journal about creating a large mycelium filtration barrier for farm runoff. *Shore Stewards* does not endorse or confirm his findings in any way, but it is interesting reading. For those with internet access, the article can be found at http://www.fungi.com/mycotech/farmwaste.html

What About Edible Mushrooms?

Yes, many of the mushrooms you find in your yard or around the more natural parts of Island County are edible. Depending on the time of year, one can find morels, chanterelles, oyster mushrooms, and many more! Below is a list of some of our favorite books on mushroom identification. BE SURE you know exactly what you are eating, and if you are not absolutely positive, consult an expert. Also, as mentioned above, mushroom mycelium will filter whatever passes through it, and pass it into the mushroom above. So if you have sprayed or fertilized your plants or trees, the chemicals can make their way back into the mushroom. And if you have mushrooms growing on any soil or bark brought from elsewhere, you shouldn't take chances, for the same reason. One last thought: never eat raw mushrooms, even the store-bought button mushrooms, so often found served raw in salads or on vegetable platters. All mushrooms have natural pesticides in them. These get cooked out of most edible mushrooms. Some edible mushrooms, like the morel, may make you very sick if eaten raw. Other raw mushrooms may build up toxins in your system over a period of time. Our advice is to not eat raw mushrooms, even if you've never had a problem in the past.

Some of these mushroom identification books may be out of print, but are still widely available through the internet and used book stores. The library also has copies of most of these books.

Mushrooms Demystified. David Arora, Ten Speed Press, Berkeley, 1986. One of the very best books for West Coast mushroomers!

All That The Rain Promises, and More! David Arora, Ten Speed Press, Berkeley, 1991. Great pocket companion to the Mushrooms Demystified book

The *New* Savory Wild Mushroom. Margaret McKenny and Daniel E. Stuntz, Revised and Enlarged by Joseph F. Ammirati. University of Washington Press, 1987. Locally written, good descriptions, well illustrated.

The Meandering Mushroomer. Dick Graham. Hancock House Publishers, Seattle, 1978. Simple, well illustrated guide of most often found local edible mushrooms.

The Audubon Society Field Guide to North American Mushrooms. Gary Lincolf. Chanticleer Press, Inc. New York. 1981. Good guide, with extensive illustrations and descriptions. This is a national guide, so includes mushrooms you won't find here. Also, some mushrooms vary in color depending on where in North America you find them. If in doubt, check a local guidebook.

Calendar of Events

Wednesday, September 21st, 7:00 pm: Water Catchments. Landscape designer Cameron Scott will talk about different types of water catchment systems, their benefits, codes and aesthetics. This free program is part of the Camano Wildlife Habitat Project. Camano Center, 141 N. East Camano Drive, Camano Island.

Saturday, October 22, 6:00 p.m. *WSU Autumn Festival* at the Greenbank Farm, Whidbey Island. Details in October newsletter.

Wednesday, October 26th, 6:00 p.m.: Septic Workshop. Free septic informational workshop presented by Janet Hall From WSU Waste Wise of Island County. Terry's Corner Fire Station, Camano Island.

Thursday, November 3rd: Camano 101. Informational program for those who are new to Camano Island and want to know about the different organizations and resources. Time and more info to follow in next month's newsletter.

March 2 – April 27th, 2006: WSU Beach Watchers training on Camano Island. Many of you are aware that the Shore Stewards book and application were researched and written by WSU Beach Watchers in Island County, and that the program has been promoted through the Beach Watchers. Now you have the opportunity to participate in Beach Watchers training on Camano in Spring of 2006! It will be held on Tuesdays and Thursdays from 9:00 a.m. to 4:00 p.m. The location will be the Camano Multipurpose Center, 141 N. East Camano Dr.

You receive 100 hours of university level training that is free. There is a $25 fee to cover the cost of reproducing the training manual, which every trainee receives. Topics covered include ground water and watersheds, geology of Camano Island, forestry, birds, marine biology, oceanography, septic systems, solid waste and recycling, composting and worm bins, pesticides and fertilizers, aquaculture, climate change, Camano Island history, noxious weeds, native plants, salmon and the nearshore, shoreline regulations, and more. There are several field trips during the training as well.

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. Voluneers have a lot of fun working together, and enjoy monthly meetings and occasional field trips.

Applications for Beach Watcher training may be picked up at the Island County Annex on Camano Island, 121 N. East Camano Drive. You can also call 629-4522, ext. 6012, and leave your name and contact information. Or email schase@wsu.edu. An application will be mailed to you.

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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SHORE STEWARDS NEWS

October 2005 Island County, Washington **Issue No. 12**

One Year Anniversary of Shore Stewards News!

This is issue number 12 of the Shore Stewards newsletter, which completes the first year of publication. Thanks to everyone for their continued support, including comments and suggestions for upcoming topics. And a special "Thank You" to the WSU Beach Watchers who have volunteered to be an important part of the success of the Shore Stewards program, including their work on the Shore Stewards Committee and their monthly editing of the newsletter. Since the end of June, the newsletter has been archived on the Shore Stewards website, which you can see at www.shorestewards.org. An index of previous topics is being worked on and will be available by the end of 2005.

Our most successful topics have been ones that were suggested by Shore Stewards like you. If there are any topics that you would like information on, or would like to see covered in more detail in the coming year, please feel free to call or email. Contact information, including local phone numbers and email addresses, can always be found at the bottom of the last page.

Protecting Your Bluff From Winter Rains

Over the past year it has become obvious that one of the subjects that is of most importance to Shore Stewards is how to prevent erosion of their bluff properties. Fall and winter rains have arrived, and with them the prospect of slides. Most of the shoreline around Puget Sound contains steep bluffs that can rise up to 500 vertical feet in height, often composed of deposits from ice-age glaciers, consisting of gravel, sand, clay and silt. These bluffs have been eroding for thousands of years and will continue to erode, which helps to build our beaches. This is not of concern until development occurs on the bluff or on the shoreline below. Erosion will happen, and we can't prevent that. What we can do, however, is to attempt to minimize our own impact on the bluff and help protect the bluff's stability.

A good visual representation of what the effects of development can have on slope stability can be seen in a King County website:
http://splash.metrokc.gov/wlr/watersheds/puget/nearshore/BluffC.htm

One of the best times to take preventative measures is during the development of your property. Clearing some shrubs and trees is necessary in order to build most homes, but over-clearing or clear-cutting in order to improve views brings a heightened risk to slope stability. Trees and vegetation can hold an enormous amount of water in their root systems, and removing them can increase the eroding factor of winter rains. If you have cleared your property, you may consider planting native vegetation. Trees such as Douglas fir and madrone have evolved to thrive near the bluff, and are a good stabilizer of bluff soils. A good booklet you might check is "Vegetation Management: A Guide for Puget Sound Bluff Property Owners". Prepared by Elliott Menashe of Greenbelt Consulting, this book is published by the Washington State Department of Ecology, and is available for free through Shore Stewards. It can also be seen online by going through the Department of Ecology website: http://www.ecy.wa.gov/programs/sea/pubs/93-30/intro.html

Beach Access: Trails and Roads

If you walk along the beaches of Puget Sound, you will often find several different accesses to the beach. Property owners will build complex stairways, often zig-zagging back and forth from the bluff top down to the beach. Pathways will be dug along the bluff face. Stair-steps made of railroad ties or old tires are often seen. Up until the 1960s, developers would sometimes use firehoses to sluice bluffs down onto the beach below, making level beachfront properties where they didn't exist before, and bulldozing a road access from the top to the bottom. In all of these instances, a pathway for rainwater was created where none existed before, creating gullies and destabilizing slopes. If you've walked the beach, you've undoubtedly seen stairways that end halfway down a steep slope, or large bulkheads built below in an attempt to prevent the access from eroding.

If you are considering building a beach access, which can be quite expensive to build and maintain, you might consider sharing an access with several neighbors. Possibly you have community property that can be used, or a lot that several can invest in to provide a mutual access. The best preventative measure, of course, is to keep the slope intact and undisturbed. If an access must be made, however, it is best to do it in a location that is less steep than others, and that would have least impact on homes above (or below) should the bluff slide in the future due to the disturbed slope face. Of course, all permitting procedures and inspections must be made prior to any such construction, and final approval must be made prior to use.

One interesting site you may want to check before doing any construction on or near a slope is the Department of Ecology's Slope Stability Maps. To see these online maps, and to check the stability of your slope, go to:
http://www.ecy.wa.gov/programs/sea/landslides/maps/maps.html

At the bottom of the website above, you can also click on a link to aerial shoreline photos, which is also quite informative.

Managing Your Runoff

Slides are often triggered by uncontrolled runoff from home sites. As mentioned earlier, one preventative measure is to leave much of your land undeveloped and to use native plants and trees whenever possible. Another consideration is the amount of concrete, asphalt, and other impervious surfaces you have on your property. Many bluff homes are located below the main road level, between the road and the bluff. If you are considering building a driveway, and your home is below road level, you might consider the driveway material. If concrete or asphalt, you might be channeling a large amount of rainwater downward towards the bluff. Consider using porous surfaces such as bricks or gravel. Same with patios, walkways and paths: if the surface is not porous, are you diverting rainwater towards the bluff? If so, you may want to seek alternatives.

For complete information on how to manage drainage on coastal bluffs, please check the Department of Ecology's website on that topic, which covers the subject in detail:
http://www.ecy.wa.gov/programs/sea/pubs/95-107/intro.html

Maintain and Check Your Tightlines Regularly

You may have read about "tightlines" in the Shore Stewards book, Guide for Shoreline Living. Many have commented that they don't really know what tightlines are. Basically, tightlines are any closed pipe, usually made of plastic, that is used to divert water from gutters and downspouts over the face of a bluff and down to the beach below. A properly engineered tightline system can prove quite effective in diverting the water away from your roof and onto the beach, channeling the water away from the bluff face and avoiding the damage from uncontrolled runoff. Washington State Department of Ecology publishes a book, "Surface Water and Groundwater on Coastal Bluffs: A Guide for Puget Sound Property Owners", which is available through Shore Stewards. Much of the information can also be seen in the link at the bottom of the preceding page.

If you live in Island County, you can obtain a sample plan of a properly engineered system by dropping into your local building department office. Prepared by the Office of Island County Engineer, this plan includes plans for properties with both above and below 5,000 square feet of impervious surface. The plans take into consideration bluff height, pipe dimension, proper anchoring, catch basin, diffuser tee at bottom, and riprap pad at outlet. You can also contact Shore Stewards if you would like a copy of that plan. Be sure to obtain proper permits, and have your system inspected after installation.

A normal engineered tightline will typically use lengths of a straight pipe of proper thickness, joined at the ends with appropriate connections and anchored into the ground. Though the corrugated flexible thinwall plastic pipe might be approved by the County if used in a properly engineered system, it's use is discouraged. This type of pipe comes in long rolls, and is available from most home centers. Too often homeowners seek the "easy" approach, attaching one end of this pipe to their downspout, and throwing the roll over their bank, without proper anchoring and diffusing at the bottom. Again, if you've walked along the beach, you've seen this pipe on bluff faces. In certain instances, this approach can prove much more damaging to your bluff than the natural runoff. Too often we've seen minor slides cause a break in this line, particularly if a tree falls and pulls the line apart. With a heavy or continuous rain, the line then acts like a firehose, causing gullies and increased erosion. Since most homeowners do not often walk along their beach during the rainy season, this break and subsequent damage might go undetected until a substantial amount of damage has occurred. We highly recommend use of an engineered system rather than the cheaper method, and use of pipe recommended by the Building Department.

Whenever you walk on the beach, take along a pair of binoculars. Visually check your tightline on a regular basis, and correct any problems right away. Tightlines are often concealed by blackberry vines, Scotch broom, and other quick-growing and invasive vegetation that typically grow on gentle slopes. Though vegetation helps stabilize bluffs, it is preferred that you remove just enough to keep your tightlines visible to inspection. Never endanger yourself by climbing up or down steep slopes, of course. Vegetation seldom covers lines on steep or vertical slopes. And never use chemicals to kill the vegetation. Chemicals can weaken the plastic, and do damage to the nearshore marine life below.

Wanted: Your Eyes On The Beach

We would like ask for your assistance when walking on or looking out on your beach. Some sea lions and seals have recently been found dead from gunshot wounds on the beaches of Island County. There is also an increase in domoic acid in shellfish in Saratoga Passage, Holmes Harbor and Penn Cove, and marine mammals also eat shellfish. If you see or encounter a dead or injured seal or sea lion, or one that is acting oddly, leave it alone. They can be quite dangerous. Instead, call your local Marine Mammal Stranding Network responder at the number on the last page.

Calendar of Events

Wednesday, October 26th, 6:00 pm: Septic Systems. Avoid septic system nightmares by attending this free septic system workshop, courtesy of the WSU Waste Wise program. Pre-register by calling the WSU Cooperative Extension Office, 360-629-4522, Ext 7327, option 7. Terry's Corner Fire Station, 525 E. North Camano Drive, Camano Island.

Thursday, November 3rd, 7:00 p.m. Camano 101: **Living on the Island**. Join us at the Camano Center Multi-Use Building for an Information Fair. The doors open at 6:30 pm, and the program begins at 7:00 pm. The address of the Camano Center is 141 - N. East Camano Drive. The themes for this fall's event are island services (government services, community resources and service clubs) and disaster preparedness. Free to the public! Displays, handouts, and short presentations will inform you on how you can better enjoy living on Camano! This event is sponsored by WSU Extension in Island County, Island County government, and Washington State Parks.

Friday, November 4th, 7:00 pm: "Shoreline Living" Film. Sponsored by WSU Beach Watchers. Can people and beaches co-exist? This free film and discussion cover practical and affordable protection for bluff and beach habitat. Guest speaker: Aundrea McBride, research ecologist, Skagit River System Cooperative. Located at Au Sable Institute for Environmental Studies, 180 Parker Road, Coupeville.

Saturday, November 12, 3 pm – 7 pm: Chili-Chowder Cookoff. Camano Senior and Community Center. Chili, chowder, desserts, and a beer and wine garden! Great fun with several of the groups and organizations around Camano Island. Come visit the WSU Beach Watchers and Shore Stewards booth, and enjoy a sea lion skeleton cookie, modeled after the "Salty" project we are working on for later exhibit at Cama Beach State Park!

March 2 – April 27th, 2006: WSU Beach Watchers training on Camano Island. March and October Beach Watchers training on Whidbey Island: Many of you are aware that the Shore Stewards book and application were researched and written by WSU Beach Watchers in Island County, and that the program has been promoted through the Beach Watchers. It will be held on Tuesdays and Thursdays from 9:00 a.m. to 4:00 p.m. For more information or to download application, go to http://www.beachwatchers.wsu.edu/about/training/. Or, on Camano contact Scott Chase (see contact info bottom of page). On Whidbey, contact Dot Irvin at doti@wsu.edu

Marine Mammal Stranding Network responders:
Camano Island: Sue Murphy, (360) 387-8299
Whidbey Island: Sandy Dubpernell, (360) 678-3765

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SHORE STEWARDS NEWS

November 2005 Island County, Washington Issue No. 13

Creosote In Your Yard And On Your Beach

Living in a marine environment, we are all familiar with logs that have been treated with creosote. Creosote logs are used in building bulkheads, piers, and bridges. You see them used in ferry terminals and marine pilings. They are sometimes used in walkways and stairs leading to the beach. Occasionally you'll find railroad crossties used in gardens or creosoted poles used for your telephone, cable and power lines. Often, you'll see pieces of creosote logs in the form of driftwood, or possibly the remnants of someone's dock that has broken up during a storm and washed up on the beach. This newsletter will focus on what creosote is and its effects on your beach and environment.

What is Creosote, And Why is it Used?

Creosote first became widely used in the 1850s, when railroads around the world were installing track across wood crossties. Without enough naturally-durable woods to meet demand, they started saturating less durable woods with creosotes to act as a preservative and to keep them from being eaten by termites and beetles or having carpenter ants burrow tunnels into the wood. Creosote also halted the natural decay of the logs from fungus, and by the 1860s creosote logs were used in marine environments to protect them from marine borers. Railroad crossties treated with creosote last about 30 years, and a utility pole can last up to 60 years.

When coal is heated to about 2000 degrees F. to produce the coke used for making steel, the condensed vapors from this process make coal tar. This coal tar is then distilled into several petroleum products: creosote, tar, and napthalene among them. The creosote produced is a complex mixture in which over 160 hydrocarbon compounds have been detected. Eighty percent of creosote contains *polycyclic aromatic hydrocarbons*, or PAH. Many of the 16 PAHs that have been found to be toxic to marine animals are found in creosote preservatives.

There are different methods of treating wood with these preservatives. If you've looked closely at pressure-treated wood using creosote, like a railroad crosstie or utility pole, you'll often see slits in the wood. These are made by running the wood through spiked rollers, which help the wood dry and help the preservative to penetrate the wood. Another method of treating wood is to remove air from the cells of the wood by drawing a vacuum, and then flooding the wood with preservative and pressurizing it into the wood. The cells are then full of preservative instead of air. A third method, known as the "empty cell" method, does not remove the water from the cells through a vacuum. The preservative is pressurized into the wood, and the air in the cells is compressed. When the pressure is released the air expands and the preservative is pushed out of the wood cells, which are left almost empty. In accordance with standards adopted by the American Wood-Preservers' Association, penetration in a Douglas Fir log is usually 1 ½ inches deep and for marine applications retention averages 20 pounds per cubic foot. Please note that creosoted wood is not for use in residential construction, but regulated by the EPA for use only in commercial applications.

How Does Creosote Affect Your Environment?

The very same reason that creosote is great for keeping wood-eating and wood-boring insects and organisms from destroying your dock or bulkhead is the same reason that it can be dangerous to your shoreline environment: it is highly toxic. Creosote is not fixed into the wood permanently; the preservative can leach from the wood in aquatic and marine situations. One way that this happens is through the heat of the sun, which can cause the creosote to ooze out of the wood. If you have ever stood next to a newer utility pole during a hot summer day, you can see and smell the creosote coming out of the wood. The same happens to creosote in pilings, piers, docks and bulkheads. Ever sit on a creosote treated pier or dock on a summer day, or lean against a bulkhead on the beach, and find that you have stained your t-shirt or pants? That is an example of leaching creosote. Creosote is also rubbed off the treated wood by boats tied up to a pier or dock, ropes that are tied around the pilings moving up and down with the tides, and the action of waves and marine debris. Sometimes pieces of wood break off during a storm, releasing the creosote. Rogue driftwood logs treated with creosote are abraded by the sand on the beach, just like sandpaper. There are a number of ways in which creosote leaves the wood and makes its way into the water and sand.

When large amounts of creosote-treated wood are used in water bodies that have little water movement, particularly those with muddy sediments and little oxygen, you can find toxic levels of the PAHs in a microlayer within close proximity to the pilings. These can be directly toxic, killing fish eggs and affecting invertebrate plankton and larvae in the microlayer. If these organisms are eaten by forage fish, the accumulated toxins can then be passed into birds, fish, and marine mammals that may eat the forage fish. If the microlayer makes its way onto the shoreline, it can affect surf smelt and sand lance eggs, shellfish, crustaceans, and juvenile fish.

What about human consumption of aquatic organisms that inhabit creosoted pilings? It is suggested that you do not eat such organisms, especially those on newer pilings. Some might argue that you ingest PAH when you eat smoked foods, or meat that you have cooked on your bar-be-que. Eating as little as 4 grams of mussel tissue from mussels growing on pilings, however, would exceed the maximum human consumption level for benso(a)pyrene, according to Eisler (1987). This is the equivalent of just two mussels! So even if you find a great quantity of delicious looking mussels growing on that piling in front of your property, it’s best to leave them alone.

Disposal of Your Own Creosoted Wood

When replacing any creosote treated wood, or removing it from your yard or beach, DO NOT burn the wood. The fumes are highly toxic. It’s best to have a professional do any removal of creosote wood. If you do it yourself, make sure you are wearing appropriate gloves and face protection. Do not cut the logs; the sawdust is very toxic, and leaving piles of treated sawdust on the ground can be a health hazard and is illegal. Check with your local solid waste facility regarding disposal. Again, it is best left to professionals.

What is Being Done to Remove Creosote Logs in Puget Sound?

Removal of creosoted wood and logs on our beaches is a high priority for many agencies in the state. In some cases, large-scale efforts are being undertaken to replace creosote pilings and other structures.

Washington State Department of Transportation and Washington State Ferries have embarked on a project to remove creosote-treated timber from their 19 Puget Sound ferry terminals. Built in the 1940s and 1950s, these timbers were used in the trestles, offshore berthing structures, and vehicle loading structures. As terminals undertake replacement and improvement projects, the creosote-treated wood is being replaced by pilings made of steel and concrete. At the time of the report this information was taken from, listed in the bibliography, 831,000 board feet of creosote timbers and pilings had been removed, the equivalent of 156.5 miles of 2 x 6's laid end to end. The Terminal Engineering Department plans to remove 14,000,000 more board feet of creosote timber over the next 10 years at 13 terminals.

The Northwest Straits Commission (NSC) and Washington Department of Natural Resources are working to identify and remove creosote treated wood from beaches throughout the 7 Northwest Straits counties, through the Marine Resource Committee (MRC) in each county. Whatcom County completed their creosote identification and removal project several years ago, in conjunction with the Department of Ecology, and that model is being used by other counties around the Sound. The DNR has provided funds to the local MRC in Skagit County, which has removed over 60 tons of creosoted logs. These logs are usually removed by helicopter, and transported to a site in Roosevelt in east Klickitat County.

In Island County, considerable efforts have been focused on removal of creosote laden logs, especially in the Fort Casey area. In March of this year, The State Department of Natural Resources (DNR), Washington State Parks and Recreation Commission, and Island County Marine Resources Committee joined together to remove creosote logs from a one mile stretch of beach at Fort Casey State Park. According to Gary Wood, Executive Director of the Island County MRC, 72,000 pounds were removed by helicopter. Volunteers, including WSU Beach Watchers, marked the contaminated wood over a 3 day period prior to it's removal. According to Wood, DNR provided about 60% of the cost, the MRC about 40%, and State Parks provided in-kind services. In November of this year, a crew of about 20 worked to remove these logs on the beach between Fort Casey State Park and Ebey's Landing. This crew, from Washington Conservation Corps, was part of a new effort to remove such logs. It is estimated this cleanup effort will net about 2,000 logs. In each of the aforementioned efforts, much work was done with the assistance of Tony Franz, a longtime Freeland contractor who has made it his "mission" to rid our beaches of these contaminated logs.

Other efforts are being looked at and grants applied for to remove contaminated logs from other beaches in Puget Sound. Puget Sound Action Team (PSAT) has made this effort one of its priorities, and in their Spring 2005 Sound Waves newsletter (see link in bibliography) listed the counties in which these efforts have been made, and the amounts of creosoted logs removed in each county.

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2. Creosote Removal Initiative: Removal of Creosote-Treated Timber from Washington State Ferries Properties Improves and Restores Salmon Habitat. See website: http://www.wsdot.wa.gov/ferries/your_wsf/corporate_communications/creosote/

3. Puget Sound Action Team (PSAT) *Sound Waves* newsletter, Spring 2005: http://www.psat.wa.gov/Publications/soundwaves/archive_sw/sw_spring_2005.pdf.

4. Seattle P.I. article: Many Working To Restore Puget Sound, November 22, 2002. http://seattlepi.nwsource.com/local/96481_sound22.shtml

5. WSU Beach Watchers *Beach Log* article, Helicopter Airlifts Tons of Creosoted Logs from Fort Casey Beach, by Gary Wood.

6. Northwest Straits Projects: Creosote Removal. http://www.nwstraits.org/projects-creosote.html

Calendar of Events

Due to the holiday season, there are no scheduled events for the public in November and December. We look forward to having many events available to you in 2006!

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. 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.

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SHORE STEWARDS NEWS

December 2005 Island County, Washington **Issue No. 14**

Trees, Bluffs and Views

The most beautiful views in Washington State can be found on or near the Puget Sound shoreline. Magnificent vistas of water, beaches and mountains are enhanced by stunning sunrises and brilliant sunsets. Maintaining these views is the chief reason cited for cutting, topping and pruning trees on or near the shoreline. Some of these methods, however, may create bigger problems than they solve. This newsletter will address some of those problems, and alternatives to some of the more drastic measures taken by homeowners in order to maintain their views.

Why You Should Not "Top" Your Trees

One of the main reasons not to cut trees near a bluff property is that the trees help stabilize the bluffs. Trees hold large amounts of water that may otherwise flow down the face of the slope. Roots hold sand and soil in place. These both help minimize the effects of erosion and the potential for slides. Instead of cutting trees, property owners may look to the alternative of "topping" the trees, which can be accomplished by hiring anyone with a ladder and chainsaw. Unlike trained arborists, some who top trees have little knowledge or experience, and often cause significant damage. An increasing number of towns and cities across the United States are banning tree topping or are requiring permits to do so.

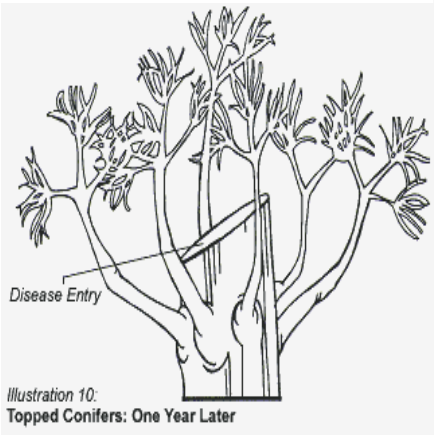

Illustration 10:
Topped Conifers: One Year Later

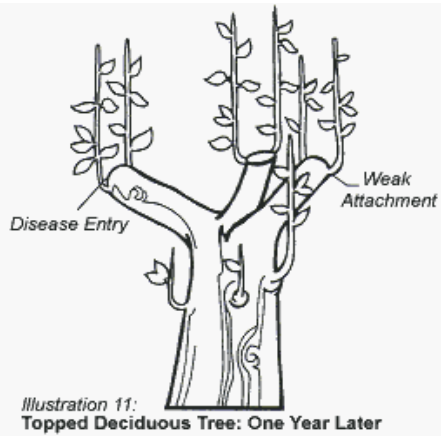

Illustration 11:
Topped Deciduous Tree: One Year Later

Illustrations to left and on next page are from Chapter 4, Vegetation Management: A Guide for Puget Sound Bluff Property Owners

Washington State Department of Ecology, 1993

Besides being ugly, a topped tree is stressed. Large wounds from improper pruning can expose heartwood and sapwood, which attracts insects and diseases. The leafy crown of a tree accounts for up to 30% of its energy production, and topping can starve the tree. Latent buds are activated as a defense mechanism, and multiple shoots pop up as quickly as possible below each cut in an effort to regain the lost energy. The shoots can reach the previous height within two years, requiring continuous topping and associated dangers. Tree canopies also protect the underlying branches and trunk from sunburn, which can lead to bark splitting and cankers. Tree canopies also shade the ground below. When exposed to light, the ground and bluffs are now open to invasion by Himalayan blackberries, Scotch broom, English ivy, and other non-native species. These invaders crowd out native species, helping to destabilize the bluff.

Pruning to Enhance Views

Illustration 12:
Alternative Pruning Practices: Conifers

When it is absolutely necessary to prune a tree to preserve a view, there are a few alternatives available that are recommended as causing the least amount of harm to the tree. Branches should be removed back to the point of origin, cut back to a strong lateral that is sufficiently large to take over the terminal role, or cut back to the parent limb. This helps preserve the natural form of the tree, and the cut can safely heal over. Never leave a stub, as this invites disease. It is best to hire a professional arborist who has a trained crew with required safety equipment and liability insurance. Professional organizations include the American Society of Consulting Arborists (ASCA), the Tree Care Industry Association (TCIA), and the International Society of Arboriculture (ISA).

Pruning Conifers

It is important when pruning a tree to retain at least 60% of its crown to keep it healthy. Some of the practices of pruning a tree, as seen in the upper right diagram, include windowing, interlimbing, and skirting up.

Windowing involves removing sections that obscure a view. Major limbs or branches may be removed, creating a "window" through which one can again see their view. This can be seen in example "A" above.

Interlimbing, as seen in example "B" above, consists of removing whole branch whorls or individual branches throughout the canopy, thus allowing light to pass through. This may be done along with windowing to improve views.

Skirting-Up, in example C, involves limbing the tree from the bottom, leaving only the trunk to obscure your view rather than the lower branches. The lower branches do not contribute as many nutrients to the tree as the upper branches do, so more branches can be safely removed. If you look at a stand of conifers, you can see that they often lose their lower branches naturally as they grow.

Pruning Broad-Leaf Trees

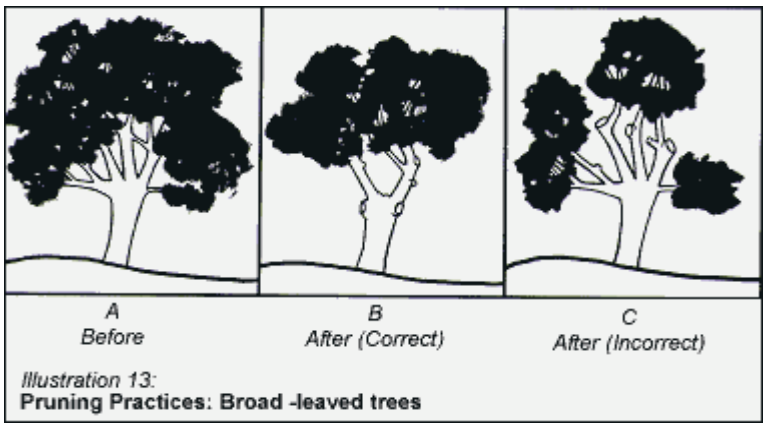

Illustration 13:
Pruning Practices: Broad -leaved trees

Before you prune broad-leaf trees, you should first consider if they are worth the cost of pruning. Is a short-lived tree like alder or willow valuable enough to you to be worth the effort? Many would say no. A madrone, big-leaf maple or white oak, however, would probably be likely candidates to prune. Pruning of broad-leaf trees are more complicated, and there are several publications available in your local library that address the subject of proper pruning. Again, it is always advantageous to hire a professional, especially when working in tall trees or near the bluff.

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http://www.treesaregood.com/

3. Urban Tree Foundation website:
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4. A Guide to Successful Pruning: Stop Topping Trees!
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6. Plant Amnesty website:
http://www.plantamnesty.org/stoptopping/5reasonstostoptopping.htm

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Due to the holiday season, there are no scheduled events for the public in December. We look forward to having many events available to you in 2006!

Saturday, January 21, 10:00 am - 4:00 pm: COASST (Coastal Observation and Seabird Survey Team) is having a training session at the Camano Resource Building, 141 NE Camano Dr on Camano Island. There will be a half hour break for lunch at 12:30.

COASST is a citizen science project of the University of Washington School of Aquatic and Fishery Sciences in partnership with the Olympic Coast National Marine Sanctuary. COASST volunteers collect data on beach-cast carcasses of marine birds on a monthly basis to establish the baseline, or 'normal' pattern of beached bird mortality in Washington and Oregon. The essence of citizen science is the involvement of well-trained community members in long-term data collection. Citizen science creates the opportunity for researchers to answer important scientific questions that could not be answered without the help of dedicated, local volunteers.

Volunteers needed to walk the beach and make a difference for the environment!

To help COASST prepare for the training, please RSVP to COASST: email coasst@u.washington.edu, phone (206) 221-6893, http://www.coasst.org

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