

# SHORE STEWARDS NEWS

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## Oysters, Clams and Clean Water

For generations Puget Sound residents have enjoyed digging and hunting for little bivalves with colorful names along our beaches. Manila clams, butter clams, littlenecks, geoducks, horse clams, and oysters. The names conjure up memories of summer days spent with wet feet, a shovel, and the briny smell of the sea. Shellfish have always been an important part of life in the Pacific Northwest. Native Americans have harvested and enjoyed shellfish for thousands of years. Today Washington is number one in the U.S. for producing farmed bivalves.

As our population grows, and forests and fields give way to houses and mini-malls, many fear that nostalgic memories will one day be all that we have left of our local shellfish. While it's true that Washingtonians lost almost 20% of our commercial shellfish growing areas since 1980, it is also true that between 1995 and 2004 8,000 more acres were upgraded then were downgraded. Hard work to protect shellfisheries is paying off and we have learned a lot from our past mistakes. The good news is that there are many things we can do on our personal property as well as in our communities to preserve our clam and oyster harvest.

What bivalves like oysters and clams need most is cold clean water. They are filter feeders, making their living by eating tiny particles floating in the water, such as plankton and detritus. Public enemy number one to the oysterman is fecal coliform bacteria and the suite of pathogens that can accompany it. Too much in the water means that oysters (or clams, or mussels) are unsafe to eat and the area is closed to commercial as well as recreational harvest.

Some fecal coliform is naturally present in the environment, coming from birds and other wildlife. Human settlement brings a variety of additional sources to the water. Municipal sewage treatment plants, failing septic systems, marinas and boaters, runoff from livestock such as horses, sheep or cows, dogs and other pet waste, are all potential sources of contamination.

Most new shellfish closures are not caused by single "point sources" such as a municipal water treatment plant. Rather, they are most often caused by diffuse and cumulative effects over a large area, also referred to as "non-point source" pollution. Making changes in our own backyards, and helping neighbors to understand what's at stake and how to keep our water clean, has huge potential for preserving viable commercial, tribal, and recreational shellfishing for future generations.

In general, intense development spells trouble for shellfish harvest. Throughout Washington more urbanization has led to poorer water quality and shellfishing closures in

the effected watersheds. But there is more to the story – the style of development matters, too. A recent study completed by Alberti and Bidwell with the University of Washington Urban Ecology Research laboratory found that the amount of forested land and the amount of hardened, also called impervious, surfaces in the watershed strongly correlated with the amount of fecal coliform in the water. More forested land was associated with less bacteria while more hardened surfaces such as roads, parking lots, roofs, and sidewalks, was associated with more bacteria in the water. These two landscape qualities, forested land and hardened surfaces, turn out to be better predictors of water quality than population density, suggesting that stormwater runoff is a very important pathway for fecal coliform pollution. It also suggests some important ways to minimize the negative impacts of human settlement on shellfish harvest by minimizing stormwater runoff.

Preserving forested land where it currently exists and restoring forested land where possible, especially along streams, lakes and the marine shoreline, will maintain or enhance the land's natural ability to filter out and break down fecal coliform pollution before it gets to the water. Choosing drought tolerant, pest-resistant and wildlife-friendly plants for your property has added benefits for the environment as well. For native plant enthusiasts, King County has a new online native plant guide which includes lots of pictures, landscaping plans, and the ability to create a custom plant list: <http://dnr.metrokc.gov/wlr/PI/Go-Native/Index.aspx>.

There are many effective and attractive ways to increase stormwater infiltration on your property and in your community as well. Collectively these techniques are referred to as low-impact development and include innovations such as pervious pavers, rain-gardens and green roofs. If you live near a bluff, however, you should know that water infiltration can lead to instability and landslides. Always consult a professional geologist if have any concerns about erosion or earth movement. To learn more about low-impact development point your browser to the Puget Sound Partnerships web resources: [http://www.psparchives.com/our\\_work/stormwater/lid.htm](http://www.psparchives.com/our_work/stormwater/lid.htm) and consider calling the Mason Conservation District at (360) 427-9436 for technical assistance.

Minimizing hardened surfaces such as concrete, asphalt, and rooftops is a very simple, straightforward, and effective way to minimize stormwater runoff, whether on your own property or in your community. Support community efforts to reduce street size, street length, and parking lots. More modern development styles which separate residences from businesses often require driving a car to accomplish virtually every errand. The more our everyday lives depend upon driving the more acres of forest will need to be paved over for roadways and parking lots.

In addition to being savvy about stormwater, keeping fecal coliform bacteria out of the water as much as possible is vital. There are many simple ways to do this and there are many resources to help including:

Maintain your septic system. Inspect your tank annually and pump it when the sediment layer is within 12 inches of the bottom of the outlet tee. Keep a schedule and records fortank maintenance just like you do for your car. Download a free guide on Septic Maintenance at: [http://www.co.mason.wa.us/forms/Env\\_Health/septic\\_user\\_manual.pdf](http://www.co.mason.wa.us/forms/Env_Health/septic_user_manual.pdf)

- And see here for other Septic Maintenance Resources:  
[http://www.co.mason.wa.us/health/envhealth/septic/oss\\_maintenance.php](http://www.co.mason.wa.us/health/envhealth/septic/oss_maintenance.php)
- Keep livestock waste out of waterways. If you have livestock, our Conservation District can help you manage your manure in ways that will both improve your pastures and protect water quality. To learn more, contact the Mason Conservation District at (360) 427-9436 / <http://www.masoncd.org/>
- Pick up after pets. It may seem hard to believe, but DNA source tracking has clearly shown that dog waste can be a significant source of water contamination. Scoop the poop and throwing it in the garbage, is an easy and simple way to keep it from washing into our waterways and making its way to shellfish beds.

There is, of course, more that you can learn and more that we all can do. To learn more about the history, economics and ecology of shellfish in Washington State, click on:

*A Heritage of Harvest:*

[http://www.psparchives.com/publications/our\\_work/waste/shellfish/fact\\_sheets/heritage\\_web1.pdf](http://www.psparchives.com/publications/our_work/waste/shellfish/fact_sheets/heritage_web1.pdf)

*“Treasures of the Tidelands”*

[http://www.psparchives.com/publications/our\\_work/waste/shellfish/fact\\_sheets/economy\\_web1.pdf](http://www.psparchives.com/publications/our_work/waste/shellfish/fact_sheets/economy_web1.pdf)

*“Keystone Species of the Estuary”*

[http://www.psparchives.com/publications/our\\_work/waste/shellfish/fact\\_sheets/ecology\\_web1.pdf](http://www.psparchives.com/publications/our_work/waste/shellfish/fact_sheets/ecology_web1.pdf)

*“Caring for the Resource”*

[http://www.psparchives.com/publications/our\\_work/waste/shellfish/fact\\_sheets/resource\\_web1.pdf](http://www.psparchives.com/publications/our_work/waste/shellfish/fact_sheets/resource_web1.pdf)

*(These are publications of the Puget Sound Action Team.)*

But to truly appreciate our local shellfish, you might just need to taste ‘em again. Warm and comforting clam chowder, oysters on the half shell, crab cakes . . . mmmmm. You might even consider growing your own. The Puget Sound Restoration Fund website contains lots of “how to” information on oyster and clam gardening from excellent sources such as University of Washington’s Sea Grant and Washington Department of Fish and Wildlife. <http://home.comcast.net/~oysterfarm/index.html>. I have heard that an excellent way to eat an oyster is with your feet in the water. Perhaps an even better way would be to enjoy them with some friends while you consider ways that we all can become better stewards of our tasty treasures.

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[http://www.psat.wa.gov/Programs/shellfish/Shellfish\\_quality/Shellfish\\_AUGUST2005\\_FINAL.pdf](http://www.psat.wa.gov/Programs/shellfish/Shellfish_quality/Shellfish_AUGUST2005_FINAL.pdf)

“Fecal Indicator Bacteria and Sanitary Water Quality” USGS Michigan Water Science Center. 10 May 2006. 14 Feb. 2007. <http://mi.water.usgs.gov/h2/BactHOWeb.html>

“Focus on Pet Waste Management” Washington State Department of Ecology. June 2003. 21 Feb 2007. <http://www.ecy.wa.gov/pubs/0310053.pdf>

Glasoe, S., Beale, H., Alberti, M., Bidwell, M., Christy, A. and May, C. New Approaches to Shellfish Protection in Puget Sound. 2005.

[http://www.psat.wa.gov/Programs/shellfish/Shellfish\\_quality/a8\\_glaso.pdf](http://www.psat.wa.gov/Programs/shellfish/Shellfish_quality/a8_glaso.pdf)

“The Scoop on Pet Feces” Lake Whatcom Management Program. 21 Feb 2007.

<http://www.lakewhatcom.wsu.edu/display.asp?ID=131>

Van Donsel, D. J., Geldreich, E. E., Clarke, N. A., “Seasonal Variations in Survival of Indicator Bacteria in Soil and Their Contribution to Storm-water Pollution” Appl Microbiol. 1967 November; 15(6) (1967): 1362–1370.

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[www.shorestewards.wsu.edu](http://www.shorestewards.wsu.edu)

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