

# Sound WAVES

## PUGET SOUND RESEARCH 2001: CONFERENCE AIMS TO 'CONNECT THE DOTS'

In laboratories and in the field, scientists gather data to develop and test research hypotheses and measure conditions to monitor the health of Puget Sound. But how does this important work affect how we go about protecting and preserving this magnificent ecosystem?

This question was posed as a challenge to the more than 200 presenters and 800 participants at the beginning of the 2001 Puget Sound Research Conference in February. And throughout the two-and-a-half day conference, many discussions and presentations focused on how to connect the dots between science and resource management, scientists and the public, and between scientists themselves.

The conference was also a forum for scientists, resource managers, engineers, planners, educators, students and interested individuals to share findings, discuss emerging issues and develop new collaborations.

A plenary session kicked off the conference with three presentations devoted to some of the forces that shape and affect the Puget Sound

ecosystem. Philip Mote of the University of Washington's Climate Impacts Group described how the global climate is changing and how climate variations might affect Puget Sound.

Richard Beamish of Fisheries and Oceans Canada continued this theme with a presentation about how global climate variations appear to affect the region's marine ecosystem and salmon populations.

Finally, Elliott Norse of the Marine Conservation Biology Institute talked about human threats to earth's marine resources.

Following the presentations, representatives from business, media and an environmental organization joined the scientists for a lively panel discussion and question-and-answer session with the audience. Kirk Anderson, with Fisher Communications, Inc.; John Dodge, an environmental reporter with the Olympian; and Jacques White, a scientist/advocate with People for Puget Sound provided their perspectives on protecting the environmental health of this region.

The panelists agreed that keeping the public's attention

and priorities focused on environmental issues will be a tremendous challenge.

"For Puget Sound's health to be a priority, it has to continue to resonate with the public," Dodge said.

The conference provided participants with 30 different oral sessions covering a breadth of topics, some of which are highlighted in this issue of *Sound Waves*.

Proceedings from the research conference will be published in the fall on CD-ROM and on the Action Team's website.

## STUDENTS RECEIVE AWARDS AT RESEARCH CONFERENCE

The Action Team awarded 43 scholarships to the Puget Sound Research Conference. Recipients were mostly college students, but a few Public Involvement and Education (PIE) contractors received scholarships, along with students from high schools in Sequim, Olympia and Gig Harbor.

Several scholarships were awarded to students enrolled in a course focused on the Puget Sound Research Conference 2001 offered this winter

through Huxley College at Western Washington University in collaboration with NOAA and Olympic and Peninsula colleges.

Ten students gave oral presentations and 20 provided poster presentations at the conference. The following students received awards:

- **Marjorie Wonham**, a Ph.D. candidate from the University of Washington—\$300 for the best oral student presentation with her

talk on non-indigenous marine species.

- **Carolyn Jenkins**, an undergraduate from the University of Washington—\$150 for her talk on the impacts of trampling on a rocky shoreline.
- **David Finlayson**, a University of Washington master's degree student—\$300 for his poster titled Building a Seamless Digital Elevation Model of the Puget Sound Basin.

The Puget Sound Water Quality Action Team and its advisory arm, the Puget Sound Council, were created by the Washington State Legislature to lead efforts to protect Puget Sound.

Chair: Nancy McKay

#### Action Team Members

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##### Counties

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#### Puget Sound Council Members

##### Agriculture

Jerry Van der Veen, dairy farmer

##### Business

Kirk Anderson, Fisher Communications,  
Inc.

##### Environmental Community

Tom Putnam, Puget Soundkeeper  
Alliance

##### Shellfish Industry

Bill Dewey, Taylor Shellfish Co.

##### Cities

Jackie Aitchison, Poulsbo City Council

##### Counties

Rhea Miller, San Juan County Board of  
Commissioners

##### Tribes

Fran Wilshusen, Northwest Indian  
Fisheries Commission

##### State Senate

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##### State House of Representatives

Phil Rockefeller (D-Kitsap)  
Representative Gary Chandler  
(R-Moses Lake)

## 2001 Puget Sound Research

# STORMWATER PROBLEMS REQUIRE MANY SOLUTIONS

What are the effects of stormwater runoff on Puget Sound lowland streams and what can be done to offset these effects? These two questions were the central theme of the stormwater session at the **2001 Puget Sound Research Conference**. Researchers from the University of Washington, King County and the U.S. Geological Survey reported on their research related to these questions.

The ecological integrity of lowland streams begins to decline even with low levels of urbanization. For example,

the number and kinds of aquatic creatures change as development starts, making the streams less welcoming for fish and other aquatic life. Similarly, the amount of water available to support aquatic life during the summer months also declines in streams found in developed areas.

Researchers suggested that no single solution will minimize these effects. Some solutions are more promising than others. Wide, continuous buffer areas of native vegetation along rivers and streams protect their health against development. Buffers

are flexible and cost-effective relative to other options. Maintaining the natural landscape in the upper watershed or maintaining forested areas are other non-structural solutions that significantly help protect stream health.

Structural best management practices such as onsite detention basins are not the panacea to offset development effects. These practices help, when used with other non-structural solutions. In ultra-urban areas, management techniques that mimic the physical, biological and chemical functions of natural stream systems are being evaluated.

## Low Impact Development Puget Sound

# STORMWATER ISSUES WILL HEADLINE JUNE CONFERENCE

Some of the ideas explored during the stormwater session at the Research Conference will be addressed during the Action Team's upcoming **Low Impact Development in Puget Sound** conference, June 5-6.

The conference will highlight the innovative land use and stormwater management techniques known as low impact development (LID) practices. These practices emphasize protection and use of natural features on development sites—integrated with engineered hydrologic controls—to manage stormwater and better protect the hydrologic functions of watersheds as development occurs.

The conference will address questions such as: What are LID practices and why aren't conventional stormwater management practices adequate? How are LID practices applied on individual sites or subdivisions? How do LID practices link



Photo courtesy of Curtis Hinman  
*An integrated bioretention garden.*

with regional land use and watershed planning efforts? What are the benefits and challenges of LID practices? How can local governments amend their regulations to integrate LID practices?

These and other questions will be tackled in plenary and concurrent sessions that address LID principles and implementation at the site-level and within the context of regional planning.

Featured conference speakers include Peter Calthorpe, one of the pioneers of livable, sustainable communities; Robin Green,

whose Ohio-based residential development is the winner of numerous environmental awards; Neil Weinstein of the Low Impact Development Center; Patrick Condon of the University of British Columbia; and Larry Coffman of Prince George's County, Maryland.

For more information about Low Impact Development in Puget Sound, visit our website at [www.wa.gov/puget\\_sound](http://www.wa.gov/puget_sound). If you would like your name added to a mailing list for conference information, call Gigi Williams at (360) 407-7311. For questions about conference content, call Bruce Wulkan at (360) 407-7332.

Low Impact Development in Puget Sound is funded in part by a WaterWorks Grant from King County Department of Natural Resources and with assistance from a conference advisory committee.

# NEWS FROM AROUND PUGET SOUND

## Jammin' on the Stilly

Five engineered logjams (ELJs) were constructed in the North Fork of the Stillaguamish River in the summer of 1998. The goal was to create more deep pool habitat for chinook salmon, provide bank and bridge protection, enhance secondary channel habitat, and trap mobile wood debris. The project



Photo by Frank Staller

is a multi-agency, cooperative endeavor with several monitoring studies in progress.

**Washington Trout**, a local non-profit organization, is one of the many partners.

Among other activities, Washington Trout and various groups are monitoring the ELJs to see if they contribute to an increase in the quality and quantity of holding-pool habitat for summer chinook that spawn in the project reach. Initial project data suggest that each of the five ELJs are, indeed, helping to form and maintain scour pools ranging in depth from 3 to 9 feet. Previous research indicates the recovery of chinook in this river will depend in part on an increase in these large holding pools.

Contact Mary Lou White at Washington Trout, (425) 788-1167.

## Grants available to Improve Water Quality, Drainage and Habitat

**King County** is offering several grant programs to fund projects that protect and improve water quality, drainage and habitat in King and South Snohomish counties. The WaterWorks program funds projects (up to \$50,000) within Seattle and the shoreline communities south of Seattle. See <http://dnr.metrokc.gov/waterworks> for more information. The Rural Community Partnership grants program funds projects (up to \$20,000) in the rural areas of the Green River, White River, Snoqualmie Valley, or Vashon Island. For more information, see <http://dnr.metrokc.gov/wlr/waterres/wsf/RDP.htm>. The deadlines for requests of more than \$5,000 are April 30 and Aug. 15. There are no deadlines for requests up to \$5,000. Contact: Ken Pritchard, King County Department of Natural Resources, (206) 296-8265 or Ken.Pritchard@metrokc.gov. The Puget Sound Urban Resource Partnership program offers grants and technical assis-

tance for environmental projects such as water quality, urban forestry, or wetland habitat restoration in urban King County. Contact: Linda Vane, King County Water & Land Resource Division, linda.vane@metrokc.gov or (206) 296-8042.

## Rate of Bulkhead Building Declines in Thurston County

In 1999 **Thurston Regional Planning Council** updated its study of armoring of marine shorelines in Thurston County. Previous work established the historical locations of bulkheads along its 104 miles of Puget Sound. The length of armored shorelines has increased by almost 10 miles since the adoption of the shoreline act in 1972. But in 1998 and 1999 less than 100 feet of new shoreline armored was approved. Why the change? TRPC's Steven Morrison reports a reduction in both new and repair permits, and attributes the reduction to two new regulations. The first step was requiring a rationale for armoring, which was part of the 1986 shoreline master program update. However, the 200-foot shoreline jurisdiction was not sufficient to protect most bluffs. So the county adopted a "marine bluff review" section in its critical area ordinance in 1993, which extends back at a 2:1 slope from the water's edge. According to Morrison, these standards require homeowners to better understand that shoreline, bluff and upland activities are all related. Contact Steve Morrison, TRPC, (360) 786-5476.

## Using Fungi to Clean Up Pollution

**Dr. Susan A. Thomas** and **Meg R. Pinza** of the Marine Sciences Laboratory, a division of Pacific Northwest National Laboratory in Sequim, are proposing to work with a local farm in the Dungeness watershed to field test their research on fungal remediation of bacteria. The biotechnology referred to as mycoremediation uses fungal strains that are native to the site but have been treated to enhance their ability to attack the pollutant. The research team's previous laboratory studies have shown that enzymes produced by the fungi destroy colonies of fecal coliform bacteria. Straw or wood chips inoculated with the selected fungus will be placed along ditches on the farm to filter coliforms out of the runoff water from animal waste. Water quality in the adjacent creek will be monitored to assess results. Research on the use of fungi for remediation of contaminants has potential for treating petroleum-based contaminants, organophosphates, pesticides and fertilizers, and many other substances. For more information contact: Dr. Susan Thomas at (360) 681-3648 or sa.thomas@pnl.gov. Media inquiries should be directed to Staci Maloof, (509) 372-6313.



## Puget Sound Water Quality Action Team Local Liaisons:

Island and Snohomish counties:  
*Joan Drinkwin, (360) 848-0924*

Thurston County:  
*Tim Ransom, (360) 407-7323*

Mason, Whatcom, and Skagit counties:  
*Stuart Glasoe, (360) 407-7319*

San Juan County:  
*Ginny Broadhurst, (360) 738-6122*

Clallam, Kitsap and Jefferson counties:  
*Harriet Beale, (360) 379-4441*

Pierce and King counties:  
*Kathy Taylor, (206) 263-6344*

## New Methods for Mapping Hood Canal's Shoreline Habitats

The **Point No Point Treaty Council** along with numerous organizations and volunteers is piloting a new technique for mapping nearshore habitats. The study area covers all of Hood Canal and extends to Dungeness Spit on the Strait of Juan de Fuca. Airplane flyovers last summer and "hyperspectral imagery" compiled a continuous scan of the nearshore environment differentiating surfaces or cover types based on how they reflect light. Concurrent with the flyovers, more than 70 volunteers laid out hundreds of precisely positioned four-meter grids at targeted sites throughout the study area and did an inventory of randomly selected one-meter squares. The field data is now being used to accurately interpret the imagery. Additional work is also being conducted to inventory shoreline geology and modifications. Lessons learned from this study will help define techniques for inventorying vast areas in relatively short periods of time. The findings and final report should be available in 2002. Contact: Ted Labbe, Port Gamble S'Klallam Tribe, (360) 297-6289, tlabbe@pgst.nsn.us.

## FRAGILE NEARSHORE HABITAT BENEFITS FROM RESEARCH

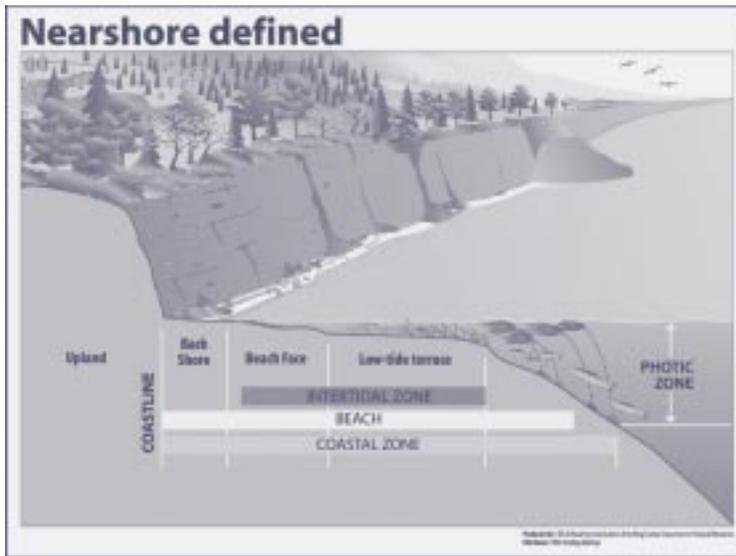
Many presentations and posters at the Research Conference discussed the emerging issue of marine nearshore habitats. This area includes shorelines, marine riparian areas, beaches, bluffs, salt marshes, eelgrass beds, kelp and other shallow water areas. All are important for salmon survival and overall biodiversity in the sound.

The natural conditions of nearshore habitat were outlined in the session "Intertidal and Nearshore Ecology." Researchers in this session focused on physical factors such as salinity, wave energy and beach grain size that influence nearshore biodiversity. In general, Washington's rocky, wave-swept outer coast supports the greatest diversity, with a gradual decline in the number of species along the calmer, muddier shorelines of Southern Puget Sound.

Other researchers looked at the human effects of selective harvest of intertidal invertebrates—such as sea mussels and goose barnacles—and trampling in high use areas.

A presentation by King County focused on the importance of overhanging vegetation along marine shorelines to provide bank stabilization, shade, habitat structure and a steady supply of falling insects for food.

During the conference, scientists introduced several new tools for characterizing the marine shorelines of Puget Sound. One tool, the ShoreZone Inventory, is a new method of rapid shoreline characterization developed in British Columbia and adapted for use in Washington by the Department of Natural Resources. DNR created a Geographic Information System data set from aerial video imagery along Puget Sound's shorelines. The ShoreZone Inventory revealed that approximately 30 percent of Puget Sound's shoreline has been modified by human activity. Up to 75 percent of the eastern shoreline of



Produced by: GIS & Visual Communications Unit, King County Department of Natural Resources.

Puget Sound's main basin has been modified. DNR catalogued more than 3,000 docks and 30,000 recreational boating slips statewide.

Many conference participants welcomed the ShoreZone Inventory as a useful tool for shoreline management. Not only can it determine the extent of human activity on the nearshore, ShoreZone can provide scientists and resource managers a wide variety of biological and geographical data.

Perhaps one of its most important uses is determining the amount of eelgrass and kelp found along the shore. Eelgrass provides cover for migrating salmon and a spawning medium for herring eggs. The shoreline inventory revealed that eelgrass is present along 35 percent of the shoreline and kelp occupies another 10 percent.

DNR conducted more detailed investigations on eelgrass through the Puget Sound Ambient Monitoring Program (PSAMP), coordinated by the Action Team. A boat, towing an underwater video camera, followed a zigzag pattern along the shoreline. Using this method, an initial inventory of the eelgrass resource can be obtained as a baseline, and future samples can be compared to measure changes in eelgrass extent and quality over time.

Another team of researchers led by Washington Department of Fish and Wildlife investigated the impacts of docks and other floating structures on eelgrass. Experiments conducted on structures with various percentages of light-permeable grating showed that up to 50 percent grating did not prevent net loss of eelgrass alone. However, grating of 50 percent or more of the deck surface combined with a North/South orientation and seasonal removal may successfully avoid impacting eelgrass density.

Other presentations examined alternative methods of shoreline protection that may replace bulkheads at some sites. These "soft methods" mimic natural shoreline processes and include re-building beaches using sediment nourishment and stabilization with root masses, logs and native vegetation. The presenters all stressed the need for evaluation and monitoring of these projects, for engineering and regulatory guidance, and for avoiding the need for protection through building setbacks.

The fragile resources of Puget Sound's nearshore habitat continue to benefit from an engaged and knowledgeable scientific community. These research findings and some new tools will directly aid local land use managers, waterfront homeowners and even the recreating public in making decisions that positively affect the nearshore environment.

### ShoreZone Inventory available on CD-ROM

The ShoreZone Inventory CD-ROM recently released by the Department of Natural Resources Nearshore Habitat Program is available free of charge.

The ShoreZone Inventory describes physical and biological characteristics of intertidal and shallow subtidal areas.

To order a copy, contact the Nearshore Habitat Program at (360) 902-1600.

# GOOD NEWS ABOUT MARINE PROTECTED AREAS

Marine protected areas received a lot of attention at the **Research Conference**, with two entire sessions and several poster presentations devoted to the subject.

And there was good news.

Previous reports from the Washington Department of Fish and Wildlife documented that rockfishes and lingcod found in MPAs are “larger, more abundant and have higher reproductive capacities than in comparable fished areas.” During the conference, participants learned that recent data collected from the Edmonds underwater dive park and from several no-fishing areas in San Juan County support Fish and Wildlife’s findings.

So where do we go from here, now that many scientists agree removing the pressures of fishing in certain areas can have positive effects on declining fish species? What sites do we choose for marine reserves? What criteria do we use for these decisions? How can we choose sites that link together biologically to form a network of protection?

Some of the scientists participating in the Research Conference are in the process of finding answers to these and other important questions.



*Photo by Wayne Palsson  
A copper rockfish, (Sebastes caurinus), as seen at the Edmonds Underwater Park*

Wayne Palsson, a senior fish and wildlife biologist at Fish and Wildlife, is looking at the complexities of designing criteria for locating and monitoring no-take refuges.

People for Puget Sound is collecting all relevant and available data for the northern Puget Sound and southern Gulf Islands in a focus area known as Orca Pass. The data will help to illustrate what’s known and not known about marine species and habitats within a given region. This information can help resource managers and the public make decisions about creating new MPAs.

Terrie Klinger from the University of Washington’s School of Marine Affairs showed specific areas in the San Juan Islands where larvae from established bottomfish protection areas are likely to be deposited. Larvae from fish in one protected area can travel in currents beyond the restricted site. This information will be useful to managers to understand where bottomfish larvae are likely to land and juveniles grow.

While scientists continue to work on these important question and issues, community advisory groups and policy makers will play an important role in determining how best to manage protected areas. Is enforcement necessary or will voluntary measures provide adequate protection? Debate on this question continues.

Rich Osborne from the Whale Museum in Friday Harbor provided compelling reasons why, in the long run, voluntary measures can work better than regulations. In the San Juan Islands, the local community took ownership and provided education—not enforcement—which resulted in cooperation from fishers. Voluntary measures also allow managers to do more with less resources.

## FORAGE FISH HABITAT NEEDS SOUND SHORELINE STEWARDSHIP

Many marine species of birds, mammals, ground fish and salmon rely on three groups of baitfish for their health and survival. In Puget Sound and on the outer coast of Washington, herring, sand lance and surf smelt belong to a group commonly referred to as forage fish.

Two of these baitfish species—smelt and sand lance—spawn on the sand and gravel in the upper intertidal area, and this important habitat can be affected by shoreline development. Several presentations at the **Research Conference** examined the effects of shoreline modifications on the spawning habitats of these fish.

If we harden shorelines with bulkheads and other structures, the gravel/sand substrate will not maintain the depth and composition necessary for good egg survival. Steve Fradkin of

the National Parks Service described years of observations his agency has made on surf smelt beaches on the outer coast, primarily near Rialto Beach near La Push. These smelt populations appear to have different spawning habits compared to similar populations in Puget Sound. Where coastal populations spawn on sand/gravel areas at a mid-beach elevation, Puget Sound stocks typically spawn higher up on beaches. This difference may relate to the greater wave energy on the coast and distribution of preferred sand/gravel sizes at the mid-beach zone.

Dan Penttila, a 25-year veteran Fish and Wildlife biologist and acknowledged forage fish expert, described the importance of overhanging, shading vegetation along our backshore areas, where summer stocks of surf smelt spawn. By comparing vegetated and sun-exposed

beach segments, he concluded that vegetated, shaded sections of upper shoreline had much greater survival of eggs and emergent young fish as compared to unshaded areas.

Healthy populations of baitfish, such as surf smelt and sand lance, depend on good stewardship of our shorelines. Innovative approaches to reduce armoring of this important habitat for fish, coupled with regulatory efforts of state and federal agencies, definitely improve their chances of survival.

Additionally, beach inventory and assessment projects by citizen efforts, such as the Marine Resources Committees in the Northwest Straits area, greatly improve our knowledge of where spawning occurs and help shoreline residents understand how shoreline activities influence these important, but often overlooked, forage fish.



## PUGET SOUND'S HEALTH

The Puget Sound Ambient Monitoring Program (PSAMP) is a coordinated effort among state and federal agencies to measure the health of Puget Sound's waters and resources. The program complements monitoring by local governments and citizen volunteers.



# PSAMP MAKES THE LINK BETWEEN MONITORING AND RESEARCH

**T**he 2001 Puget Sound Research Conference provided the Puget Sound Ambient Monitoring Program with a great forum for sharing information about study results and learning how the work of PSAMP relates to other scientific investigation of the Puget Sound ecosystem.

PSAMP's principal investigators, staff scientists, collaborators and contractors contributed nearly one-fifth of the 200 presentations made at the conference. In addition, the conference provided PSAMP scientists with opportunities to discuss collaboration and research needs and other issues with their colleagues from government, academia and consulting firms.

In their posters and talks, PSAMP scientists and affiliated researchers presented new information and status reports on a diversity of issues covering the breadth of work addressed by PSAMP, including:

- characteristics of Washington State's marine shoreline as portrayed in the ShoreZone data set (Helen Berry and Betty Bookheim, Department of Natural Resources; John Harper, Coastal and Ocean Resources);
- oceanographic characterization and hydrodynamic modeling of Puget Sound waters (Skip Albertson, Julia Bos, Jan Newton and Rick Reynolds, Department of Ecology);
- fecal contamination and paralytic shellfish poison at shellfish growing areas (Tim Determan, Department of Health);

- the effects of toxic contaminants in Puget Sound fish (Sandie O'Neill and Jim West, Washington State Department of Fish and Wildlife; Dan Lomax, Mark Myers and Tracy Collier, Northwest Fisheries Science Center);
- sediment contamination and contaminant effects on sediment biota determined through a recent three-year survey of Puget Sound (Maggie Dutch, Department of Ecology; Ed Long, NOAA);
- eelgrass monitoring (Amy Sewell, Department of Natural Resources; Jim Norris, Marine Resources Consultants);
- changes in shoreline biota (Megan Dethier, University of Washington Friday Harbor Labs);
- marine fish stock status and trends (Wayne Palsson, Department of Fish and Wildlife);
- marine bird distributions and trends in populations, including recent surveys of pigeon guillemot nesting colonies (Joe Evenson and Dave Nysewander, Department of Fish and Wildlife); and
- status and health of harbor seal populations in south Puget Sound (Steve Jeffries, Dyanna Lambourn and Monique

Lance, Department of Fish and Wildlife).

These presentations, and all others made at the conference, will be documented in the proceedings of the 2001 Puget Sound Research Conference, which the Action Team will produce later this year. If you'd like more information about PSAMP's presentations at the conference before the proceedings are published, please see the conference abstracts on the Action Team's web site at [www.wa.gov/puget\\_sound](http://www.wa.gov/puget_sound). Follow the link to **Research** and select the link for the conference—or contact the presenters directly.

### Collaborations—old and new

In addition to providing a venue for presenting PSAMP findings, the conference also allowed PSAMP scientists to advance ongoing collaborations, to make contacts that might lead to new collaborations and to participate in discussions of the scientific issues confronting the region's scientific community.

Examples of PSAMP's collaborations that were highlighted at the meeting include:

- Cooperative work between the Department of Fish and Wildlife and the Northwest Fisheries

Science Center about the effects of toxic contaminants on Puget Sound fish demonstrates the power of collaborative efforts to advance analytical methodologies (e.g., vitellogenin presence in male fish) while producing useful information about the status of the ecosystem (sublethal effects of toxic contaminants, such as vitellogenin production in male fish from Puget Sound).

- Scientists at the Department of Ecology, King County Department of Natural Resources, and the University of Washington are working together to develop a consistent framework for hydrodynamic modeling of Puget Sound's marine waters. The models developed from this work are being applied to evaluate dissolved oxygen issues in south Puget Sound and to analyze potential locations for a marine outfall for municipal wastewater treatment plant effluent to be sited in central Puget Sound.
- The U.S. Fish and Wildlife Service has teamed with the Washington State Department of Fish and Wildlife and numerous partners to initiate and continue annual pigeon guillemot colony surveys in Puget Sound. These surveys enhance ongoing marine bird monitoring by providing information about year-round resident birds that have a direct link to nearshore resources (e.g., they nest in shoreline bluffs).

### TO FIND OUT MORE...

For more information about collaborating with PSAMP, contact Scott Redman or the program's principal investigators. For a list of PSAMP contacts, see the resources section of the *2000 Puget Sound Update*, available at [www.wa.gov/puget\\_sound](http://www.wa.gov/puget_sound).

# PROGRESS REPORTED IN BURLEY LAGOON CLEANUP

The Burley Lagoon shellfish closure in 1999 led to the formation of a joint Burley Lagoon Watershed Protection District by Pierce and Kitsap counties. Both counties' local health districts, conservation districts, surface water management and planning programs, the shellfish grower, the state Departments of Health and Ecology, and the Puget Sound Action Team developed a cleanup strategy to

identify and correct pollution sources.

Water quality in the southern part of the bay has improved as a result of intensive sanitary surveys, on-site septic repairs, implemented farm plans, monitoring, public education, and funding assistance for landowners. Health is currently in the process of re-opening that part of Burley Lagoon for commercial shellfish harvesting. Areas in the northern

part of the bay continue to violate standards and will remain closed until this situation improves.

Progress in Burley Lagoon is the result of persistent on-the-ground work, landowner cooperation, and coordination between the counties. Cleanup efforts will continue while long-term plans are made to maintain the water quality once the entire bay is re-opened to shellfish harvesting.

## FUNDING OPPORTUNITIES

### Competitive funds for projects to help marine wildlife and ecosystems

The Marine Ecosystem Health Program (MEHP) is offering competitively awarded funding for research and conservation or management projects aimed at directly impacting the health of marine wildlife populations and ecosystems in the North American Pacific.

MEHP is a part of University of California Davis's Wildlife Health Center (School of Veterinary Medicine). The program's goal is to restore and maintain marine wildlife and ecosystem health. The scope of the program encompasses all marine vertebrates and the biotic and abiotic environmental factors they depend upon for survival. At present, the program gives special attention to the issues facing the Puget Sound. Funded projects range from scientific investigations of the efficacy and impact of marine protected areas and impacts of introduced species to expansion of the COASST program into the Northwest Straits region.

To receive a Request for Pre-proposals or more details, contact Dr. Kirsten Gilardi, MEHP coordinator and staff veterinarian at the U.C. Davis Wildlife Health Center at (530) 752-4896 or [kvgilardi@ucdavis.edu](mailto:kvgilardi@ucdavis.edu). The deadline for pre-proposals is June 1.

### State offers program to assist small forest landowners

Under a new program offered by the Washington State Department of Natural Resources, small forest landowners may now receive partial compensation for the trees they must leave along streams and rivers to protect water resources according to new forest practice rules.

The **Forestry Riparian Easement Program** provides monetary compensation to offset the loss in revenue of small landowners who are disproportionately affected by new forest practice rules.

The rules authorize DNR to purchase 50-year easements from qualifying landowners to protect harvestable timber near fish-bearing streams and other aquatic areas. In general, qualifying landowners must have a history of selling less than 2 million board feet of timber annually, possess 50-year rights to the protected timber, and hold an approved forest practices permit.

For more information on the Forestry Riparian Easement Program and other assistance provided by the Small Forest Landowner Office, call (360) 902-1389, e-mail at: [sflo@wadnr.gov](mailto:sflo@wadnr.gov), or visit the website at: [www.wa.gov/dnr/sflo](http://www.wa.gov/dnr/sflo).

### \$8 million available for habitat projects

The National Oceanic & Atmospheric Administration's National Marine Fisheries Service is seeking new partnerships under its **Community-Based Restoration Program** to use \$8 million for habitat restoration in 2001.

NOAA is seeking national and regional organizations interested in partnering with the NOAA Fisheries Restoration Center to accomplish on-the-ground, community-based restoration of marine, coastal and freshwater habitats to benefit living marine resources, including fish stocks managed by NOAA and the trophic systems that support them. Organizations interested in partnering with NOAA Fisheries as part of the Community-Based Restoration Program should contact the NOAA Restoration Center at (301) 713-0174.

Complete information, including a partnership application, is available online at <http://www.nmfs.noaa.gov/habitat/restoration/community/feb9>. Applications for these projects is open through September.

## AWARDS

**Scott Hansen** recently received a Volunteer of the Year award from Pierce County Stream Team and an Unsung Hero award from the Northend Neighborhood Council and the City of Tacoma for his work on coordinating the restoration of the Puget Gulch/Puget Creek area. The Action Team provides funds for Hansen and the Tacoma Neighborhood Network Center to work with disabled people on restoration projects.

The **King County Solid Waste Division School Program** received an award for organizational excellence from the Environmental Education Association of Washington in March. The comprehensive education program is designed to motivate and sustain behavior change in the school community in the areas of waste prevention, recycling and the proper management of solid and hazardous waste. Since 1989, the program has served students in pre-school through high school. The award was given March 30 at the EEA annual conference.

## EDUCATIONAL RESOURCES

Two new videos with water quality and land stewardship themes are available from WSU Cooperative Extension Skagit County:

- **Keep it Clean Downstream** shows home gardeners how to prevent water contamination by using responsible gardening practices. Cost is \$25.
  - **Sound Farming: An Investment in Our Community** describes the contributions of agriculture to the quality of life we enjoy. Narrated by farmers, educators, scientists and conservationists. Cost is \$30.
- For more information, contact Dyvon Havens, extension agent, at (360) 428-4270.

Return Service Requested

### Read Sound Waves on the Web!

If you'd like to receive an e-mail reminder when *Sound Waves* is posted on our website, send an e-mail to [gwilliams@psat.wa.gov](mailto:gwilliams@psat.wa.gov).

*Sound Waves* is produced quarterly by the Puget Sound Water Quality Action Team.

If you need this document in an alternate format, call (360) 407-7300, (800) 54\_SOUND, or the TDD number: (800) 833-6388.

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*Sound Waves* is run on an alcohol-free press using vegetable-based inks.

# CALENDAR

April 22  
**Earth Day!**

May 2  
**Public Meetings on Snohomish County Marine Resources**

Edmonds Library  
A series of meetings to discuss the status and protection of our marine environment.

*Sponsor: The Snohomish County Marine Resources Advisory Committee.*  
Contact: Jeff Carter, (425) 388-3464 ext. 4664 or [jeffrey.carter@co.snohomish.wa.us](mailto:jeffrey.carter@co.snohomish.wa.us).  
[www.co.snohomish.wa.us/mrc.htm](http://www.co.snohomish.wa.us/mrc.htm)

May 2, May & May 12  
**Volunteer Salmon Habitat Restoration Monitoring Program (VSHRMP)**

*Sponsor: People for Puget Sound*  
This three-part training program (two weekday evenings and one Saturday) is designed to give citizen

volunteers the tools, training and structure to monitor and provide stewardship in estuarine habitat restoration projects in Puget Sound. Volunteers gather high quality data used to inform project managers and the restoration community of the health, growth and success of restoration sites. Contact Rachel Strasz Schofield at (206) 382-7007 or [schofield@pugetsound.org](mailto:schofield@pugetsound.org). Groups are welcome!

May 5  
**Kitsap Countywide Rain Barrel Sale**

Purchase up to four rain barrels for \$20 each at five sites in Kitsap County. Learn about stormwater, salmon-friendly gardening, and water conservation.  
*Sponsors: Cities of Bremerton and Bainbridge Island, Kitsap PUD, Kitsap Conservation District, Annapolis Water District, Puget Sound Action Team, and Water Purveyors' Association of Kitsap County.*

Contact: Mindy Fohn  
(360) 478-2347 or [mfohn@ci.bremerton.wa.us](mailto:mfohn@ci.bremerton.wa.us)

May 8  
7 to 9 p.m.  
**Impervious Surfaces and Their Effects on Stream Health**

Snohomish County Campus  
*Sponsor: Stilly-Snohomish Fisheries Enhancement Task Force, Snohomish County Surface Water Management, and Pilchuck Audubon Society's Smart Growth program.*  
Contact: (425) 252-6686 or [ann@stillysnofish.org](mailto:ann@stillysnofish.org)

June 6  
**Public Meetings on Snohomish County Marine Resources**  
Everett Library  
See details from May 2 event.

June 23 - 28  
**Onshore/Offshore: Marine Ecology for Teachers**  
Fort Worden State Park and aboard the schooner

Adventurers. Learn about the rich invertebrate community in the Puget Sound waters. Work with scientists on a long-term fish population study. Credit and clock hours available.

*Sponsor: Port Townsend Marine Science Center.*  
Contact: Anne Murphy, (360) 385-5582 or [ptmsc@olympus.net](mailto:ptmsc@olympus.net).

July 21  
10 a.m. to 5 p.m.

**Low Tide Fest**  
Fort Worden State Park, Port Townsend  
The marine underworld is exposed during this -3.2 tide. Activities include beach walks; presentations; kids crafts and games; fish printing; photo, sand and sculpture contests; music and art.  
*Sponsor: Port Townsend Marine Science Center.*  
Contact: (360) 385-5582 or [ptmsc@olympus.net](mailto:ptmsc@olympus.net)  
[www.olympus.net/ptmsc/events.html](http://www.olympus.net/ptmsc/events.html)