

Sound WAVES

SOUND SCIENCE EQUALS SOUND PROTECTION

The Puget Sound Water Quality Action Team is using the latest scientific information to update and expand the *Puget Sound Water Quality Management Plan*. The Action Team is developing an Aquatic Nuisance Species Program in light of recent scientific discoveries about the risk non-indigenous species pose to the Puget Sound ecosystem, revising the Wetlands and Habitats programs using new information about the importance of certain habitats to salmon and other threatened species, and revising the Stormwater Program in view of the effects of stormwater runoff on crucial habitats.

The use of scientific information in the protection of Puget Sound is not a new phenomenon. The Action Team's predecessor, the Puget Sound Water Quality Authority, relied on a wealth of scientific knowledge to develop programs and policies to protect and restore the Sound.

The Authority's effort began in the early 1980s when media coverage of

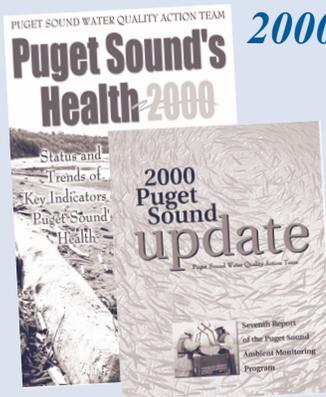
scientific studies raised public awareness about damage caused to Puget Sound by human activities. During 1985-86, Authority staff prepared a series of technical issue papers. Each paper reviewed the best available scientific information on one topic and cited numerous published technical studies. Both a technical advisory committee and the public reviewed each paper. At the same time, a team of consultants prepared the *State of the Sound 1986 Report*, compiling the available information on Puget Sound's natural ecosystem, historical human uses of the Sound and human-caused harm in Puget

Sound, including loss of wetland habitats, contamination of shellfish growing areas, declines in marine life and toxic chemicals in sediments and marine life. Based on these reports, the Authority proposed management strategies for protecting Puget Sound, received public review, made changes and adopted the first *Puget Sound Management Plan*.

Recognizing a continuing need for quality scientific information, the Authority called for coordinated monitoring and research activities for Puget Sound. A Monitoring Management Committee developed the Puget Sound Ambient

Monitoring Program (PSAMP), which continues to provide important information about conditions in Puget Sound. The Authority also formed a research committee to identify research needs and to host the first Puget Sound Research Conference. These research conferences provide a forum to bring together members of the Puget Sound scientific community and to collect and publish the latest scientific findings about the Sound. The proceedings of the 1998 conference are available at http://www.wa.gov/puget_sound/98_proceedings/index.html

PUGET SOUND'S HEALTH 2000 AND THE 2000 PUGET SOUND UPDATE NOW AVAILABLE!



The ultimate measures of our efforts to protect and restore Puget Sound are seen in the condition of the Sound and its biological resources.

Puget Sound's Health is the Puget Sound Water Quality Action Team's biennial publication on the status of key environmental indicators of Puget Sound's health. The

Puget Sound Update is a more comprehensive report on the results of the Puget Sound Ambient Monitoring Program (PSAMP).

Both publications are available at http://www.wa.gov/puget_sound/ or by calling the Action Team at (360) 407-7300 or (800) 54-SOUND.

Using Citizen Monitoring Data	2	New MPAs Recommended	5
New Action Team & Council Members	2	Adaptive Management	5
News from Around the Sound	3	What Fish Surveys Tell Us	5
Science and the ESA	4	Environmental Indicators Report	6

The Puget Sound Water Quality Action Team was created by the Washington State Legislature to lead efforts to protect Puget Sound.

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Action Team Members

Cities

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Counties

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Puget Sound Council Members

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Business

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Tribes

Fran Wilshusen, Northwest Indian Fisheries Commission

State Senate

Senator Tracey Eide (D-Federal Way)
Senator Pam Roach (R-Auburn)

State House of Representatives

Representative Dave Anderson (D-Clinton)
Representative Gary Chandler (R-Moses Lake)

CITIZEN MONITORING DATA—AN UNDERUSED RESOURCE

Throughout much of the Puget Sound region, citizen monitoring groups are collecting valuable information about the marine environment. While these groups institute quality control procedures to ensure the validity of their data, often the data are not used by scientists, policy makers and land use planners because they do not consider the data to be rigorous enough for their standards.

Despite this obstacle, citizen monitoring efforts continue. The following discussion offers a sampling:

- **People for Puget Sound** was recently awarded a Public Involvement and Education (PIE) fund contract from the Puget Sound Water Quality Action Team to develop a Rapid Shoreline Inventory (RSI). The project will involve gathering contiguous data for a set distance of shoreline within a three-month time frame. Many counties are expressing the need to conduct rapid inventories of large sections of shoreline. The Northwest Straits Marine Resource Protection Act mandates such inventories for the seven northern Puget Sound counties in order to secure baseline data and identify sensitive areas. The RSI will provide a critical tool for this type of data collection. Also, as salmon habitat restoration efforts increase, and with the potential listing of seven species of Puget Sound marine fish under the Endangered Species

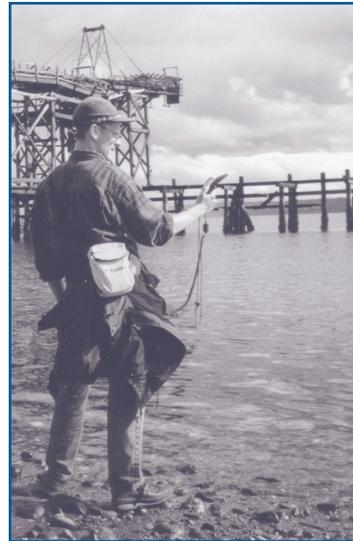


Photo by Siri Dale

People for Puget Sound staffer monitors shoreline using GPS.

Act, resource managers' need for this data will increase.

- **Friends of the San Juans**, in cooperation with the **National Park Service**, will pilot People for Puget Sound's RSI in the summer of 2000 for more than six miles of shoreline in San Juan Island National Historical Park. The park has committed staff and resources to assisting Friends of the San Juans with the pilot in order to identify sensitive areas and assess perhaps as yet unseen impacts to the park.
- In the spring of 1999, **Island County/Washington State University Beach Watchers** worked in conjunction with four other Puget Sound marine monitoring groups to develop a protocol for measuring shoreline alteration to ensure that

citizen groups take a coordinated, scientific approach to data collection. The Beach Watchers measured the majority of the 155-mile Whidbey Island shoreline, producing a shoreline alteration percentage similar to that reported by professional scientists at Washington's Department of Natural Resources.

The Puget Sound Action Team works to promote the use of citizen monitoring data with the goal of encouraging agencies, tribes and governments to use this valuable data source. The Action Team is in the process of distributing the Beach Watchers' final report, *Survey of Shoreline Armoring in Island County: A Protocol for Volunteers*, to appropriate planning staff and elected officials. The distribution of the protocol will aid local governments in completing Shoreline Master Program updates at a time when rapid growth in the Puget Sound basin is leading to increasing shoreline development. Another Action Team project currently under development is a coastal data sources user's manual. The manual will act as a key guide for natural resource managers in the use of various types of marine data that can be obtained on the Internet, from agencies or from organizations, including citizen monitoring groups. For more information on this upcoming publication and other efforts to promote the use of citizen monitoring data, contact Lori Scinto, (360) 407-7337.

Governor Appoints New Members to Action Team and Council

In March, Governor Gary Locke announced the appointment of two new members to the Puget Sound Water Quality Action Team and Puget Sound Council. **Chuck Booth**, mayor of the city of Auburn, was appointed to the Action Team as a

representative of city governments. His term is determined by the governor. **Jackie Aitchison**, a city of Poulsbo councilmember, was appointed to the Puget Sound Council as a representative of city governments. Her term expires July 1, 2003.

NEWS FROM AROUND PUGET SOUND

Marine Protected Areas in the Works

San Juan County and the **Islands Trust** are discussing where, and how, to protect marine habitat in the waters that connect Puget Sound and the Georgia Strait. Ideally, these groups want to protect a network of marine areas to maximize preservation of biological diversity. They will select specific sites based on scientific information collected by groups in Washington and British Columbia. They have a particular interest in identifying areas where rockfish reproduce and need protection from fishing pressure. "We think we should do something now, before we are fighting over who gets to kill the last fish," says Jim Slocomb, chair of the San Juan County Marine Resource Committee. Meanwhile, local non-governmental organizations are making proposals of their own. Any locally developed plan will be voluntary and will undergo public review. *Contact: Ginny Broadhurst (360) 738-6122, gbroadhurst@psat.wa.gov*



Rockfish are among the many marine fishes targeted for protection at new MPAs.

Committee to Coordinate Mapping for Salmon Recovery

A subcommittee of the Hood Canal Coordinating Council is working toward regionally coordinated GIS (geographic information system) mapping to aid in salmon recovery and watershed planning. Counties, tribes, local agencies and non-governmental organizations in areas adjacent to Hood Canal are also participating, citing a need for information-sharing and guidance. Staff of the Puget Sound Action Team, the Department of Natural Resources, Olympic National Forest and the Washington Department of Fish and Wildlife are assisting the group with development of a proposal for an update of Natural Resources' hydrography database for the Olympic and Kitsap peninsulas. The next step is to digitize the Salmon and Steelhead Habitat Inventory and Assessment Project (SSHAP) data developed by local tribes. *Contact: Harriet Beale, (360) 379-4441, hbeale@psat.wa.gov.*

Committee to Focus on Snohomish Marine Resources

Snohomish County launched a Marine Resources Advisory Committee (MRC) in January as part of the Northwest Straits Initiative, an effort designed to chart a path toward protection and restoration of the marine resources of north Puget Sound. Snohomish County's MRC comprises citizens that represent a variety of interests and expertise, including recreation, environmental protection, commercial fishing and science. The committee is currently developing its workplan for the year 2000. One specific focus of the committee will be to expand scientific understanding of the marine resources of Snohomish County. *Contact: Will Hall, Snohomish County, (425) 388-3464 ext. 4657.*

Watershed Forum Focuses on Nearshore

The Central Puget Sound Watershed Forum of King County has launched its projects for 2000. In conjunction with organizations such as People for Puget Sound and the Seattle Aquarium, the Forum is sponsoring several stewardship projects, including the Beach Naturalist Program and the Citizen Shoreline Inventory. Beach Naturalist Program volunteers will educate others about the fragile nearshore environment; Citizen Shoreline Inventory volunteers will collect important data about our shorelines. The Forum also plans to sponsor a demonstration project showcasing alternatives to seawalls. The Forum endorsed the formation of the Nearshore Technical Committee, which will provide it and Water Resource Inventory Area (WRIA) Steering Committees with project and policy recommendations based on scientific findings. *Contact: Laura Blackmore, (206) 263-6556.*

Do Cropping Practices Affect Water Quality?

In 1994 the **Padilla Bay National Estuarine Research Reserve** purchased a 100-acre farm on the shore of Padilla Bay to study the effect of annual cropping practices on water quality and fish habitat on agricultural lands around Puget Sound. This unique research program promotes collaboration between local farmers, the Washington State University Mount Vernon Experiment Station, the Skagit Conservation District and other agricultural, environmental and natural resource organizations. Early on, researchers determined baseline water quality data for the many ditches and the small salmon-bearing creek that flow through the farm. Currently researchers are evaluating the use of filter strips, winter cover crops and alternative drainage ditch treatments to retain sediments and reduce surface runoff. *Contact: David Henry, (360) 428-1558, henry@padillabay.gov.*



Puget Sound Water Quality Action Team Local Liaisons:

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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

City of Olympia Evaluates Habitat

To improve the protection of its natural resources, the **City of Olympia** turned to research from the University of Washington's Center for Urban Water Resources and others on the impacts of urbanization on streams and wetlands. Noting strong linkages between levels of urbanization in a watershed and changes in hydrology, riparian vegetation, in-stream habitat and the response of aquatic biota, staff developed criteria for evaluating Olympia's eight creek basins, with an eye towards prioritizing them for enhanced management and protection. Recently, the City Council translated this work into policy by enacting interim habitat protection measures for its portion of the Green Cove basin. Measures included down-zoning, enhanced stormwater standards, seasonal clearing and grading restrictions and a tree retention requirement. *Contact: Andy Haub, (360) 753-8475.*

SCIENCE AND THE ESA

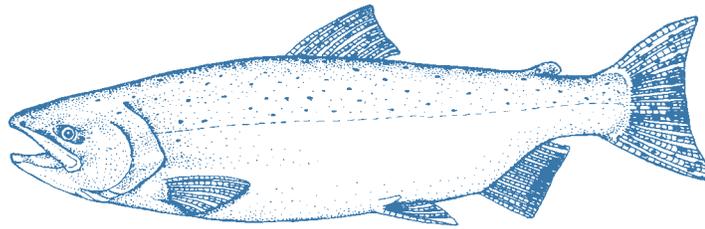
SCIENTIFIC REVIEW AND STUDY LEAD TO LISTINGS, RECOVERY

Several species of salmon and trout have recently been listed as threatened under the federal Endangered Species Act (ESA). Science plays an integral part in the listing and recovery of these and other endangered species.

The key provisions of the ESA apply only to species that are listed as threatened or endangered. The most common way a species gets listed is for someone to submit a petition, presenting scientific evidence to support a listing. The appropriate federal agency reviews the petition and makes a determination whether or not to list the species called out in the petition. The National Marine Fisheries Service (NMFS) deals with marine and anadromous species while the U.S. Fish and Wildlife Service (USFWS) handles everything else.

The federal agency assembles a scientific team to compile the available data on the life history, genetic makeup and

abundance of the species. This review may lead the agency to divide a species (like chinook salmon) into sub-populations that should be considered separately. For fish, these separate



West coast chinook salmon *Oncorhynchus tshawytscha*

populations are often determined by comparing the DNA from fish that spawn in different river systems. Large genetic differences show that fish are members of an isolated breeding group and have probably evolved special characteristics that suit them to their specific habitats. The National Marine Fisheries Service uses the term Evolutionary Significant Unit (ESU) to describe these separate populations of a species of fish.

Once the scientific team has separated a species into appropriate units and

collected the available data, they report their findings, including whether each unit is either endangered or threatened. These determinations receive extensive scientific review

and are published in technical reports. The agency then decides whether to list the various ESUs and publishes its decisions as a proposed rule that is released for public review and comment. Agencies, organizations and individuals often submit extensive data to both support and refute the agency's proposal. The agency must review the additional information before making a final listing determination.

Once a species is listed under the ESA, other

provisions of the act take effect. For example, the ESA prohibits "taking" a listed species. Taking includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping or collecting the listed species. Prohibitions on hunting, shooting and killing are clear to anyone. But it can require scientific study to determine actions that may cause *harm* to a listed species. For example, scientists can determine the temperature range that allows a species to survive. They can also show that removing bank vegetation that shades a stream increases water temperature. So, although not readily obvious, scientists may determine that removing streamside vegetation constitutes *harm* to certain fish.

If future scientific monitoring shows real improvements in the abundance and distribution of a listed species, then the species can be removed from the endangered species list.

HYDROGRAPHY FRAMEWORK PROJECT BUILDS STATEWIDE DATABASE

The Hydrography Framework Project, sponsored by the Department of Natural Resources and the Department of Ecology in collaboration with state, local, federal, tribal and private partners, is working to produce a consistent statewide database of surface water information.

The hydrography database, updated to the Framework Project model, will support effective decision-making, reduce duplication of data collection and facilitate data exchange among agencies.

Folks involved in local GIS (geographic information system) mapping efforts are encouraged to

coordinate with the Hydrography Framework Project by contacting Carl Harris, (360) 902-1523, carl.harris@dnr.state.wa.us or Carrie Wolfe, (360) 902-1639, carrie.wolfe@wadnr.gov. For more information, visit <http://framework.dnr.state.wa.us/hydro/index.html>.

NEW MARINE PROTECTED AREAS AROUND THE SOUND

Many fish and wildlife species in Puget Sound are depressed, declining or outright endangered. The recent listing of Puget Sound chinook and Hood Canal chum salmon as threatened species is just the beginning. The National Marine Fisheries Service is reviewing the status of seven other Puget Sound marine fish that are all in decline.

Recognizing the need to protect marine species now, many groups are calling for the establishment of marine protected areas (MPAs). As part of a bottomfish recovery plan, San Juan County established eight small marine reserves in 1996 in which fishers can not harvest bottomfish. These restrictions are voluntary; monitoring is in place to



Sea urchins are an example of a declining species that could be protected in an MPA.

measure compliance. By reducing harvest pressures, bottomfish such as rockfish can have a chance to grow and reproduce. Larger, older female rockfish produce 200 times more eggs than younger ones.

In 1998, the Fish and Wildlife Commission took action to ban fishing in the Orchard Rocks area, near southern Bainbridge Island. In February 2000 the Commission added three new marine reserves: one on Colvos Passage, north of Gig Harbor; another at Waketickeh, north of the Hamma Hamma River on the west side of Hood Canal; and a third at Saltar's Point Beach in Steilacoom. The commission also expanded the Orchard Rocks no-take area.

SCIENTIFIC SURVEYS AID IN FISH MANAGEMENT

The Washington Department of Fish and Wildlife assesses the status of herring and groundfish stocks to support fisheries management decisions. A variety of data collection and analysis methods supply information for these assessments. Scientific trawls, acoustic surveys and spawning deposition surveys are particularly important because they supplement information drawn from commercial or recreational fisheries.

Each year, Fish and Wildlife scientists estimate the abundance (spawning biomass) of each of the 18 recognized stocks of Pacific herring in Puget Sound based on spawn deposition and acoustic/trawl surveys. These methods allow the scientists to estimate total fish abundance and spawning biomass and provide data on herring size, age and maturity.

Using Puget Sound Ambient Monitoring Program (PSAMP) resources, Fish and Wildlife will conduct a trawl survey of groundfish resources in the eastern Strait of Juan de Fuca in spring 2000. This type of survey has not been conducted in this area since 1991. This new survey will provide up-to-date information on the status of Pacific cod, walleye pollock, Pacific whiting, English sole (and other flatfish), spiny dogfish, skates, Dungeness crab and other species.

The abundance estimates based on these surveys can be used to aid in decisions on fish harvest and conservation and recovery planning.

Looking ahead...

2001 PUGET SOUND RESEARCH CONFERENCE

The Puget Sound Water Quality Action Team will sponsor the 2001 Puget Sound Research Conference on February 12-14, 2001 at the Meydenbauer Center in Bellevue, Washington. Mark your calendars and be on the lookout for a call for papers this summer. Registration materials will be available in the fall.

'LEARN FROM YOUR MISTAKES' MANAGEMENT

Management decisions seem to get more complex every day. When a local government adopts zoning, for example, it needs to consider the effects of the resulting development on water supplies, stormwater, traffic, schools, sewage, open space, salmon and more.

Increasingly, governments are turning to adaptive management to be sure their decisions achieve their objectives (see sidebar).

But this simple idea can be difficult to apply. An environmental objective may depend on several different management programs, like

stormwater, on-site and agricultural practices. To apply adaptive management, one would need to pick a measurable objective for each program. A second problem is the time lag between a management action and the resulting environmental change. It can take many years after a change in a local ordinance before enough new developments are completed to allow the results to be measured and used to modify the ordinance. But careful design of adaptive management processes and thoughtful planning of monitoring programs will improve both the efficiency and effectiveness of our programs.

ADAPTIVE MANAGEMENT is any formal process to improve management activities by learning from mistakes.

The process includes five steps:

- ✓ Set a measurable objective.
- ✓ Take management actions that seem adequate to reach your objective.
- ✓ Measure the results of your actions and assess whether you are achieving your objective.
- ✓ Modify, or adapt, your actions to get closer to your objective or improve efficiency.
- ✓ Repeat



PUGET SOUND'S HEALTH

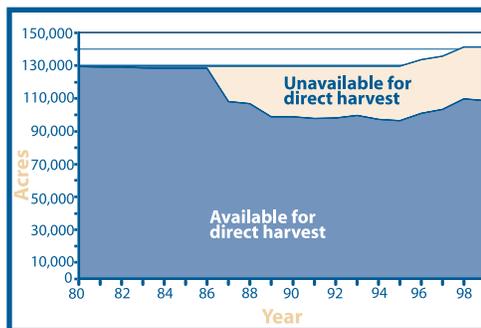
The Puget Sound Ambient Monitoring Program (PSAMP) is a coordinated effort among state and federal agencies to measure the health of Puget Sound's waters and resources. The program complements monitoring by local governments and citizen volunteers. This section highlights key PSAMP studies.



ACTION TEAM'S ENVIRONMENTAL INDICATORS SHOW PROBLEMS AND SUCCESSES IN MANAGING PUGET SOUND'S HEALTH

In March, the Puget Sound Water Quality Action Team released *Puget Sound's Health 2000*, a report on the status and trends of 17 key environmental indicators that are used to track how the Sound's water quality and natural resources are faring and to

Figure 1



evaluate efforts to protect Puget Sound. This report shows that pollution, development and habitat loss are threatening the health of the Sound.

“Our environmental indicators show us that conditions in some areas of Puget Sound are getting worse, not better,” says Nancy McKay, chair of the Action Team. “It’s a disappointing trend that suggests continuing development in the basin is taking its toll on the Sound.”

Worsening conditions are seen in a number of indicators:

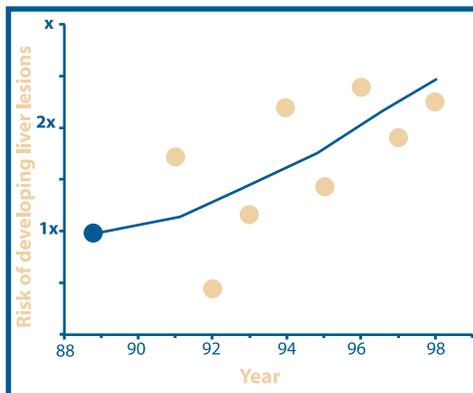
➤ **Water quality** is deteriorating at some shellfish growing areas—especially in rural areas where commercial and residential development are occurring. In some shellfish growing areas, water quality has deteriorated so much that direct harvest of shellfish is no longer permitted. In 1999, worsening water quality prompted downgrades in growing area classifications for Portage Bay and Drayton Harbor in north Puget Sound and Burley Lagoon in south Puget Sound (Figure 1).

➤ **Toxic contamination** problems may be worsening in Seattle’s Elliott Bay. English sole from Elliott Bay, and from

most other urban bays, have a relatively high incidence of liver lesions related to toxic contaminants. Previous studies have shown that the incidence of liver lesions is related to the degree of toxic contamination, especially by polycyclic aromatic hydrocarbons (PAHs), in the sediments where the fish reside. Since 1989, scientists have monitored liver lesions in English sole from six locations around Puget Sound. At five of these stations, there has been no change in the number of liver lesions observed. However, the incidence of liver lesions in English sole collected from Elliott Bay in the late 1990s is twice as high as it was in 1989. This indicates that PAH contamination in Elliott Bay may be increasing (Figure 2).

➤ **Numerous marine species** that live in Puget Sound appear to be in trouble,

Figure 2



including Pacific herring, rockfish, coho salmon and scoters. The biomass of herring that spawn in Puget Sound has declined from more than 20,000 tons in the 1970s to between 10,000 and 15,000 tons in recent years. As food for many other animals, herring are a critical element of the Puget Sound ecosystem (Figure 3).

“Its not all bad news,” says Scott Redman, lead scientist for the Action Team. “Improvements in some conditions in the Sound are evidenced

by the indicators.” For example:

➤ **Water quality restoration efforts** lifted harvest restrictions at commercial shellfish growing areas at several locations in the past two years, including Eld Inlet, Port Gamble Bay, Samish Bay and Sequim Bay.

➤ **Control measures** have substantially decreased the size of infestations of *Spartina*—an invasive salt marsh plant—in seven counties.

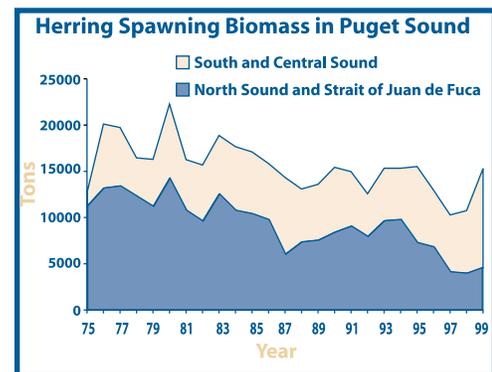
➤ **Decreasing trends** in concentrations of PCBs (polychlorinated biphenyls) and other contaminants measured in mussels were observed in a number of locations around the Sound.

Resource agencies and legislators use the information provided by these and other environmental indicators to guide protection efforts and more effectively target restoration and cleanup actions. Based in part on the evidence of conditions in Puget Sound, the 2000 Washington State Legislature earmarked supplemental funding of up to \$609,000 for Puget Sound marine fish recovery planning.

Puget Sound's Health 2000 is available on the Action Team’s website at http://www.wa.gov/puget_sound.

To receive a hard copy of the report, contact the Action Team at (360) 407-7300 or (800) 54-SOUND.

Figure 3





ACTION TEAM FUNDS EDUCATION PROJECTS TO PROTECT PUGET SOUND'S HEALTH

This January, the Puget Sound Water Quality Action Team awarded contracts totaling \$450,351 to 17 groups for innovative projects that involve people in and educate them about protecting Puget Sound's water quality and marine resources.

Public Involvement and Education (PIE) fund projects boost Puget Sound's health by keeping pollution out of the Sound, restoring stream and shoreline habitat, and changing

the way people think about their home or business practices.

"PIE dollars empower people to solve local pollution problems in creative ways and motivate environmental stewardship," said Nancy McKay, chair of the Action Team.

PIE Fund contracts are awarded every two years. Since 1987, more than \$5 million has funded over 280 projects. Projects begin this spring and continue through spring 2001.

A brief description of each contractor's project follows:

Maxwelton Salmon Adventure (\$29,010)

Contact: Laura Fox,
(360) 321-4698

- As part of a watershed stewardship program, educate watershed landowners and directly involve them in restoring riparian habitat on Whidbey Island.

Jefferson County (\$8,161)

Contact: Caryn Woodhouse,
(360) 385-9147

- Offer two Shoreline Connections workshops – with field trips—to residents in east Jefferson County to provide an opportunity for shoreline landowners to learn about their connection to coastal habitat.

City of SeaTac (\$45,000)

Contact: Soraya Chang,
(206) 439-4722

- Implement Phase II of the SeaTac Businesses for Clean Water Program. Businesses in an urbanized Des Moines Creek sub-basin will receive technical assistance to identify and reduce sources of stormwater pollution.

Seattle/King County Department of Public Health (\$8,000)

Contact: Gordon Clemans,
(206) 296-3989

- Provide information and tools to owners of on-site sewage systems through workshops in an attempt to minimize premature system failures that threaten Puget Sound waters.

Bremerton-Kitsap County Health District (\$32,492)

Contact: Scott Daniels,
(360) 692-3611

- Use the Sound Boater Program to educate recreational boaters about how improper waste disposal and inappropriate boating and boat maintenance practices harm habitat and water quality.

Seabeck Alki Salmon Team (\$12,500)

Contact: Jerry Zumdieck,
(360) 830-4230

- Educate children and the community about salmon and salmon habitat using a traveling slide show developed and presented by Salmon Team students.

Hood Canal School (\$23,462)

Contact: Laurie Byrd,
(360) 877-5463

- Involve older students in riparian, estuary and stream restoration activities.

City of Tacoma Public Works Department (\$42,233)

Contact: Chris Gleason,
(253) 591-5066

- Use the EnviroMobile to carry interactive environmental science lessons to 5,000 Tacoma elementary students and to youth organizations and community events.

Korean Women's Association (\$45,000)

Contact: Faaluaina Pritchard,
(253) 535-4202

- Build on a two-year collaboration between resource agencies and Asian

Pacific Islander communities in Pierce County by expanding student involvement in preservation and protection of shellfish habitat.

Metro Parks' Tacoma Nature Center (\$18,824)

Contact: Mary Brown,
(253) 591-6439

- Through the Swan Creek Watershed Citizen/Youth Partnership Project, help citizens of Tacoma's Salishan and Eastside communities become caretakers of the Swan Creek Natural Area.

Friends of the San Juans (\$30,500)

Contact: Kevin Ranker,
(360) 378-2319

- Initiate the Shoreline Preservation Project to improve understanding of San Juan Archipelago shorelines.

City of Lacey (\$10,052)

Contact: Lisa Dennis-Perez,
(360) 438-2687

- Initiate an educational program to motivate and train homeowners and homeowner associations to maintain private stormwater ponds.

WSU Cooperative Extension-Thurston County (\$14,504)

Contact: Robert Simmons,
(360) 786-5445

- Enhance the success of volunteer riparian restoration projects by demonstrating correct riparian replanting techniques through a short video and booklet.

RE Sources for Sustainable Communities (\$16,113)

Contact: Robyn du Pré,
(360) 733-8307

- Offer day-long tours of salmon habitats to local decision-makers and citizens to teach them about impediments facing salmon and best management practices to mitigate impacts.

Alayne Renee Blicke (\$45,000)

Contact: Alayne Renee Blicke,
(425) 432-6116

- The Horses for Clean Water program will teach and promote environmentally sensitive horsekeeping to reduce runoff pollution that can threaten shellfish and other resources.

Master Builders Association of King & Snohomish Counties (\$30,000)

Contact: Doug Lengel,
(800) 522-2209

- Conduct workshops for industry professionals in sustainable building techniques that help prevent damage to and restore water quality, water quantity and salmon habitat.

People for Puget Sound (\$39,500)

Contact: Jacques White,
(206) 382-7007

- Promote and expand volunteer stewardship and citizen monitoring throughout Puget Sound. Pilot a citizen-based Rapid Shoreline Inventory to quickly and accurately inventory contiguous sections of shoreline.



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Sound Waves is produced quarterly by the Puget Sound Water Quality Action Team.
 If you need this document in an alternate format, call our TDD number: (800) 833-6388.

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



CALENDAR

April 28
 8 a.m. to 4:30 p.m.
Environmental Controls on Real Property
Everett Community College—Continuing Education Division
 Learn about the environmental laws that affect real property, its regulation and its value.
 Call: (425) 388-9214

April 28, May 19 & June 9
 1 to 2:30 p.m.
Composting Workshops
Padilla Bay-Breazeale Interpretive Center
 Learn what goes into a compost pile and how to use the finished product.
 Contact: Frances Ambrose, (360) 336-9400

April 29
Olympic Coast Cleanup
Washington Water Trails Association
 Help collect and remove marine debris from 64 miles of Olympic Coast.
 Contact: Jan Klippert, (206) 364-2689

May 6
 Lecture 10 to 11:30 a.m.
 Field Trip 12 to 2 p.m.
The Secret Life of the Great Blue Heron
Padilla Bay-Breazeale Interpretive Center
 Learn about the Great Blue Heron's habitat, feeding habits, reproduction and more from a local wildlife biologist. Discuss the local population and conservation efforts.
 Register: (206) 428-1558

May 6 & 27
 11 a.m.
Spring Kayaking in Padilla Bay
Padilla Bay-Breazeale Interpretive Center
 Paddle the shores of Padilla Bay with a guide and a naturalist.
 Register: Eddyline Kayaks, (206) 299-2300

May 14
 7:30 to 9 a.m.
Birds of Soos Creek
County Tracks & Friends of Soos Creek Park
 Bring binoculars and see which feathered friends can be found along the Soos Creek Trail!
 Limited Space! To sign up, call: (206) 296-4171

June 28-July 3
Onshore-Offshore: Marine Ecology for Teachers
Fort Worden State Park, Port Townsend
 A hands-on class about fish population studies, beach survey and navigation, grants, and teaching science by inquiry.
 Contact: Anne Murphy, (360) 385-5582

July 30-August 2
Northwest Aquatic and Marine Educators Association Conference
Fort Worden State Park, Port Townsend
 Education at the Center: Dissolving the Barriers in Community Water Issues
 Explore Northwest water-related issues and examine the role of education in bringing communities together to solve problems.
 Contact: Cedar Wells, (360) 753-8454

September 6
Salmon Homecoming Forum 2000
Northwest Indian Fisheries Commission & the Seattle Aquarium
 Participate in traditional Native American talking circles and conventional conference sessions in an effort to build bridges among diverse groups with a stake in salmon recovery.
 Register early! Call: Seattle Aquarium, (206) 386-4315