

Sea Star

Surprises in a Sponge

With Sea Grant funding, Bradley Moore is delving deep — and opening the door to major pharmaceutical advances

There's a doctor's bag full of invaluable pharmaceutical supplies waiting for us under the sea.

That's the simplified finding of many of today's scientists, who are discovering the essential ingredients for many new medicines in such unusual sources as blue-green algae and the so-called "lower" invertebrates of the marine world — the corals, sponges and tunicates.

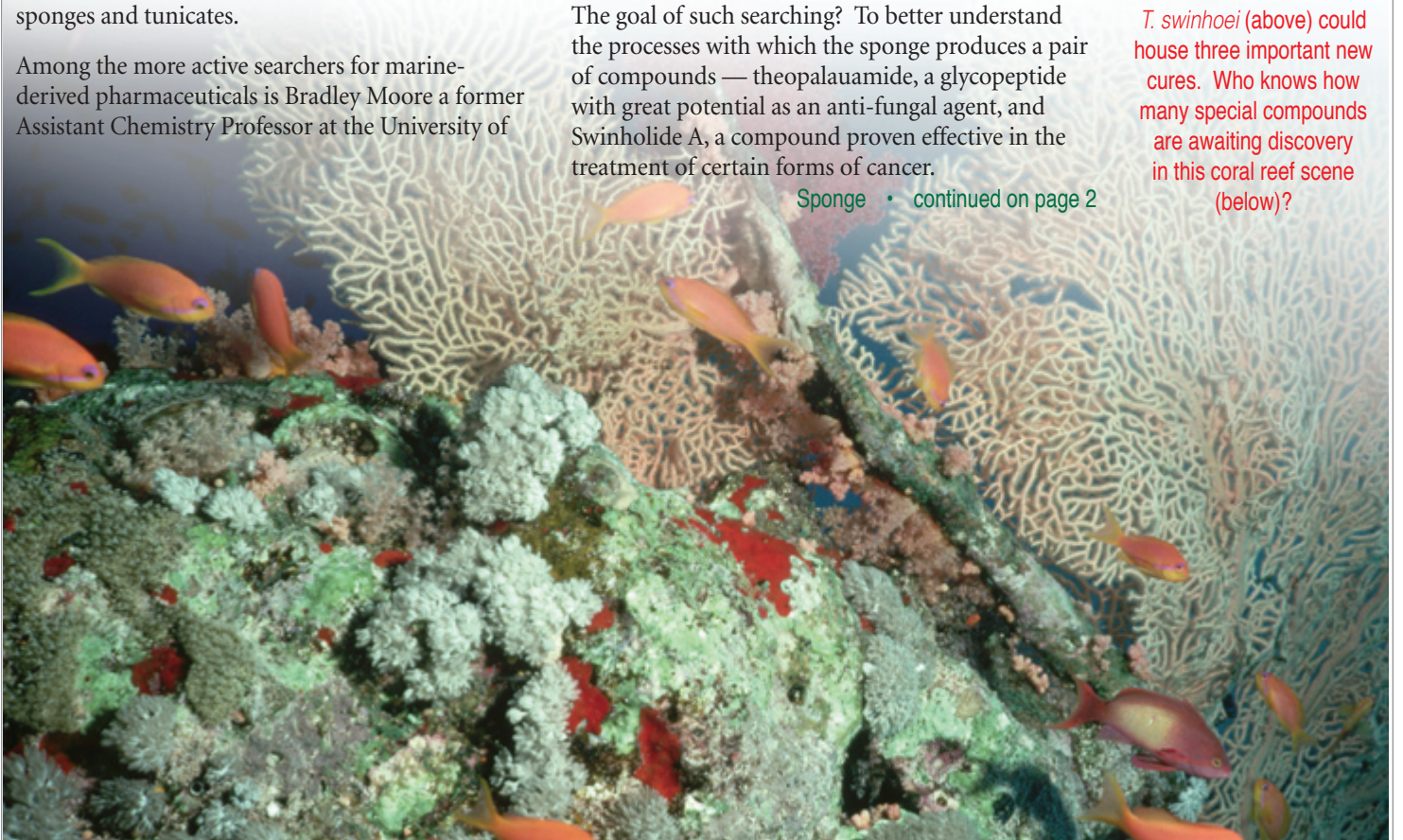
Among the more active searchers for marine-derived pharmaceuticals is Bradley Moore a former Assistant Chemistry Professor at the University of

Washington, now an associate Professor of Pharmacology and Toxicology at the University of Arizona in Tucson. With long-term funding from Washington Sea Grant Program and other sources, Moore has been scrutinizing the sponge *Theonella swinhoei*, a native of the South Pacific's lavish coral reefs.

The goal of such searching? To better understand the processes with which the sponge produces a pair of compounds — theopalauamide, a glycopeptide with great potential as an anti-fungal agent, and Swinholide A, a compound proven effective in the treatment of certain forms of cancer.

Sponge • continued on page 2

T. swinhoei (above) could house three important new cures. Who knows how many special compounds are awaiting discovery in this coral reef scene (below)?





Sea Grant scientist
Bradley Moore

Sponge • continued from page 1

The Secrets of Symbiosis

Early in his studies, the Hawaii-born biochemist determined that it wasn't the sponges themselves but the organisms living inside them that were producing the two potentially therapeutic substances.

T. swinhoei is a filter feeder, sustaining itself on the marine bacteria it removes from its seawater surroundings, Moore says. However, this particular sponge doesn't eat all the bacteria in its underwater world, he points out, and that simple fact could be the key to a major medicinal breakthrough.

Within *T. swinhoei*'s porous walls are zillions of bacteria, thriving unharmed in a mutually beneficial, symbiotic relationship. The bacteria benefit from the stable, food-rich environment that the sponge provides. As a form of payback, the bacteria manufacture foul-tasting, toxic compounds. These compounds, which include theopalauamide and Swinholide A, are deterrents to sponge-eating fish, snails and other predators of the sedentary sponges.

One needn't look far to find other examples of such win-win relationships in nature, writes Laura Carsten in a recent issue of *Pacific Northwest Science & Technology* magazine. "The guts of humans, for instance, are filled with *E.coli* bacteria in search of a protected home and a stable source of food," she explains. "In return, the microbes aid the digestion process." In other words, it's a good deal for the bacteria *and* us.

Hi-Tech Techniques

To determine if the bacteria were really responsible for the two medicinal compounds, Moore picked apart *T. swinhoei* in his laboratory. It was his plan to isolate and culture the microbes under controlled conditions. However, he soon found this task was much easier said than done. Many of these microbes are so reliant on the particular environment within the sponge, that they can't really exist on their own.

Using sophisticated tricks from the biochemist's lab, Moore now hopes to transfer the genes that code for the toxic substances into other more successfully cultivated strains of bacteria. The lab-reared microbes would then be put into large fermentation tanks, which, under ideal conditions, could produce ample quantities of the anti-fungal and cancer-thwarting compounds.

It may take months, even years to develop the necessary technology to enable the lab-reared bacteria to thrive. However Moore feels the effort may be well worth the wait. For one thing, it will eliminate the need to harvest wild sponges, several species of which are in short supply. For another, there could be many other beneficial compounds from sponge symbionts, waiting to be discovered and capitalized on. Indeed, experiments conducted by other scientists have already revealed HIV-inhibitory properties from one bacterial strain, also dwelling inside *T. swinhoei*.

"Ours is an exciting project, with incredible potential and with important ramifications to our understanding of evolutionary biology," says Moore. "Bacteria and sponges are certainly among the oldest life forms on our planet. We stand to learn a lot by studying how these two ancient beings interact in the ocean environment," he notes.

In Memoriam: Marsha Landolt and Robert Busch



Jenna Rovig

In January, an avalanche in Idaho's Sawtooth Mountains took the lives of Marsha Landolt and Robert Busch, two of Washington Sea Grant Program's dearest friends. "Both Marsha and Bob were staunch supporters and advocates of our program," says WSGP Director, Louie Echols. "Our relationship with them extended back many years, to the days before they were married."

Busch taught at Humboldt State University before moving into industry, doing research on fish vaccines and aquaculture. He served on the WSGP Steering Committee from 1988 to 1996. "He was tough-minded but fair, encouraging our long-term investment in

marine biotechnology," Echols recalls.

Landolt joined the University of Washington in 1975 as an assistant professor in the School of Fisheries and later served as the school's director. In 1996, she became Dean of the Graduate School.

Landolt participated on several Sea Grant-funded projects addressing fish diseases and also served on the special advisory committee on shellfish studies in Washington state. "We were making far-reaching changes in our program and Marsha was one of our strongest backers," says Echols.

We deeply regret their passing.

WSGP-funded Seaweed Specialist Tries a New Crop: Turkish Towel

Whether we know it or not, most of us have eaten some form of seaweed — as a side dish at sushi bars or an ingredient in non-dairy creamers and soft-serve ice cream. Now, get ready to encounter seaweed as a cosmetic, thanks in part to Washington Sea Grant-funded research.

In the 1990s, Diane Boratyn developed a skin care product that utilized the vitamins, minerals, and unique chemical compounds in Turkish towel (*Chondracanthus exasperatus*), a seaweed native to the Northwest. Hoping to capitalize on her discovery, Boratyn founded Söliv International and began developing an entire cosmetics line from the seaweed.

However, before Söliv could expand and mass-produce its products, the company had to guarantee that a high-quality supply of the seaweed was available. Because the State of Washington has a long-term moratorium on commercial harvesting of wild seaweeds, Söliv was required to find another way to gather Turkish towel.

“The reason for the seaweed moratorium is an important one,” says University of Washington Botany Professor J. Robert Waaland. “It is believed that wild seaweed populations have more value as undersea habitat for fish and invertebrates than as commercial products.”

Waaland’s research focuses largely on ways to grow native seaweed for commercial use. At the request of Boratyn, he began to develop methods for growing Turkish Towel seaweed, with funding from the Washington Technology Center. In research conducted in Mukilteo and, later, in Manchester, Washington, Waaland successfully grew Turkish Towel in a number of specially designed tanks. He also experimented with adding different kinds of nutrients to the sea water, which was continuously pumped into the tanks from its source, Puget Sound.

In March 2001, Washington Sea Grant Program began funding an exciting new phase of Waaland’s research — a test of a sea water conserving system using a spray technique. Waaland reasoned that seaweed grown this way would be more economical and environmentally friendly. He also believed that the seaweed’s access to carbon dioxide (the major compound for plant growth) would be significantly enhanced, thus producing faster-growing stocks.



“We found that seaweed grows well out of water, as long as it is kept wet by the spray,” says Waaland. The seaweed grew so well that Waaland began hanging the broad dark-green blades on what amounted to a clothesline, he says. Washington Sea Grant Program’s funding of Waaland’s research continues through the end of this summer.

Even though the seawater spray technique proved successful, Waaland has recommended to Söliv that it continue to grow its Turkish towel seaweed in tanks. “With the tank, there are some safeguards,” he says. “If the pump breaks down, you have days or weeks before the seaweed dies. With the spray system, the seaweed will die in a matter of hours if it is not kept wet.”

Regardless of the technology that is ultimately selected, Waaland views his project as a success. “We’ve grown plenty of seaweed, and Söliv is developing products with it,” he says. “It is our hope that our research will allow this industry to thrive here in Washington state.”

At the Manchester lab, a tankful of Turkish towel (above); formerly placed in the genus *Gigartina*, this whopping seaweed (below) can grow to seven feet in length.



Fishing Rights or Wrongs



Join us for this year's Bevan Series on Sustainable Fisheries on April 29 and 30 in Seattle. Unlike previous years' Bevan Series, this one will be cast as a two-day symposium, featuring speakers with expertise in biology, fisheries management, economics, law, policy and anthropology. Titled Fishing Rights or Fishing Wrongs? the timely gathering will explore the pros and cons of individual transferable fishing quotas, incentive-based market forces, fishing cooperatives, state auctioning and other facets of rights-based fishery management in the US. It's sponsored by Tanya Bevan, friends of Don Bevan, the University of Washington's Program on the Environment and School of Aquatic & Fishery Sciences, NOAA Alaska Fisheries Science Center and Washington Sea Grant Program. For schedule details, and other information, visit the Bevan Series Web site, <http://courses.washington.edu/susfish/>, or contact Kate Litle, kalittle@u.washington.edu.

Whatcom Wizard

With considerable pride, we introduce Ken Carrasco, our new Water Resources Educator, now headquartered at the WSU Cooperative Extension office in Bellingham.

Ken's extensive career includes stints with King County's Department of Natural Resources and Parks and Department of Development and Environmental Services. In this latter post, Ken created a new program to train land developers, brokers, agents and other real estate professionals about the regulations in the county's Sensitive Areas Ordinance. Prior to his King County positions, he worked as North Puget Sound Biologist for the Northwest Indian Fisheries Commission. As Piscine Histopathologist with NOAA Fisheries, he studied the effects of pollution in fish collected from Puget Sound, Alaska and other West Coast and East Coast locales.

"I'm pleased with this opportunity to bring all those elements that excite me careerwise into one place," says Ken. "I'll have contact with people from all walks of life, engage in practical, hands-on work in the field and be intellectually stimulated in a rapidly advancing area of interest to me. Plus, I'll have the certainty that what I do is of genuine benefit, especially to a community and environment that I've grown to love," the Whatcom County resident adds.

When not on the job, Ken's often aboard the family's 32-foot boat, on a camping adventure with his wife Mariann and their kids, or caring for the four horses that the Carrascos keep on their property near Custer.

Call Ken (360.676.6736) or send an e-mail to ken_c@wsu.edu.



Tania Westby

Shiver me timbers! LaConner High School students took the best costume prize at this year's WSGP-supported Ocean Sciences Bowl.

Sweet Sue

What's more versatile than duct tape? If you answered "Sue Raub," then you've probably spent a few minutes with WSGP's Assistant to the Director.

It's Sue's job to hold everything together at WSGP. She compiles the elements for our proposal, tracks research and outreach proposals, helps coordinate conferences, keeps leave records for other Sea Grant staff, assists with payroll, and, when needed, answers phones, edits and proofreads documents like this one. She's an active participant of the UW's Health and Safety Committee and claims principal authorship of WSGP's safety plan for earthquakes, fires and other emergencies.

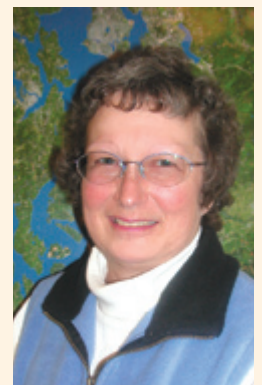
Sue joined the WSGP staff in 1991. Before that, she

worked at the UW's Drama Department, Primate Center and Office of the Vice President for University Relations.

On winter weekends, you might find Sue and husband Tom on their snowmobiles, exploring Stampede and Snoqualmie passes and points east. In the spring and summer months, the action shifts to lakes Washington and Union and the San Juan Islands, where the two Puget Sound Yacht Club members like to cruise in their 50-foot 1950 Chris-Craft.

"I'm fortunate that I can use so many of my skills on a daily basis," says Raub. "I really love my job."

Know any rolls of duct tape that could say that?



Focus on Fellowships

Xan Augerot: Career Lessons from WSGP

As a 1986 Dean John A. Knauss Fellow, Xan (short for Xanthippe) Augerot spent a year in Washington DC, helping the Senate's National Ocean Policy Committee with issues pertaining to fisheries and maritime programs.

"It was an invaluable opportunity to see how policy is formed," Augerot says. "I got to learn first-hand how government and interest groups interact."

After her stint in the nation's capital, she returned to the "other" Washington to finish her master's degree. At the same time, she worked for Washington Sea Grant Program on strategies for controlling marine plastic debris – those pop bottles, six-pack rings, polystyrene bits and other non-degradable pieces that are frequently washed from land into the sea.

In 1991, she moved to Connecticut, to begin her doctoral work at Yale University, focusing on U.S./ Russian marine resources use.

"Alas, my professor left before I got there," Augerot recalls. "So I switched to Oregon State University instead."

At OSU, she became involved in the Center for Analysis of Environmental Change, primarily working with the "salmon-centric" Pacific Rim Project.

"That ultimately led to my current position," as Director of Conservation Programs for the Wild Salmon Center, a Portland-based nonprofit dedicated to studying and protecting Pacific salmon, steelhead, char and trout stocks and their ecosystems.

"Looking back, I can see how my experiences at Washington Sea Grant Program helped shape my professional development," Augerot says. "I was impressed by the blend of science and policy that Sea Grant promotes, and the role that knowledge plays in public process to create more meaningful results. That was an important insight for me, one that I've found myself using at nearly every phase of my career."

Tell Us!

Washington Sea Grant Program is updating its strategic plan. We'd like to know what you think about the program, what we can do better and where we should concentrate our future efforts.

By taking a few minutes to fill in the enclosed questionnaire, you can provide us with valuable feedback. We'll use your comments (all responses are anonymous, of course) to help evaluate our activities and plan for new and continued actions and programs.

Please fill out the questionnaire and return it by fax (206.685.0380) or mail. You can also go

online at www.wsg.washington, click on "New," and submit your responses electronically. Your input will be most helpful if received by April 30th, but we value your feedback at anytime.





Let Your Fingers Do the Walking



Feast on a smorgasbord of information with WSGP's new *Directory of Research, Outreach and Partnerships*. In its pages are brief descriptions of all current and ongoing research and outreach projects funded by WSGP for 2004 through 2007.

Projects in the directory are divided among five Critical Program Areas — Living Marine Resources, Ecosystem Health, New Technologies, Economic and Community Development and Education, Training, and Public Information. Learn about cutting-edge research and innovative outreach and get contact information for WSGP staff and administrators, Marine Advisory Services specialists, Communications staff and project investigators. Copies are available at no cost from WSGP Publications. Still hungry for more? Visit WSGP's Web site: www.wsg.washington.edu.



April

S	M	T	W	T	F	S
				1	2	3
4		6	7	8	9	10
11	12	13	14	15	16	17
18		20	21	22	23	24
25	26	27	28	29	30	

May

S	M	T	W	T	F	S
						1
2	3		5	6	7	8
9	10	11	12	13	14	15
16	17	18		20	21	22
23/30	24/31	25	26	27	28	29

June

S	M	T	W	T	F	S
		1	2		4	5
6	7	8	9	10	11	12
13	14	15	16		18	19
20	21	22	23	24	25	26
27	28	29	30			

Items with the gull logo next to them are wholly or partially Sea Grant-sponsored.

JULY/AUGUST/SEPTEMBER 2004 Marine Events Calendar
Submission deadline:
May 14, 2004.

Sea Grant Publications

Many marine-related publications are available from Washington Sea Grant Program.

To order publications or to request a current catalog, please contact: Washington Sea Grant Program Publications, University of Washington, 3716 Brooklyn Ave. N.E., Seattle, WA 98105. Phone 206.543.0555. Fax 206.685.0380. sgpubs@u.washington.edu www.wsg.washington.edu

This publication was funded in part by the National Oceanic and Atmospheric Administration. The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its sub-agencies.

Communications Manager, Melissa O'Neill Albert. Editor, Susan E. Cook. Designer, Robyn Ricks. Writers, David G. Gordon, Jeff Wolfe. ©2004, University of Washington, Board of Regents WSG-MR 04-02

APRIL

CRUISES TO PROTECTION ISLAND

April 3, 10, 17 & 24, 2004

Port Hudson Marina, Port Townsend, Washington.

Port Townsend Marine Science Center has scheduled four Saturday cruises in April to Protection Island to observe the annual bird migration. FFI: 360.385.5582, 1.800.566.3932, info@pmsc.org, www.ptmsc.org.

PACIFIC FISHERY MANAGEMENT COUNCIL

April 4-9, 2004

Red Lion Hotel, Sacramento, California.

FFI: Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, OR 97220-1384, 503.820.2280, 1.866.806.7204 (toll free), pfmc.comments@noaa.gov, www.pfcouncil.org.

FORAGE FISH AND NEARSHORE ECOLOGY

April 10 and April 24

Port Townsend Marine Science Center, Port Townsend, Washington.

A free Saturday workshop series cosponsored by PTMSC and Washington Sea Grant. April 10, Nearshore Habitats and Food Webs, Charles Simenstad, University of Washington; April 24, Science and Stewardship, John Cambalik and Mary Knackstedt, Puget Sound Action Team. FFI: 360.385.5582, 1.800.566.3932, info@pmsc.org, www.ptmsc.org.

MARITIME LECTURE AND BOOK SIGNING

April 17, 2004

Hatfield Marine Science Center, Newport, Oregon.

Author Eleanor Mathews reads from her book *Ambassador to Penguins - A Naturalist's Year Aboard a Yankee Whaleship* about her grandfather, who traveled to the Antarctic in the early 1900s. FFI: Maureen Collson, 2030 S. Marine Science Drive, Newport, OR 97365, 541.867.0159, maureen.collson@oregonstate.edu, hmsc.oregonstate.edu/visitor/current.html.

WILD SEAFOOD EXCHANGE

April 23, 2004

Bell Harbor Conference Center, Seattle.

A day-long conference and trade show bringing together independent commercial fishermen, restaurants and retailers. FFI: Wild Seafood Exchange, 2201 West Commodore Way, Seattle, WA 98199, 206.284.8285, marci@RHPPublishing.com, www.wildseafoodexchange.com.

SHORELINE/COASTAL PLANNERS GROUP

April 27, 2004

Tacoma Sheraton, 1320 Broadway, Tacoma, Washington.

The topic under discussion at this meeting will be, *Puget Sound Shorelines: Management by Drift Cell*. Participants must preregister via email. FFI: Please follow directions on the web site: <http://staff.washington.edu/goodrj/cpg/>.

MAY

4TH WORLD FISHERIES CONGRESS

May 2-6, 2004

Fairmont Hotel and the Hyatt Regency, Vancouver, British Columbia, Canada.

The theme this year will be, Reconciling Fisheries with Conservation: The Challenge of Managing Aquatic Ecosystems. FFI: Advance Group Conference Management Inc., Congress Secretariat, Fourth World Fisheries Congress, Suite 101, 1444 Alberni Street, Vancouver, BC, Canada V6G 2Z4, 604.6889655x2 (general inquiries), 1.800.555.1099x2 (toll free in North America), fish2004@advance-group.com, www.worldfisheries2004.org.

THE COASTAL SOCIETY 19TH INTERNATIONAL CONFERENCE

May 23, -26, 2004

Newport, Rhode Island.

The Coastal Society's 19th biennial conference (TCS19) will focus on how coastal managers, resource users, law and policy makers, educators and students, and other coastal community members measure and assess coastal resources, functions and human impacts. FFI: Judy Tucker, Executive Director, The Coastal Society, 703.768.1599, coastalsoc@aol.com, www.thecoastalsociety.org/conference/tcs19/.

WILD HARVESTING BY KAYAK: A NATURAL HISTORY FEAST IN THE SAN JUAN ISLANDS

May 7-9, 2004

Spencer Spit State Park, Washington.

Learn about the ecology of the San Juan Islands and sample some of it on this kayaking adventure, part of the North Cascades Institute's curriculum. FFI: Northwest Cascades Institute, 810 State Route 20, Sedro-Woolley, WA 98284-1239, 360.856.5700x209, nci@nccascades.org, www.nccascades.org/

FINDING YOUR WAY: HUMAN NAVIGATION

May 8, 2004

Museum of History and Industry (MOHAI), Seattle, Washington.

This exhibit and accompanying programs lasts through January 2005. FFI: Feliks Banel, MOHAI, 2700 24th Avenue East, Seattle, WA 98112, 206.324.1126, feliks.banel@seattlehistory.org, www.seattlehistory.org.

JUNE

A SOUND INVESTMENT: THE NORTHWEST STRAITS INITIATIVE LOOKS AHEAD

June 4 & 5, 2004

A reception on June 4 precedes the sessions on June 5, focusing on strategies, projects and involvement. Special speakers are Patty Murray, U.S. Senator, Gary Locke, Washington State Governor, and William Ruckelshaus, former head of the U.S. Environmental Protection Agency. FFI: Northwest Straits Initiative Conference, c/o Northwest Straits Commission, 10441 Bayview Edison Road, Mount Vernon, WA 98273, 425.947.4579, conference@nwstraits.org, www.nwstraits.org.

TUNA 2004 BANGKOK

June 3-5, 2004

Shangri-La Hotel, Bangkok, Thailand.

In its eighth year, this is the fifth time that the World Tuna Trade Conference will be held in Bangkok. FFI: INFOFISH, First Floor, Wisma PKNS, Jalan Raja Laut, P.O. Box 10899, 50728 Kuala Lumpur, Malaysia, 603.26914466, infofish@po.jaring.my, www.infofish.org/.



ORGANIC AQUACULTURE AND SEA FARMING 2004

June 15-17, 2004

Legend Hotel, Ho Chi Minh City, Vietnam.

Global technical and trade conference and exhibition. FFI: INFOFISH, First Floor, Wisma PKNS, Jalan Raja Laut, P.O. Box 10899, 50728 Kuala Lumpur, Malaysia, 603.26914466, infish@po.jaring.my, www.infofish.org/.

PACIFIC FISHERY MANAGEMENT COUNCIL

June 13-18, 2004

Crowne Plaza Mid Peninsula, Foster City, California.

FFI: Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, OR 97220-1384, 503.820.2280, 1.866.806.7204 (toll free), pfmtc.comments@noaa.gov, www.pcouncil.org.

ON THE HORIZON

July 12 - 14/July 26 - 30/

August 9 - 13/

August 16 - 19, 2004

Adventure Salmon Day Camp for 4th & 5th Grades/6th-9th Grades, - Hood River Salmon Enhancement Group, Belfair Hood Canal, Washington

July 12 - 16, 2004

Maritime Summer Day Camp - Odyssey Discovery Center Seattle, Washington

July 21 - 30, 2004

International Institute of Fisheries Economics & Trade (IIFET) 2004

Tokyo, Japan

August 17 - 20, 2004

NAME (North American Marine Educators) 2004 Annual Conference

Olympia, Washington

September 12 - 15, 2004

Second National Conference on Coastal and Estuarine Habitat Restoration

Seattle, Washington

September 30 - October 3, 2004

22nd Annual Wakefield Fisheries Symposium

Anchorage, Alaska

ONGOING

BREAZEALE INTERPRETIVE CENTER

A variety of workshops, field trips and teacher education are held at or sponsored by Padilla Bay National Estuarine Research Reserve. FFI: Padilla Bay NERR, 10441 Bayview-Edison Road, Mt. Vernon, WA 98273-9668, 360.428.1558; alex@padillabay.gov, www.padillabay.gov.

THE BURKE MUSEUM

Thomas Burke Memorial Washington State Museum, University of Washington, Seattle. FFI: The Burke Museum, 206.543.5590, receipt@u.washington.edu, www.burkemuseum.org

CENTER FOR WOODEN BOATS

Monthly Meetings on third Friday of the month, 8 p.m., at the CWB Boat. Learn to sail, Saturdays and Sundays. FFI: The Center for Wooden Boats, 1010 Valley Street, Seattle, WA 98109, 206.382.BOAT (2628), cwb.org.

CLALLAM CONSERVATION DISTRICT

Monthly meetings are held on the first Tuesday of each month at 2 p.m. at the County Courthouse in Port Angeles. FFI: 360.452.1912, laura-hall@wa.nacdn.net, www.clallam.scc.wa.gov/upcoming.htm.

CLASSROOM@SEA

Classroom@Sea is a virtual learning community constructed by NOAA with the help of the University of Washington's College of Education. It connects NOAA's research vessels working in the world's oceans with classrooms around the globe to bring science to life. FFI: classroom@sea.noaa.gov

CLATSOP COMMUNITY COLLEGE

Offers a complete program of Radar Endorsement, Maritime Safety Training and Maritime Science Certificate Program classes throughout the year. FFI: Clatsop Community College, Maritime Science Program, 6550 Liberty Lane, Astoria, OR 97103, 503.325.7962, msd-info@clatsop.cc.or.us, www.clatsopcc.edu/

COLUMBIA RIVER MARITIME MUSEUM

Founded in 1962, this is the official maritime museum of Oregon; interpreting the Pacific Northwest's rich maritime history. FFI: Columbia River Maritime Museum, 1792 Marine Drive, Astoria, OR 97103, 503.325.2323, www.crrmm.org

FRIDAY HARBOR LABORATORIES

Facilities for independent investigators available throughout the year. FFI: Friday Harbor Laboratories, University of Washington, 620 University Road, Friday Harbor, WA 98250, 206.378.2165, depts.washington.edu/fhl/.

GRAYS HARBOR HISTORICAL SEAPORT AUTHORITY

For a complete schedule of Lady Washington sailings, education programs and FFI: GHSA/The Seaport Learning Center, 712 Hagara Street, P.O. Box 2019, Aberdeen, WA 98520, 360.532.8611 or 1.800.200.LADY (5239), ghsa@techline.com

KITSAP DIVING ASSOCIATION

Meetings held third Wednesday of the month at 7 p.m. FFI: KDA, P.O. Box 1302, Bremerton, WA 98337-0511, 360.373.7593, ATTN: Donald Larson, dolarson@linklet.kitsap.lib.wa.us.

KING COUNTY WATER and LAND RESOURCES DIVISION

For opportunities to volunteer and FFI: Community Stewardship Program, King County Department of Natural Resources, Water and Land Resources Division, 201 South Jackson Street, 600, Seattle, WA 98104, ATTN: Valerie Dascal, 206.296.1968, valerie.dascal@metrokc.gov, dnr.metrokc.gov/wlr/pi/commstew.htm.

MARINE TECHNOLOGY SOCIETY MEETING

The Old Spaghetti Factory, 2401 Elliott Avenue, Seattle. Marine Technology Society/IEEE Oceanic Engineering Society regular meetings on the third Thursday of the month at 6 p.m. For reservations and FFI: Nick Lesnikowski, 206.329.0743, nsl@deainc.com, www.mtsociety.org/sections/puget_sound/nextmts.html.

SEATTLE MARITIME ACADEMY

The Academy offers courses in subjects ranging from the fundamentals of marine electricity to preparing for maritime and commercial fishing careers. Contact Seattle Maritime Academy for a full schedule of classes. FFI: Seattle Maritime Academy, 4455 Shilshole Avenue NW, Seattle, WA 98107-4645, 206.782.2647, dflath@sccd.ctc.edu, www.seattlecentral.org/maritime/index.php.

MUSEUM OF HISTORY AND INDUSTRY

Ongoing exhibits: Salmon Stakes: People, Nature and Technology, and others. FFI: Museum of History and Industry, McCurdy Park, 2700 24th Avenue E, Seattle, WA 98112-2099, 206.324.1126, information@seattlehistory.org, www.seattlehistory.org/.

NORTH CASCADES INSTITUTE

Working cooperatively with the National Park Service, U.S. Forest Service and Western Washington University, NCI provides educational programs promoting appreciation, understanding, and conservation of the natural and cultural heritage of the North Cascades. NCI also offers an Elderhostel Program and provides volunteer opportunities. FFI: North Cascades Institute, 810 State Route 20, Sedro-Woolley, WA 98284-1239, 360.856.5700x209, nci@ncascades.org, www.ncascades.org.

NORTH PACIFIC FISHING VESSEL OWNERS' ASSOCIATION

Fishermen's Terminal, Seattle. Dedicated to education and training in marine safety. FFI: North Pacific Fishing Vessel Owners' Association, 1900 W. Emerson, Suite 101, Fishermen's Terminal, Seattle, WA 98119, 206.285.3383, info@npfvoa.org, www.npfvoa.org.

NORTHWEST SCHOOL OF WOODEN BOATBUILDING

On the Water Adventures with small boat sailing, sail training and boatbuilding workshops. FFI: Northwest School of Wooden Boatbuilding, 251 Otto Street, Port Townsend, WA 98368, 360.385.3628, info@woodenboat.org, www.woodenboat.org.

ODYSSEY MARITIME DISCOVERY CENTER

A complete maritime adventure includes exhibits on everything from shipping to kayaking, with many interactive exhibits. FFI: Odyssey Maritime Discovery Center, 2205 Alaskan Way, Pier 66, Seattle, WA 98121, 206.374.4000, info@ody.org, www.ody.org.

POINT DEFIANCE ZOO & AQUARIUM

FFI: Point Defiance Zoo & Aquarium, 5400 N. Pearl Street, Tacoma, WA 98407, 253.404.3636, carolync@tacomaparks.com, www.pdza.org/.

POULSBO MARINE SCIENCE CENTER

Touch trays and other interactive exhibits, plus classes on many marine topics. FFI: Poulsbo Marine Science Center, P.O. Box 2079, 18743 Front Street, Poulsbo, WA 98370, 360.779.5549, info@poulsbomsc.org, www.poulsbomsc.org.

SEATTLE AQUARIUM

One World-One Vision, Art Wolfe photography display, through May, and much more. FFI: The Seattle Aquarium, Pier 59, Waterfront Park, 1483 Alaskan Way, Seattle, WA 98101, 206.386.4300, aquarium.programs@seattle.gov, www.seattleaquarium.org.

VANCOUVER MARITIME MUSEUM

Museum hours 10 a.m.-5 p.m. FFI: Vancouver Maritime Museum, 1905 Ogden Avenue (foot of Cypress Street), Vancouver, British Columbia, Canada V6J 1A3, 604.257.8304, www.vmm.bc.ca.

WHALE MUSEUM

The Whale Museum promotes stewardship of whales and the Salish Sea ecosystem through education and research. FFI: The Whale Museum, 62 First Street North, P.O. Box 945, Friday Harbor, WA 98250, 360.378.4710, 1.800.946.7227, www.whalemuseum.org/index.html.

WSGP's Marine Ballast Water Specialist Russ Herwig continues to field interview requests from the media, here and abroad. In February, he met with Camilla Widebeck, a reporter from *Sveriges Radio* in Uppsala Sweden. Widebeck exchanged e-mails with Herwig weeks before her trip to Seattle, site of this year's conference of the American Association for the Advancement of Science. At Herwig's invitation, she accompanied the UW ballast water science team to the Port of Seattle's grain terminal, boarding a Croatian ship and meeting with the captain. Then, in Herwig's words, "a crewmember kindly removed the 20 nuts that held the cover over the opening to one of the ballast tanks." The team collected water and plankton from the tank for processing and examination at the UW. Widebeck interviewed Herwig and his associates for a radio segment that will be broadcast — in Swedish — at a not-too-distant date. Contact Russ Herwig at 206.685.2163 or herwig@u.washington.edu for more information — in English — on WSGP's ballast water research.

WSGP communicators and specialists in aquatic nuisance species (or ANS) are joining forces to produce a tourable display about non-native plant and animal invaders and their effects on coastal and nearshore habitats throughout the Northwest. As envisioned, the display will consist of three 80-inch-tall freestanding banners, each emblazoned with provocative text and colorful images of ANS species and issues. The three-banner approach will give greater flexibility, enabling the display to appear at a greater range of venues than its predecessor, the award-winning Oyster History mural created by WSGP in 2002. For additional info or to book either exhibit for your next conference, festival or fair, contact Science Writer David G. Gordon at 206.685.8191 or davidg@u.washington.edu.

Attention recreational and commercial boaters: Spring is the perfect season to enhance your marine technology, weather forecasting or safety-at-sea skills. WSGP offers a rich roster of one- and two-day workshops and classes on these and other topics, geared expressly for you. All are reasonably priced and many are U.S. Coast Guard-approved. For further information, contact Fisheries Program Coordinator Sarah Fisker at 206.543.1225 or sfisker@u.washington.edu.

Have a sea-gar! On February 22, WSGP Communications Manager Melissa O'Neill Albert gave birth to Seamus, a seven-pound, six-ounce baby boy. For the next few months (while Melissa is at home, meeting her initial offspring's every need), please direct any communications questions to Andrea Copping, WSGP's Associate Director, at 206.685.8209 or acopping@u.washington.edu.



Squibs & Squids



Washington Sea Grant Program
University of Washington
Box 355060
3716 Brooklyn Avenue NE
Seattle, WA 98105-6716

SPRING 2004
SURPRISES IN A SPONGE

Nonprofit
Organization
U.S. Postage
Paid
Seattle, WA
Permit No. 62