



# ONRC UPDATE

Volume 1, Issue 11

July 15, 2003

*A Monthly Newsletter from UW Olympic Natural Resources Center*

## DIRECTOR'S MESSAGE



**John Calhoun**

Thirty four students and faculty from the National Chung-Hsing University, located in Taichung, Taiwan will spend 15 days at the 2003 North America Biological Conservation Camp, arriving August 22nd. The Camp is a result of a memorandum of understanding (MOU) which created a "sister college" relationship between the UW College of Forest Resources' ONRC and National Chung-Hsing University, College of Natural Resources' Department of Forestry. UW College of Forest Resources Dean Bruce Bare, Rich Hsu, UW ONRC Policy Advisory Board member Bert Paul, and I traveled to Taiwan last year to formally sign the MOU. This camp is the first exchange set up under that agreement.

We want to show the students how the use of new modeling tools can demonstrate forest man-

agement practices to achieve conservation goals and also produce revenue to support communities. A detailed itinerary of educational, cultural and sightseeing experiences is planned. The Forks community is helping with arrangements to make the group feel welcome and to encourage groups from Taiwan to think of Forks as a desirable destination for future study trips.

If this visit is successful, we can expect a steady stream of exchanges and study groups coming to the Forks area. The group is already talking about planning a Geographic Information System workshop at UW ONRC for students next year. We hope these exchanges will gain a reputation for Forks as a place to visit and learn about natural resources in the United States.

This will be the first visit to the United States

for most of the Chinese delegation, although they all speak English well and have been preparing for this trip for some months.

The group will use Forks and UW ONRC as their home base. They will travel to southwest Washington's Willapa Bay to learn about ecological restoration of oyster beds and salmon rearing habitat through the eradication of the invasive weed *Spartina*—one of UW ONRC's major marine program efforts. A visit to the Weyerhaeuser Learning Center at Mt. St. Helens and to the College of Forest Resources' experimental forest near Eatonville is also planned. Finally the group will spend time on the UW campus in Seattle before returning home September 5<sup>th</sup>.

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**ONRC UPDATE** is published monthly by the University of Washington Olympic Natural Resources Center, PO Box 1628, Forks WA 98331 (360) 374-3220 or in Seattle (206) 685-9477 Website: [www.onrc.washington.edu](http://www.onrc.washington.edu) Newsletter Editor: Ellen Matheny — [ematheny@u.washington.edu](mailto:ematheny@u.washington.edu)

## East Coast Die-Offs May Yield Clues for Killing *Spartina* in Willapa Bay

**Fritzi Grevstad** / Bio-Control Specialist  
UW Olympic Natural Resources Center

While the State of Washington has been doing everything it can to kill the invasive weed *Spartina* in Willapa Bay and Puget Sound, some southeastern states have been doing all they can to keep *Spartina* alive. The states of Louisiana, Texas, Florida, Georgia, and South Carolina report "brown marsh" phenomena in which all the *Spartina* plants in an area suddenly and mysteriously die off.

*Spartina* is native along the Atlantic and Gulf Coasts where it occurs in great abundance. There, it is valued as the dominant plant in the salt marsh ecosystem. It provides habitat for wildlife and invertebrate species that have had a long evolutionary history with the plant. It also provides erosion protection in a part of the world where sea levels have been slowly rising. Here in Washington, *Spartina* is considered a menace because it eliminates the natural

open mudflat habitat that is crucial to a variety of birds, fish, and the aquaculture industry.

In Louisiana alone, 110,000 acres have been severely impacted by brown marsh and 150,000 have been moderately impacted. Seventeen-thousand acres of Louisiana's marshes (more than double the amount in Willapa Bay) have been converted from dense *Spartina* to pure mudflats without any vegetation or roots remaining to hold the land in place.

Ecologists back east are racing to understand the cause of the die-offs in hopes that it could be managed and prevented. UW ONRC researchers are eager to understand the cause as well, since it may help us kill it in Willapa Bay. The leading theories for the die-offs include drought, disease, and grazing by a periwinkle snail. Drought could cause die-



**Fritzi Grevstad**

offs through increased salinity, low water levels, build up of sulfide toxins, and changes in soil metal levels. Drought might also make *Spartina* more susceptible to diseases. A recent theory put forth by scientists at Brown University links declines of the blue crab with increases in the *Spartina* grazing periwinkle snail, *Littoraria irrorata*. The snail creates scars on the stems that allow a fungal pathogen to infect and kill the plant. The snail then feeds on the dead plant material. Experiments

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**Large areas of *Spartina* are mysteriously dying off in its native range on the East Coast**

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have demonstrated that when the crabs are excluded from plots, snail populations build up to densities that can completely kill off *Spartina*.

The snail is one of many *Spartina*-feeding organisms from



**Fritzi Grevstad in tall  
*Spartina* growth**



**Healthy invasive *Spartina* in Willapa Bay is eliminating open mudflat habitat that is critical to wildlife and shellfish**

the East Coast that have potential as biocontrol agents against invasive *Spartina* on the West Coast. One insect, a planthopper called *Prokelisia marginata*, has already been introduced for this purpose in Willapa Bay by UW ONRC researchers, though it is still too early to know its impact. Additional candidate biocontrol agents from the east coast include two stem boring flies, an ergot fungus

that attacks the seeds, another planthopper species, a scale insect, and a mirid bug. For all candidate agents, extensive pre-release research and careful consideration of any risks will be required. UW ONRC is currently seeking fund to conduct this research in collaboration with scientists at the U.S.D.A. Agricultural Research Service Center for Biological Control in Tallahassee, FL.

**Signing Ceremony of MOU of Sister Relation Agreement Between UW College of Forest Resources & Chung Hsing University College of Agriculture & Natural Resources in October 2002**



## New Research Funded by UW ONRC

**Jason Cross** / Research Coordinator  
UW Olympic Natural Resources Center



When the Washington State Legislature created the Olympic Natural Resources Center at the University of Washington, it declared, "It is the intent of the legislature to foster and support the research and education necessary to provide sound scientific information on which to base sustainable forests and marine industries, and at the same time sus-

tain the ecological values demanded by much of the public."

UW Olympic Natural Resources Center (ONRC) was given authority to seek resources and enter into contracts to support a program of research to carry out the intent of the legislature. 2003 is the eighth year UW ONRC obtained support for a program of research addressing legislative in-

tent by obtaining Congressional "earmark" of funds within the budget of the USDA Forest Service, Pacific Northwest Forest and Range Experiment Station.

The request for proposal process for FY 2003 is complete. After consultations with our science and policy advisors, UW ONRC will fund the following projects.

|                         |   |
|-------------------------|---|
| <b>Title</b>            | <i>Effect of Salmon-derived Nutrients on Macroinvertebrate Production and Community Composition in Salmon Spawning Streams: A Tool to Monitor Conservation and Restoration</i>  |
| <b>PI / Affiliation</b> | Dr. Robert Gara / UW College of Forest Resources  |
| <b>Award</b>            | \$47,312  |
| <b>Comment</b>          | This research will contribute to the conservation and restoration of threatened and endangered salmonids by providing a better understanding of the dynamics of salmon nutrients. More specifically, this research is expected to result in measurable parameters (e.g., taxa, presence/absence, density, community composition) reflecting macroinvertebrate production capacity that can be monitored to validate conservation and restoration practices. |
| <b>Title</b>            | <i>Linking Human Actions to Salmon Productivity: Intensive Watershed Monitoring</i>   |
| <b>PI / Affiliation</b> | Dr. William Ehinger / Washington State Department of Ecology  |
| <b>Award</b>            | \$7,000   |
| <b>Comment</b>          | Watershed-level experiments will be required to determine the response of salmon populations to regulatory and restoration actions. This project will begin to develop the research infrastructure to enable the implementation of these large experiments.   |
| <b>Title</b>            | <i>Refining a Landscape-scale Habitat Model and Inland Monitoring Program for Marbled Murrelets in the Olympic Peninsula</i>  |
| <b>PI / Affiliation</b> | Brian Cooper / ABR, Inc.<br>Dr. Martin Raphael / USDA Forest Service  |
| <b>Award</b>            | \$33,430  |
| <b>Comment</b>          | It is likely that the model developed from this work would provide land managers science-based information to help identify which watersheds support higher numbers of birds and to help identify the appropriate configuration of habitat needed on the landscape to meet management goals.  |
| <b>Title</b>            | <i>Using Volume to Reduce Type II Errors in Classifying Northern Spotted Owl Habitat on the Olympic Experimental State Forest</i>   |
| <b>PI / Affiliation</b> | Dr. Chadwick Oliver / Yale University<br>Jason Cross / UW Olympic Natural Resources Center  |
| <b>Award</b>            | \$31,868  |
| <b>Comment</b>          | Volume (possibly accompanied by another metric such as density) offers many of the structural guarantees sought in old-forest owl habitat, while allowing a range of possible combinations – the result being a volume-based definition that decreases the occurrence of Type II errors without significantly increasing the rate of Type I errors.   |
| <b>Title</b>            | <i>Does Riparian Red Alder Increase Fish Performance?</i>   |
| <b>PI / Affiliation</b> | Dr. Peter Kiffney / National Oceanic & Atmospheric Administration<br>Dr. Robert Edmonds / UW College of Forest Resources  |
| <b>Award</b>            | \$40,126  |
| <b>Comment</b>          | This research will test the hypothesis that forest cover affects the growth, biomass, and abundance of resident cutthroat trout. Specifically, this research will test whether riparian red alder increases the performance of resident fishes compared to fish in streams draining coniferous forests.   |