



# ONRC UPDATE

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A Monthly Newsletter from UW Olympic Natural Resources Center

## DIRECTOR'S MESSAGE



**John Calhoun**

The Landscape Management System (LMS) is a computerized forest simulation model that can be a very useful tool. Anyone with a computer and forest inventory data can use LMS. It is in the public domain and easily downloaded. LMS excels in planning forest activities to meet multiple forest management objectives. The technology allows planners to "custom fit"

meet some of the pressing problems facing junior taxing districts in the West End of Clallam County.

Junior taxing districts include the Quillayute Valley School District, Clallam County Rural Fire District #1, and the Forks Hospital District. The Forks Hospital

tainable Harvest Technical Review Committee in Olympia on June

5, 2003. DNR has not previously been asked to provide such specific information as might be required by a local hospital district. They are interested in new tools, such as LMS, which might efficiently provide this information.

Applying technology to unanticipated and vexing natural resource management problems that impact rural communities is right down our alley. UW ONRC can help.

"Applying technology to unanticipated and vexing natural resource management problems that impact rural communities is right down our alley."

management plans to meet often changing needs.

Jason Cross, UW ONRC's Research Program Coordinator, has expertise in using LMS. He has been working with the Olympic Region of the Washington State Department of Natural Resources (DNR) to test the applicability of LMS to DNR planning needs.

Partly through this process, community leaders became aware of the power of LMS and began to ask questions regarding how LMS might be applied to

District is in a particularly difficult financial situation as revenue from DNR managed Forest Board lands have declined. Community leaders asked the DNR and UW ONRC if LMS could help them predict future revenue from these lands.

Bruce Mackey, DNR Lands Steward, has invited UW ONRC and some community leaders to make a presentation to DNR's Sus-



**LMS Data Displays**

### Inside This Issue

Director's Message	1
OESF Corner	2
GPSing High Tide in Willapa Bay	3
OPI Teaches Forks 8th Graders About Forest Ecology	4



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# OESF CORNER

**Peter Harrison**

Wildlife Biologist, Olympic Region  
Washington State Department of Natural Resources



**Peter Harrison**

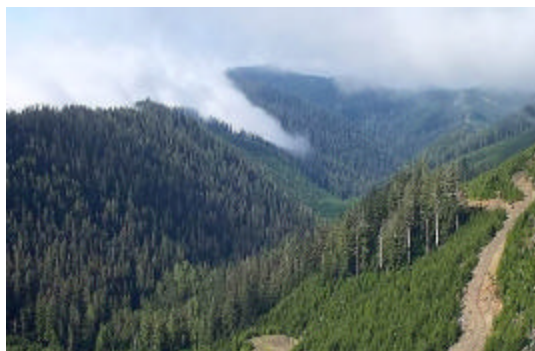
Last month, Scott Horton introduced ongoing marbled murrelet research in the Olympic Experimental State Forest (OESF). Scott briefly described the Washington State Department of Natural Resources' (DNR) commitment to a marbled murrelet conservation strategy and the related study by John Marzluff of the UW College of Forest Resources that predict predation at marbled murrelet nests.

I'd like to share results of the analysis of the inland marbled murrelet surveys conducted exclusively in the OESF. These analyses will be used with additional information in the development of a long-term marbled murrelet conservation strategy that will begin within the next few months.

Observations of subcanopy behavior permit a reasonable estimate that a survey site may be used for nesting by murrelets. Surveys were conducted from 1996 through 1998, following protocols developed by the Pacific Seabird Group, Marbled Murrelet Technical Committee. Sites were defined as either Occupied (present) or Not occupied (not present) determined after two years of protocol surveys.

The survey site became the basis for analyses of the relationships between murrelet use and a variety of landscape-level features thought to be important to the inland ecology of murrelets. We examined: 1) distance from the ocean; 2) elevation, which could be important both energetically and/or as a determinant of forest composition and structure; 3) local geography, using landscape planning units (LPU=s) which are watershed-based partitions of DNR-managed land that are the base for long-term

planning; 4) stand size - many stands were subdivided into multiple survey sites; 5) stand shape - an area to perimeter index; 6) amount of interior forest (>328 ft. from Asharp@ edge) within survey sites; and 7) density (expressed as the proportion of the area sampled in habitat), at two spatial scales (within 0.5 and 1.2 mile of sites) of: Aclearly good@ habitat, and all potential habitat. Preliminary analysis from a separate study of murrelet habitat relationships allowed



**Olympic Experimental State Forest**

us to develop an aerial photograph-based model of Aclearly good@ murrelet habitat that was specific to the OESF.

We identified 41,000 acres of generally low to mid-elevation, generally western hemlock (*Tsuga heterophylla*) dominated old-growth forest patches variously scattered across the much larger commercial forest landscape. We delineated 427 survey sites averaging 64 acres in size, 1-22 miles from the ocean.

We think that our most notable findings are the almost universal presence of marbled murrelets and the quite high level of murrelet use at our inventory of old-growth sites scattered across a commercial forest landscape.

Murrelet use was associated with stand size and shape, the proportion of interior forest in survey sites, density of habitat around sites, and geographic position across the study area. Associations of habitat and stand variables were consistent with the conventional wisdom, except that stands with higher perimeter/area index were occupied at higher rates. However, due to patterns of timber harvesting, these stands were also the largest stands with the greatest amounts of interior forest and habitat density.

We noted an uneven geographic distribution of murrelet use across the study area, with LPU=s of less-than-expected use clustered to the south. Those LPU=s are inland of areas of relatively lower at-sea densities noted on aerial surveys in 1993-94.

Scott & I think DNR should be encouraged by the apparent situation in the OESF. The relatively abundant potential murrelet habitat and its abundant use by murrelets should enable options for successful murrelet conservation, land management, and research.

Please feel free to contact me at the DNR office in Forks (374-2886) if you have any questions.

We welcome your input.

**Results – Surveys/Analysis**

	Occupied	Presence	No Detections	Total
Sites	217	182	28	427
Percent	51%	43%	6%	100
Area (acres)	14,606	10,947	1,588	27,141

# GPSing High Tide in Willapa Bay

**Teresa Zena Alcock** / GIS Specialist

**Eric Sfetku** / GIS Technician

UW Olympic Natural Resources Center



Teresa Zena Alcock



Eric Sfetku

The UW ONRC Geographic Information Systems (GIS) group is working with staff at the US Fish & Wildlife Service (USFWS) Willapa National Wildlife Refuge, the Pacific Conservation District, and the Coastal Resources Alliance to develop map products to help them eradicate invasive

*spartina alterniflora* from Willapa Bay.

This year's first Global Positioning System (GPS) mission mapped tide - or water level - lines to determine exactly where USFWS managers can treat spartina with chemical-application precision farming tools

(precision sprayers) that would provide for the longest drying time

for the chemical to be absorbed into the leaves of the grass. The benefits of extended drying time are fundamental in the eradication of spartina.

In fact, in places where the USFWS were previously able to get a 24-hour drying time, a nearly 100% kill ratio of the weed was achieved.

Armed with Trimble GPS units on airboats, Eric Sfetku & Teresa Zena Alcock of UW ONRC, Jim Assenberg of the Coastal Resources Alliance, and Sean Rubey of the Pacific Conservation District were escorted by Terri Butler and Jonathan Bates from the USFWS to produce navigation maps that can be used inside the computer console of the Precision Sprayer.

The GPS survey of the high tides was done from the 9th through the 14th of April. To GPS the tide line, the airboat floats into that day's high tide shoreline interface and slides along the mud. The challenge is in dealing with all of the Spartina which is dense enough to obstruct most views from within the boat. In his/her elevated position, the airboat driver has a bird's eye view and can pick out the water line, as well as other obstacles, amongst the Spartina. Those down in the boat aren't as fortunate. While the driver is able to

(Continued on page 4)

Jonathan Bates and Terri Butler from USFWS take Jim Assenberg from Coastal Resources Alliance and Eric and TZA from UW ONRC on a "Wild Country Safari".



Armed with Trimble GPS, data points were collected every three seconds to draw a line in the sand (or, in this case, mud, sand, or mixed substrates).

## GPSing High Tide in Willapa Bay (continued)

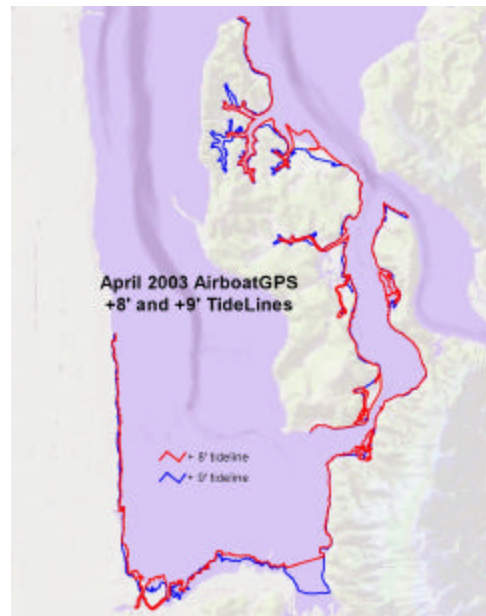
avoid most logs and hummocks, the unsuspecting passengers must manage their GPS while bracing for sudden impacts. As Sean Rubey put it, "It was like 4-bying on the water."

The GPS survey data was processed in ArcGIS back at the UW ONRC GIS lab, with several thousand individual coordinates merged into layers that define the upper boundary of eight and nine foot tides of Willapa Bay. While this map is beneficial, it is not the final step in the mission plan.

These tide lines along with the seven foot tide lines will be imported into a software package produced by Ag Leader called SMS (Spatial Man-

agement System) Basic. The USFWS can then prescribe treatments using this software to those infested areas above the tidelines on the days tides are predicted to match (7, 8, or 9 foot tides). This treatment, or prescription, provides a path that the precision sprayer can then follow in real time in the cabin of the Precision Sprayer.

This is the first time that modern, integrated tools and technology have been used to treat *Spartina* in Willapa Bay. The USFWS and UW ONRC have high hopes this year will be the beginning of the end of *Spartina* in Willapa Bay.



## Forks 8th Grade Class at UW ONRC

**Ellen Matheny** / Director, Education & Outreach  
 UW Olympic Natural Resources Center

Olympic Park Institute instructors led a Forest Ecology course for the Forks Middle School 8th grade class at UW ONRC. The students were divided into eight groups, and each student completed five days of instruction. The students studied forest life and ecology as well as experiencing firsthand the scientific method. This was particularly impressive be-

cause many of the days it was pouring down rain!

Olympic Park Institute funds these programs through its "Gateway Communities Initiative" that obtains funding from both federal and private foundation grants. UW ONRC supported this program through its educational outreach program.

The student groups presented

findings from their research on the final day of instruction. Community members and parents attended these insightful presentations.



**Forks Middle School 8th Grade Science Teacher Rob King**



**Instructors from Olympic Park Institute**



**Forks 8th Grade Student Giving Presentation**