



ONRC UPDATE

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A Monthly Newsletter from UW Olympic Natural Resources Center

DIRECTOR'S MESSAGE



John Calhoun

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UW
 College of Forest Resources
 College of Ocean and
 Fishery Sciences

UNIVERSITY OF WASHINGTON
Olympic
 Natural Resources Center

It seems university center directors are always concerned about money. With more emphasis on "external funding" and "self-sustaining" programs, finding the money is a vital part of our success.

I should note up front that the Washington State Legislature, through the UW budget, funds only a small portion of the upkeep and activities of UW Olympic Natural Resources Center. All of the research, facility & conference support, K-12 education enhancement programs, and much of the professional services, such as Geographic Information Systems (GIS) and Spartina bio-control and technical support, are externally funded.

This year saw the troubling and continuing trend of federal research money, earmarked for UW ONRC, "borrowed" to

cover the high cost of fire suppression experienced by the USDA Forest Service. This is a serious impediment to our ability to fund valuable research projects in support of our mission. As a consequence, we have had to withdraw awards made to researchers this year. We are watching federal budget preparation for next year's budget (already nearly two months behind schedule) very closely to see if the "borrowed" funds might be replaced so that we can reinstate the awards made this spring. As of this writing, it is still uncertain.

On the bright side, the rate of acquiring external funding is exceeding the rate of reductions to state permanent budgets, resulting in a net gain of total financial capacity for UW ONRC. This is only possible through the aggressive,

entrepreneurial spirit of UW ONRC professional staff.

With adequate funding, program development and delivery continues. We are making great strides in Education & Outreach, GIS support of Spartina control, delivery of Landscape Management System services to the Washington State Department of Natural Resources, facilitation of salmon conservation efforts and management-oriented research into effective ways to measure successful stream protection and old forest restoration.

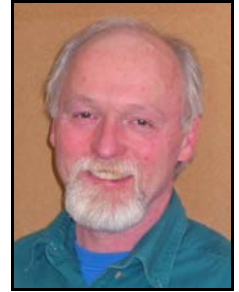
Funding is difficult to come by. I am confident, if we continue to produce valuable services and products, we will continue to be successful in finding the support.

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OESF Corner

Mike Cronin

Crescent District Manager
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Mike Cronin

Implementation of the Habitat Conservation Plan (HCP) is governed by an agreement among Washington State Department of Natural Resources (DNR), the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service (now known as NOAA Fisheries). The Implementation Agreement defines the roles and responsibilities of these parties regarding implementation of the HCP. The HCP and the Implementation Agreement (IA) are supplementary to each other. Together they fulfill the requirements as outlined in the Endangered Species Act for issuance of an incidental take permit. One of the major requirements of the HCP and IA is monitoring.

There are three primary objectives for monitoring the HCP. The first is to determine whether the HCP conservation strategies are being implemented as written. This is referred to as *implementation monitoring*. The second is to determine whether implementation of the conservation strategies results in the habitat conditions anticipated. This is referred to as *effectiveness monitoring*. The third objective is to evaluate cause and effect relationships between the habitat conditions which result from implementation of the conservation strategies and the animal populations targeted by these strategies. This is referred to as *validation monitoring*.

Implementation monitoring is in

progress in the Olympic Region with field reviews of completed timber sales and silviculture activities being scheduled by monitoring teams from the Land Management Division, HCP Monitoring and Reporting Section, and the region foresters who planned and administered the activities. Timber sales sold after January 1999 were expected to be HCP compliant and, with two year contract terms, the first HCP sales were completed and ready for review in 2001. The two conservation strategies selected for implementation monitoring this year are those for riparian and northern spotted owls. Enough activities are selected to provide a 95% sampling confidence. These reviews also provide opportunity for site specific interaction between the field forester and the scientific staff to improve understanding of policy direction and procedures. In addition to these field reviews of completed activities, implementation monitoring includes documentation of all activities carried out on DNR lands.

Effectiveness and validation monitoring involves a more long term scientific approach, including experiments planned and in progress. Included in these experiments are riparian studies of conditions and trends, restoration, silviculture and wind throw. Spotted owl and marbled murrelet studies are also in progress in the Olympic Experimental State Forest (OESF).

Future Plans

The following activities are planned to dominate HCP research and monitoring for the 2003/2004 reporting period.

- 1) Research to support the development of the marbled murrelet long-term conservation strategy including the DNR habitat relationship study, predation research, developing the Marbled Murrelet radio tracking and demographic studies and support of WDFW at-sea surveys.
- 2) Establishment of riparian Silviculture Effectiveness Monitoring and completion of a riparian specific version of the Landscape Management System to help quantify working hypotheses being tested in effectiveness monitoring. A workshop will be held to train foresters on the riparian forest growth model.
- 3) Expansion of existing Spotted Owl Effectiveness monitoring to SE Washington.
- 4) Expansion of existing in-stream conditions and trends and riparian effectiveness monitoring for wind throw on the OESF.



GPS@Home (Part 1 of 3): History of GPS

Eric Sfetku

GIS Technician

UW Olympic Natural Resources Center

Global Positioning Systems (GPS) were originally a product of the space race between the United States and the former Soviet Union. Both countries saw space as the medium in which they would be able to track all of their military units as well as extend their over-the-horizon capabilities.

The US gained the inside track in the early 1960's when the US Air Force's 621B program conceptualized a system in which highly accurate clocks in orbit could assist in tracking units on the ground and in the air. A similar program, called TIMATION, was also underway by the US Navy. Over the next ten years, the TIMATION program developed and tested satellites while the US Air Force program advanced their rocketry systems.

In 1973, the US Air Force 621B and US Navy TIMATION programs combined to form the Navigation Technology Program. The program was later renamed Navigation Systems and Ranging (NAVSTAR). Together the two programs put their first satellite, TIMATION III, into orbit on an Atlas-Centaur rocket on July 14, 1974. This was the first time an atomic clock was launched into orbit. The testing and development of this satellite led to the first production GPS satellite, dubbed the Block I. The first of what was to be a constellation of 24 satellites was put into orbit February 12, 1978.

In the early 1980's, development began on the second generation GPS satellite, the Block II. Having better radiation shielding, gyro-

scopic controls, and internal systems, the Block II satellite was too heavy to be launched on an Atlas-Centaur rocket. The most economical solution to getting these satellites into a high enough orbit was NASA's Space Shuttle. Unfortunately, the STS-51 (Space Transportation System) Challenger disaster was a major setback in the deployment of the GPS satellite constellation. Without STS launches, there was no longer a US medium for placing satellites the size of the Block II into geosynchronous orbit.



NAVSTAR BLOCK II Satellite Orbiting Earth

It was 4 years before modifications could be made to Delta II rockets to launch Block II satellites into their proper orbits. While storage on a space shuttle is relatively easy, special packaging of satellites must be made so they can withstand the massive G-forces of a launch. The storage cowl on the Delta II rocket had to be reduced from 10.6 to 9.3 feet in diameter to properly store a Block II satellite.

With the modifications complete, launches of Block II satellites resumed on February 14, 1989. On December 8, 1993, the final GPS satellite was activated, thus completing the constellation of satellites that millions of people take advantage of today.

The final momentous date in GPS history was May 1, 2000. On that day, an algorithm, defined as Selective Availability, was turned off by the US government. Selective Availability was a mathematical equation inserted into the GPS radio fre-

quency that degraded the accuracy of handheld receivers. With this system in place, the recreational GPS user could be anywhere from 3 to 100 meters from their actual location. While it prevented terrorists and naysayers alike from getting the exact coordinates of places like the White House, it also kept Joe Q. Taxpayer from finding his way back to his campsite at the end of a long day of hiking. The US Supreme Court deemed Selective Availability unconstitutional and it was turned off.

Today, as a growing industry, researchers are designing and launching the next generation of navigational satellites that will continue to make GPS more accurate for the general public. In 2000, GPS had more than 1.5 million users, and its economic impact was estimated at \$6.2 billion. By 2010, its economic value is expected to exceed \$50 billion.

GPS Class at UW ONRC Well-Attended

Ellen Matheny

Director, Education & Outreach
UW Olympic Natural Resources Center

The abundant Forks rain held off long enough for Eric Sfetku to lead an informative workshop, in-



Participants Practice Using GPS Units

structing community members in the use of their Global Positioning Systems (GPS) receivers. A few participants had received GPS receivers as a loving gift from their wife but were a little fuzzy on how



Instructor Eric Sfetku helps participants Use GPS Receivers

to use it properly. Others who came had found a great fishing hole and wanted to remember its location for their next fishing adventure. Each person left the workshop filled with information about GPS and a little experience in actually using a GPS receiver to locate a cache filled with prizes.

The UW ONRC Lobby, setup with a data projector and snacks, was filled to capacity with people interested in the basics of using their GPS units.

All totaled 30 people attended one of the two workshops offered on October 23rd and 25th.

The goal of the workshop was to teach recreational users of GPS devices in its proper usage. The workshop helped individuals get greater use out of their GPS receivers by learning how to operate their unit and better understand activities where it can be used.

"Knowledge of GPS is beneficial in just about any outdoor activity, including hunting, hiking, fishing, search & rescue activities, and the increasingly popular sport of geocaching," noted

workshop instructor and UW ONRC GIS Technician Eric Sfetku.



GPS Unit

The workshop included a 45-minute discussion on how GPS technology works in non-technical language. The class then divided up into small groups and embarked on an adventure using their GPS units. Some participants brought their own GPS receiver and some used one of UW ONRC's Magellan Sport Trak Map GPS receivers.



Workshop Participants Locate Geocache Using GPS Units

A fun time was had by all. Due to popular demand, Sfetku has scheduled another workshop on January 3, 2004. Give UW ONRC a call, if interested in attending.