



ONRC UPDATE

Volume 2, Issue 5

January 22, 2004

A Monthly Newsletter from UW Olympic Natural Resources Center

DIRECTOR'S MESSAGE



John Calhoun

At our core, UW ONRC is a research station. Finding funds to support a research program in service of our mission and purpose is the first order of business for the Director.

We are fortunate to have a base of research funding made available through the USDA Forest Service Pacific Northwest Research Station (PNW). These funds were originally earmarked on the PNW budget by Congressman Norm Dicks. The funds have now become part of the Administration's regular budget proposal, thanks to the wide support of others in Washington State's delegation.

Staff at UW ONRC have taken this model for funding programs of research and education and expanded it into other federal agencies and into our state legislative process as well. Through one process or another, we enjoy funding from the National Ocean & Atmospheric Administration, US Fish and Wildlife Service, USDA, US Department

of Education, the Washington State Legislature, the Washington State Higher Education Continuing Board, even a few county and city governments, a non-profit organization or two, and from private corporations.

Funding from PNW was the first and remains the core support of forestry-related research at UW ONRC. We have been funded again for Fiscal Year 2004 in the amount of \$250 thousand dollars. In recent years, we have awarded these funds only to have them withdrawn in order to pay extra-ordinary federal firefighting costs.

This year, we have been working with PNW staff to find a mechanism that would give greater assurance that, once these funds are awarded to researchers, we will be able to carry through and commit the funds.

We have a much higher level of confidence that we can accomplish secure funding this year. Two strategies are adopted to

assure secure funding. The first is to start the Request for Proposal process earlier (notification to researchers will go out this month). In this way, we hope to complete the award process by May 1, 2004. This will encourage PNW to encumber the funds before they might be withdrawn for firefighting costs. The second strategy is to enter into one agreement between PNW and UW ONRC for the entire amount rather than separate agreements for each project funded. UW ONRC would then manage funding of each of the research projects under the master agreement with PNW. This will reduce processing time and encumber the entire amount for UW ONRC early.

Finding a securing research funding is the lifeblood of our program. We will continue to find ways to enhance this process.

Inside This Issue

Director's Message	1
<i>Prokelisia</i> is an Effective Seed Reducer	2
GPS Uses	3, 4

UW
College of Forest Resources
College of Ocean and Fishery Sciences

UNIVERSITY OF WASHINGTON
Olympic
Natural Resources Center

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 Newsletter Editor: Ellen Matheny — ematheny@u.washington.edu

Prokelisia is an Effective Seed Reducer

Fritzi Grevstad

Biocontrol Specialist

Carol O'Casey

Research Assistant

UW Olympic Natural Resources Center

In the past two years, new seedlings of the invasive grass *Spartina* have been notably abundant in Willapa Bay. Warm summers usually mean greater viability of seeds in the following spring. We are frequently asked what effect the biocontrol agent, *Prokelisia*, has on seed production. Now we have a clear answer. *Prokelisia* planthoppers have a very large effect, reducing the number of viable seeds to 1/10th of normal production.

In late October, we collected seeds from a site near the Naselle River where *Prokelisia* was released in the spring of 2002 and 2003. Densities of *Prokelisia* were greater than 200 per stem in the vicinity of the release in October. Areas immediately surrounding the area of release have lower densities. A total of 180 seed heads were randomly selected in areas of high density of *Prokelisia* (>200 per stem) and nearby medium (30 to 100 per stem) and low density (0 to 20 per stem) areas. The seed heads were weighed and then placed into perforated Ziploc bags in groups of five, soaked in saltwater under refrigeration for one month, and then moved into fresh water filled trays in a warm greenhouse until germination oc-

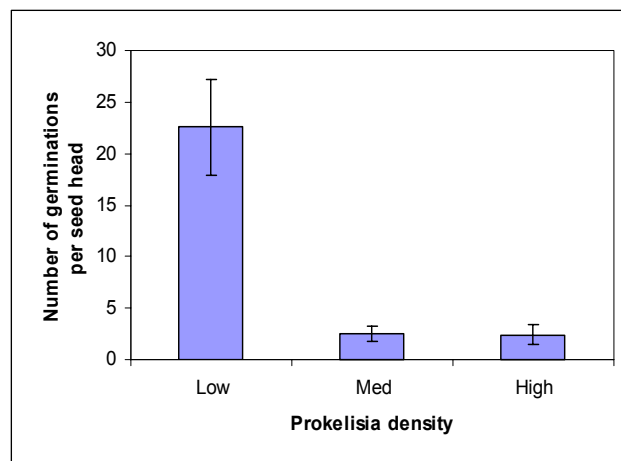
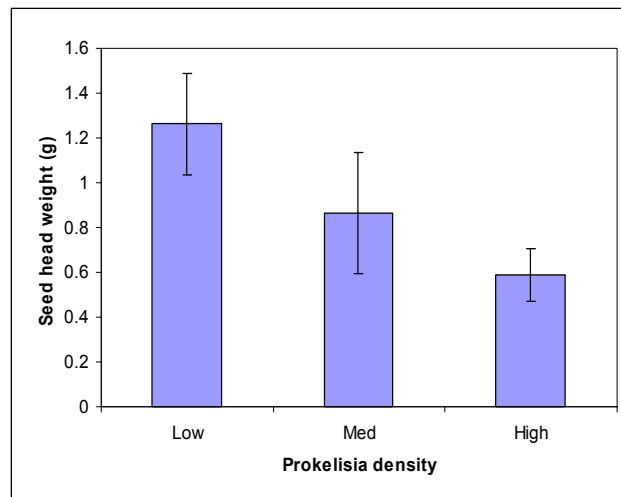
curred. Germinated seeds were counted and removed from the bags after one month of warm soaking and again after six weeks. (Special thanks to John Lambriños, postdoctoral research associ-

The weight of seed heads collected from high density areas was 50% lower than the weight of seed heads collected from areas with little or no *Prokelisia*. Even more exciting though, is a 90% reduction in the number of viable seeds (i.e., seeds that actually germinated). This reduction occurred even within moderate densities of *Prokelisia*.

Why such a big effect from a tiny insect that sucks sap from leaves? There are several reasons why this insect affects the seeds. First, when *Prokelisia* removes sap from the leaves, it reduces the total energy available to the plant for seed production.

The plant may reallocate resources, for example into root storage, rather than investing it in seeds. Second, during the early fall, some *Prokelisia*, especially adults, move off the leaves and up the stem to feed on the inflorescence itself. This takes resources directly away from the seeds. Finally, when *Prokelisia* feeds, it excretes a sticky honeydew that gums up the flowers and seeds, likely affecting their development.

We plan to repeat this work next year to see if we get similar impact at a variety of sites.



ate in the Department of Ecology and Evolution at University of California Davis for suggesting the soaking approach to germinating seeds.)

GPS@Home (Part 3 of 3): GPS Uses

Eric Sfetku

GIS Technician

UW Olympic Natural Resources Center

There is an error in the second part of this three part series that relates to "Heisenberg's Uncertainty Principle." In fact, Albert Einstein played no part in the discovery of this scientific equation as was alluded to in last month's article. Werner Heisenberg was the sole discoverer of this principle and deserves all of the credit. More can be found about Werner Heisenberg and his principle at www.aip.org/history/heisenberg.

This final installment of GPS@Home will discuss what you can do with your Global Positioning Satellite (GPS) receiver. Over the past ten years, Global Positioning devices have become almost a necessity in the American economy. It is estimated that by 2010 GPS will contribute over \$50 billion to the annual US economy. That is quite a return for a \$750 million a year investment by the federal government. While recreational uses of GPS are growing at a huge pace, the largest transformation has been and will be in the corporate world.

This may sound like a Microsoft commercial, but imagine a world where you can track a package you ordered in real time as it travels from the distribution center to your doorstep. Doorbells would become almost obsolete because the buzzer would know to alert you as the package reached the driveway. Even though this vision is still a few years away, many corporations are already incorporating this very

technology on their trucks for tracking purposes.

As you drive down the highway, look at the back of the cab of a semi truck. Chances are you will see a white ball about 10 inches in diameter. The device is a GPS antenna which is tracking that truck's position as it moves along the interstate. Positional data is then relayed via a separate satellite to the distribution center, where warehouse workers can plan for an estimated time of arrival and adjust their schedules accordingly.



Etrex GPS Receiver

The agricultural industry uses GPS very intensely. Today, farm tractors are being fitted with GPS units to track their path along a farm. With this device, a farmer can see exactly where they have applied herbicides to ensure that all of his or her crops have been treated. The US Fish and Wildlife Service's Willapa Bay Wildlife Ref-

uge (with the help of UW ONRC) uses GPS on its amphibious machines to assist in the eradication of *Spartina Alterniflora* in Willapa Bay. This allows them to map a treatment area and compare the effectiveness of different ratios of chemicals in the treatment of Spartina.

At home, GPS units are becoming increasingly more practical and popular. There is an obvious benefit to using GPS in activities such as hunting, fishing, and backpacking. With a GPS receiver, a hunter or fisherman can get back to their favorite unit or fishing hole, while a hiker has the ability to backtrack out of an unfamiliar area. Of course, search and rescue uses GPS to find outdoorsmen who have gotten lost in the woods. However, that doesn't mean that a GPS will save you every time you need it. Like all other technology these days, GPS receivers have been known to fail and most survival experts will recommend that you use GPS as a supplemental gear when you venture into the woods.

For the avid exerciser, a GPS can provide a way of recording your workout. Some GPS models will record how far you have biked or jogged so you can compare workouts from one day to the next. One website of particular interest to this type of person is www.endlesspursuits.com. It allows a GPS user to upload data to the endless pursuit's website and moni-

(Continued on page 4)

GPS@Home (Part 3 of 3): GPS Uses

(Continued from page 3)
 tor their workouts. It will map out your route on a topography map and give you an entire schematic about your workout, including how many calories you have burned, etc.

Other GPS users are finding their GPS receiver adds a new twist to the classic game of hide and seek.

Www.geocaching.com is a place where people can go to get the coordinates of millions of "caches" (a cach, in this case, varies from a small can to a five gallon bucket) and then attempt to locate them. For example, the official Forks geocache is located at N 47° 55.930 W 124° 23.550. Anyone with a GPS can record or mark these coordinates and navigate back to them. When they reach these coordinates, they are rewarded with the chance to fill out a logbook and to take a small prize for there success. The caches operate on the "take a penny leave a penny concept," so if you take something from a cache, it is a courtesy to leave something for the next person to find.

The uses of global positioning devices are still being discovered and in the future many more activities will be available for the every day user. The Internet provides a wealth of information about GPS, and I am sure that many readers of this article know of other web sites that allow them to take advantage of their GPS. Listed below are all of the places that I have visited to gather information on Global Positioning Sys-

tems and the activities that you can do with them. All of these sites deserve credit in the time they spent to make their data available to the public and, without the combined knowledge of all of these sites, this article would not have been possible. I hope



GPS Class Instructor Eric Sfetku

you have enjoyed these articles, and you have a great time using your GPS.

REFERENCES

Spaceflight Now | Delta Launch Report | GPS animation
http://spaceflightnow.com/delta/d278/000421gpsanim_qt.html

Overview of GPS
<http://www.geog.okstate.edu/gpstools/overview.htm>

Comparison of Positions With and Without Selective Availability
<http://www.jennifer.mehaffey.com/uscg.html>

Interagency GPS Executive Board

(IGEB)
<http://www.igeb.gov/sa/diagram.shtml>

GLONASS / GPS Comparison
http://www.oso.chalmers.se/~geo/gg_comp.html

GPS Current Satellites Homepage (main)
<http://gps.losangeles.af.mil/space/current-sats/index.htm>

Timation
<http://www.astronautix.com/craft/timation.htm>

NAVSTAR GPS - Logs/Manifests
http://www.spaceandtech.com/spacedata/constellations/navstar-gps_conlogfest.shtml

Launch Vehicles
<http://zebu.uoregon.edu/~js/space/lectures/lec19.html>

Howstuffworks "How Atomic Clocks Work"
<http://www.howstuffworks.com/atomic-clock.htm>

Howstuffworks "How GPS Receivers Work"
<http://electronics.howstuffworks.com/gps.htm>

Goecaching - The Official GPS Cache Hunt Site
www.geocaching.com

EndlessPursuit - Measure, Track, and Improve Your Fitness Performance
<http://www.endlesspursuit.com/DesktopPageControl.aspx>