



UNIVERSITY *of* WASHINGTON

School of Forest Resources

RESEARCH NEWSLETTER ISSUE ONE, VOLUME 4

January 20, 2010

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NEWS –

TOP NEWS ITEM – probable change in deadlines: After a 2-day deadline was missed recently when the Dean's office was unable to get to it in time (admittedly, it didn't go to them until 6:30 the evening before), we can expect a new layer of deadlines in connection with the GIM19 deadlines. We won't know immediately, but plan on needing to allow at least a 2-day cushion on all submissions. That is, to meet the OSP 10-day deadline, we need to submit to the Dean's office 12 days ahead, the 5-day will be 7 and the 2-day 'drop-deadline' will be 4. A formal announcement should be made in the next few weeks, but it would be prudent to proceed as if this policy is already in place.

OTHER NEWS YOU CAN USE: Calculating annual salary increases: The budget module on SAGE uses a multiplier of 3% for salary increases. It was announced at a research administrators' meeting that the University, within a year or so, is going to require that the budget module be used for all submissions. This means we will not be able to use a different multiplier than is provided there (probably won't go back to 4% increases for a while anyhow). So as you plan for future spending, use 3% for salaries. If you have a budget template, check the formulas to make sure that the rate of increase is correct.

Temporary change in submission deadlines: Grants.gov will be down February 6-9th to complete a major upgrade to the system. OSP is asking for all submissions for that time period to be submitted in FINAL form no later than 5 days prior to the deadline (plus 2 days for the Dean's Office, so one full week prior to the deadline). Based on news at a university-wide grants administration meeting, it sounds as if the 5 day mark will become the new standard, so it would be a good idea to begin thinking in those terms, anyhow. (With the anticipated change in Dean's office requirements, think 7 days.)

Do you have NSF funding? If so, effective January 4, 2010, all labs with NSF funding must have a plan in place for training and oversight of responsible conduct of research for all grads, postdocs, and undergrads. The UW has responded with setting up an on-line system for training. It is unclear how soon students would have to complete this training, but—especially for anyone with ARRA funds, audits are quite likely—so soon seems like a good idea. In addition, this requirement may only apply to new awards, but how new is "new" is also unclear. The website below has more information and the training can be found here also:

<http://www.washington.edu/research/main.php?page=rcr>

THINGS THAT LOOK INTERESTING IN THE COMING YEAR (BY DATE):

EPA: Puget Sound Scientific Studies and Technical Investigations Assistance (informal Notice of Intent **1/29/2010**; preliminary application **3/2/2010**; final proposal 5/15/2010). The solicitation encourages multifaceted applications that support identification and achievement of priority environmental outcomes including but not limited to:

- Protecting and restoring water quality in shellfish growing areas.
- Remediating contaminated sites or preventing sources of toxic pollution.
- Restoring or protecting important wetland, floodplain and nearshore habitats.
- Reducing nutrient loads to both freshwaters and sensitive marine waters.

See <http://yosemite.epa.gov/R10/ECOCOMM.NSF/Puget+Sound/ps10fsscitec>.

European Union funding opportunities for US scholars and universities (not a call for proposals, but of interest to those interested in international opportunities). Laurent Bouchereau, from the European Union Delegation to the United States, will visit campus **February 11, 2010**. He and a colleague will provide information about EU funding sources for US scholars and universities.

The EU Delegation has published a brochure ("European Research and Education Programs: A resource for researchers, scholars, and institutions in the USA") outlining a variety of funding opportunities – in a wide number of fields. The brochure in full: <http://www.eurunion.org/Ed&RsrchProgsBklt2008.pdf>; lots of interesting stuff there.

Royalty Research Fund: Proposals for the Spring 2010 round of the Royalty Research Fund (RRF) are due on Monday, March 1, by 5:00 PM. As in the last round, these will have to be routed through OSP, using the eGC1 process and should be routed through the SFR grants office. The usual GIM 19 deadlines must be met, so the ready-to-submit proposal must be routed for approvals and received in OSP by no later than 12:00 noon on **February 25**.

Environmental Security Technology Certification Program (ESTCP)

The Department of Defense (DoD), through the **Environmental Security Technology Certification Program (ESTCP)**, is seeking innovative environmental and energy technology demonstrations as candidates for funding. This solicitation requests pre-proposals via Calls for Proposals to DoD organizations and Federal (Non-DoD) organizations, and via a Broad Agency Announcement (BAA) for Private Sector organizations. **PRE-PROPOSALS ARE DUE BY THURSDAY, MARCH 4, 2010**. If interested, consider attending an online seminar "**ESTCP Funding Opportunities**" on **January 15, 2009, 1:00-2:00 PM EST**. This "how to play" briefing will offer valuable information for those who are interested in new funding opportunities within ESTCP. During the online seminar, participants may ask general questions about the funding process, submitting proposals, and the current ESTCP solicitation. **Pre-registration for this webinar is required**. To register, visit www.estcp.org/webinar-registration.cfm. Detailed instructions for DoD, Non-DoD Federal, and BAA proposers are available on the ESTCP web site at www.estcp.org/opportunities.

Agriculture and Food Research Initiative - Rural Development

This program will be offered in alternate years and is accepting applications for the first time in FY 2010. The Rural Development Program will focus on developing sustainable rural communities through integrated projects focused on enhancing economic vitality of rural communities and reduce rural poverty; protecting and enhancing economic growth and the natural resource base of rural areas by developing strategies that reduce the competition between economic growth and the environment; and building a diversified workforce to meet the needs of the present and for the future. The closing date is **September 30, 2010**; see <http://www.nifa.usda.gov/fo/ruraldevelopmentafri.cfm?pg=2>.

PROPOSALS FUNDED

Application Number: A53644

PI: Sarah Reichard

Title: **BLM Ex Situ Seed Conservation**

Agency: Bureau of Land Management (BLM)

Period: 08/3/09 - 12/30/10

Amount: \$13,000

Washington Rare Plant Care and Conservation will provide curation services to the Bureau of Land Management for seeds of rare plant species held for BLM in the Miller Seed Vault. Rare Care will also collect seeds from rare plant populations located on BLM land in Washington. Seeds will be stored in Miller Seed Vault for BLM for future use in research and restoration projects.

Application Number: A54676

PI: David Briggs

Title: **Stand Management Coop**

Agency: Forest Capital Partners, LLC

Period: 1/1/10 - 12/31/10

Amount: \$13,938

Supplement and Extension

Application Number: A54735

PI: David Briggs

Title: **Stand Management Coop**

Agency: Port Blakely Tree Farms, LP

Period: 1/1/10 - 12/31/10

Amount: \$13,892

Supplement and Extension

Application Number: A54738

PI: David Briggs

Title: **Stand Management Coop**

Agency: Weyerhaeuser Company

Period: 1/1/10 - 12/31/10

Amount: \$63,614

Supplement and Extension

Application Number: A54799

PI: John Calhoun

Co-PI: Eric Turnblom

Title: **WA North Olympic Peninsula feedstock study**

Agency: Washington State University (WSU)

Period: 10/31/09 - 12/31/10
Amount: \$50,000

The UW Olympic Natural Resources Center proposed to provide an assessment of woody biomass available on the North Olympic Peninsula of a quality that may support business investments by expanding the scope, and modifying slightly two research projects that are already funded but not yet underway. We define investment grade as predictions of biomass availability +/- 15% of mean with 85% accuracy. The two projects are Data Gathering for Updated Logging Residue Ratios, Principle Investigator; Prof. Eric Turnblom, UW School of Forest Resources, College of the Environment and Logging Supply Curves for a Forks Centroid, Principle Investigator; John Calhoun, Director, UW Olympic Natural Resources Center. In order to establish investment grade feedstock supply data for the North Olympic Peninsula, these projects will be expanded in scope and a more robust data collection and analysis process will be employed. Short project descriptions, including secured budgets for the two projects are attached.

Application Number: A55035
PI: David Briggs
Title: **Stand Management Coop**
Agency: West Fork Timber Company, LLC
Period: 1/1/10 - 12/31/10
Amount: \$6,405
Supplement and Extension

Application Number: A55063
PI: Luke Rogers
Title: **DOH Parcel Database Development Phase II**
Agency: Washington State Department of Health
Period: 1/4/10 - 12/31/10
Amount: \$120,000
Supplement and Extension

Application Number: A55066
PI: Richard Gustafson
Title: **USA Pulp Processing**
Agency: US Department of Agriculture (USDA)
Period: 12/1/09 - 8/31/10
Amount: \$8,000
This research support agreement is to clean and screen and process 1000 pounds of biomass.

Application Number: A55092
PI: David Briggs
Title: **Stand Management Coop**
Agency: Plum Creek Timber Company
Period: 1/1/10 - 12/31/10
Amount: \$22,142
Supplement and Extension

PROPOSALS SUBMITTED

Application Number: A54630
PI: Jonathon Bakker
Title: **Prairie Habitat Restoration for Endangered Species**
Agency: US Fish and Wildlife Service (FWS)
Period: 07/1/10 - 6/30/11
Amount: \$80,000
Competing Supplement

Application Number: A54689
PI: Aaron Wirsing
Title: **Recovering lynx in north-central Washington**
Agency: US Fish and Wildlife Service (FWS)
Period: 6/1/10 - 6/1/12
Amount: \$145,796

Ongoing habitat loss is an immediate and serious threat to lynx population persistence in north-central Washington. Thus, management actions that reverse this trend are absolutely critical to lynx conservation in this region and throughout the distribution of this imperiled predator in the continental United States. Debate continues about the characteristics of ideal lynx habitat, but there is consensus that high-quality lynx habitat must offer an abundant supply of snowshoe hares (Murray et al. 2008). Accordingly, our primary goal is to model snowshoe hare availability to lynx in north-central Washington based on boreal forest stand features. We will accomplish this goal by taking the unprecedented step of equipping individual hares on six study sites on the Loomis State Forest with mortality-sensitive GPS collars that will allow us to identify forest stand features that hares select and that are associated with lynx hunting success at a fine spatial scale. Stand features that promote heavy use by hares without rendering them inaccessible to lynx will be considered to be indicators of high hare availability rather than mere presence, an important distinction given that forest patches where hares are present but inaccessible would not be expected to support many lynx. Having identified these features, we should then be able to devise a boreal forest management strategy that best promotes snowshoe hare abundance and, as a result, lynx population viability. Without an understanding of the forest features that promote prey availability for lynx, on the other hand, preservation of this carnivore in Washington will be impossible and declines will likely continue.

Application Number: A54714
PI: Soo-hyung Kim
Co-PI: Joshua Lawler
Title: **Assessing the Impacts of Climate Change on Urban Forests in the Puget Sound region**
Agency: Cascade Land Conservancy
Period: 1/1/10 - 12/31/11
Amount: \$64,000

Climate change can create both challenges and opportunities for sustaining urban forests. Little research has been done to guide decisions on how to best manage urban forests while adapting for changes in future climate. We propose to develop tools for assessing the impacts of climate change on urban forests in the Puget Sound region. The tools which will include bioclimatic envelope models of target species to predict their range shift will be used to evaluate vulnerabilities and opportunities associated with developing conservation strategies and restoration priorities in the region's urban forests in a changing climate.

Application Number: A54723
Co-PI: Sharon Doty
Title: **IDR: Advanced tools for sampling, sensing, and separating useful bioenergy endophytes**
Agency: National Science Foundation (NSF)
Period: 5/1/10 - 4/30/13
Amount: \$899,770

Plant endophytes are microbes (fungi and bacteria, mostly) that grow within the tissues of plants. Endophyte populations have barely been explored, though several have been discovered that can efficiently utilize lignocellulosic sources for the production of diesel-like compounds, ethanol, and other value-added products. We describe a research program aimed at developing high throughput microfluidic tools and high sensitivity sensing needed to rapidly evaluate thousands of endophytes for interesting bioenergy phenotypes. This single cell platform will also be useful for identifying difficult-to-culture cells that are normally ignored by traditional bench-top microbiology.

Application Number: A54926
PI: Aaron Wirsing
Title: **Collaborative Research: Does Anti-predator Behavior Modify Indirect Effects of Top Predators?**
Agency: National Science Foundation (NSF)
Period: 10/1/10 - 9/30/14
Amount: \$772,854

A recent review reveals that spatial responses to predators can vary with prey escape mode. By implication, predators could exert multiple and spatially opposing indirect effects on species serving as food for prey that are mediated by divergent spatial shifts of sympatric prey species with different means of escape. No study to date has

explored this intriguing possibility. Accordingly, we propose to test whether recolonizing gray wolves (*Canis lupus*) in the Methow Valley of north-central Washington State, USA exert contrasting indirect effects on plants by inducing divergent winter habitat shifts by two sympatric herbivores – mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*) – with different escape tactics. Mule deer escape predators by stotting, a tactic that ostensibly provides an advantage against coursing predators over rugged terrain. In contrast, white-tailed deer escape predators with sprints that are most effective on gentle terrain with few obstacles. Thus, we predict that mule deer exposed to wolves will shift to, and forage more heavily in, shrub-steppe habitats where the terrain is broken, whereas white-tailed deer should shift to riparian habitats where the terrain is gentle. As a result, we expect that wolves will indirectly shelter plants growing in shrub-steppe habitats from white-tailed deer herbivory while exposing them to increased pressure from mule deer, and that these top predators will exert the opposite indirect effect in riparian habitats.

Application Number: A55003

PI: Jonathan Bakker

Title: **Grazing and Afforestation Effects on Understory Community Composition and Diversity in Uruguayan Grasslands**

Agency: Weyerhaeuser Company

Period: 5/1/09 - 4/30/12

Amount: \$20,000

Supplement and Extension

Application Number: A55039

PI: David Briggs

Title: **Stand Management Coop**

Agency: Quinault Indian Nation

Period: 1/1/10 - 12/31/10

Amount: \$6,710

Supplement and Extension

Application Number: A55123

PI: Sarah Reichard

Title: **Shrub Steppe/Sage-Grouse Habitat Restoration**

Agency: Bureau of Land Management (BLM)

Period: 2/1/10 - 1/31/12

Amount: \$85,000

The objective of this project is to contribute field and lab information on restoration techniques and research that leads to more successful restoration projects and an increased availability of restoration materials crucial to the restoration of shrub-steppe habitat that support threatened/endangered (T/E) species on public lands. Under this project, we will investigate and evaluate selected sites for restoration and conservation priorities, collect field data from existing restoration sites, and research and summarize state-of-the-art restoration techniques that can be applied to current restoration problems. We will also investigate selected species through lab and greenhouse research to develop protocols for development of these species for restoration materials including seed production.

Application Number: A55148

PI: Jerry Franklin

Title: **Yosemite Forest Dynamics Plot**

Agency: Smithsonian Tropical Research Institute (STRI)

Period: 1/1/10 - 12/31/11

Amount: \$38,077

Supplement and Extension

Application Number: A55236

PI: James Fridley

Title: **Collaborative Research: Designing Communication Interfaces that Stimulate Science Problem-solving and Learning**

Agency: National Science Foundation (NSF)

Period: 10/1/10 - 9/30/15

Amount: \$1,177,988

Communication mediates thinking and learning, therefore high-quality educational interfaces ideally should be a rich communications interfaces. To be compatible with constructionist theory, educational interfaces need to facilitate students' own engagement, communication, and problem-solving activities? including increasing their communicative activity in a way that directly stimulates thought. The proposed project will conduct ground-breaking research on the design of digital communications tools that provide broad and flexible coverage of different representation systems, especially nonlinguistic ones (symbolic, numeric, diagrammatic, informal marking), which can substantially facilitate students' ideational fluency, problem solving, and learning in science. Guided by Activity and Affordance theories, project research also will uncover the underlying cognitive mechanisms involved during interface facilitation of science schema acquisition. This project will challenge our fundamental assumptions about the adequacy of existing graphical interfaces to successfully support our nation's future educational objectives. The proposed five-year project will prototype and investigate the impact of educational interfaces with more expressive input capabilities, including digital pen and multimodal interfaces, which are designed: (1) to facilitate students' ability to learn and transfer science knowledge across formal classroom and informal field contexts, and (2) to scaffold science schema formation in low-achieving, culturally diverse (e.g., Native American), and disabled students (e.g., deaf). Research will include longitudinal studies that evaluate how students adapt their use of new digital tools over extended time periods, including co-emergent change in communication patterns and ability to conceptualize and solve science problems. It also will track change in students' ability to solve problems and learn both procedural and domain knowledge over time, including evaluating the extremes of high- versus low-performing students and change in the achievement gap due different interfaces. In addition, project research will: (3) design new collaborative multimodal interfaces that incorporate pen input, and examine their impact on students' ideational fluency and problem-solving performance while working in small groups. During this five-year project, new prototypes will be developed and tested that involve combining digital pen and multimodal input with emerging educational platforms (e.g., digital books, collaborative tables) and science simulations for situated learning. To support these efforts, the project involves collaboration among a multidisciplinary team of educators, computer scientists, and basic scientists. It represents a partnership between Incaa Designs, a nonprofit research institution, University of Washington, Northwest Indian College, international partners at National ICT Australia, DFKI in Germany, ETH in Switzerland, the University of Victoria, and corporate partners FXPAL and Nokia. With respect to broader societal impact, this transformational research will advance the design of new educational interfaces that stimulate students' ideational fluency and problem-solving abilities in science. It will contribute to new learning theories, guide more effective interventions for scaffolding science learning in low-performing students, and improve our understanding of technology's influence on the achievement gap. New interfaces prototyped on this project will support visual language and mnemonic functioning in deaf students, and nonlinguistic and bilingual communication by Native Americans who need to communicate unique native science concepts using their heritage language. More generally, this project will promote the country's worldwide leadership in educational interfaces, improve science education in students worldwide, and have an impact on changing the interface in future commercially-available computing. With respect to human resources, this project will provide multidisciplinary training for diverse students and early career scientists in the consequential and growing field of educational technology, and teach them leadership skills in designing new interfaces that promote social equity for underserved and disabled students. Project results will be disseminated broadly through workshops for professional educators and academics, publications and journal special issues, and the project's website.

Application Number: A54246

PI: Soo-hyung Kim

Title: **Interactions of Phytophthora disease, Salinity, and Host Physiology in Red Maple (*Acer rubrum*)**

Agency: Washington State Department of Agriculture (WSDA)

Period: 7/1/10 - 6/30/12

Amount: \$26,500

The purpose of this research is to investigate the effects of saline irrigation on the infection and disease progression of common *Phytophthora* pathogens in red maple, a common nursery tree species. As the need for conservation of fresh water increases, the use of recycled and/or reclaimed water for irrigation of nursery crops has become commonplace. On the other hand, recycled or reclaimed water often has the salinity level that may be less than optimal for nursery plants. However, much is unknown about the effects of salinity of the irrigation water – that is recycled or reclaimed – on susceptibility of common nursery plants to diseases. In this research, we aim to test if the infection rate and severity of disease caused by *Phytophthora* spp. (*P.cinnamomi* and *P.cactorum*) are exacerbated in red maple (*Acer rubrum*) when irrigated with saline water. Using salinity levels typical of recycled irrigation water, we will also investigate whether and how the latent root infections progress to stem lesions following a period of physiological stress. While it is well established that salinity stress predisposes many plants to root infection by *Phytophthora* spp., little research exists regarding the possibility of latent or minor root infections progressing into stem lesions following drought or salinity stress in tree species. This could have major implications for our understanding of the disease dynamics of canker-causing species of *Phytophthora* in the nursery and managed landscapes. This in turn will aide in creating management strategies for important diseases such as Sudden oak death, as well as *Phytophthora* canker of beech, maple and oak, among many others.

Application Number: A55279

PI: Jonathan Bakker

Title: **Using plant traits to predict community dynamics and ecosystem functions**

Agency: National Science Foundation (NSF)

Period: 9/16/10 - 9/15/13

Amount: \$619,097

Ecological theory indicates that plant functional traits control ecosystem function and vegetation dynamics, but our predictive capabilities are limited at present. Plant ecology to date has focused on taxonomically-derived characterizations (individual species, life forms), though we have surprisingly little information about the actual functional traits of most species in spite of this attention. For example, we do not adequately understand how strongly traits vary within and among species, particularly for species of limited current economic value. This project will analyze a regional species pool from the perspective of plant functional traits, using western Washington grasslands as our model system. Our objectives are to 1) understand intra- and inter-specific variation in functional traits, 2) explore the consequences of functional traits on several ecosystem functions, and 3) experimentally assess the utility of a functional approach in predicting species invasiveness and community invasibility. The results of this work will enhance our understanding of how plant traits affect ecosystem function, improve our ability to predict the effects of plant traits on vegetation dynamics, and complement our understanding of this system and these species (some of which are endemic while others are distributed globally). This knowledge may be particularly helpful as we conceptualize and predict the consequences of climate change on plant communities and the ecosystem functions they provide.

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PI: Sarah Reichard

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