



UNIVERSITY *of* WASHINGTON

School of Forest Resources

RESEARCH NEWSLETTER ISSUE TWO, VOLUME 6

NEWS & INFORMATION Page 1

SAGE Budget Module upgraded; Guidelines on F & A rate variances

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News and Information

Sage Budget Module: Although the SAGE Budget Module doesn't work for all situations, it is a useful tool for planning and can be used for many situations, without necessarily being applied to a grant application. For example, it can be used to easily pull correct salary rates and benefits for everyone working in a research group, even if they are from different units and without referring to the payroll system or looking up rates elsewhere. And effective now, SAGE Budget can calculate F&A rates that change from one year to the next and apply the appropriate rate to each period of your budget. The system uses the start date for each of your budget periods to determine the F&A rate to apply to that period. (In the past, SAGE Budget has applied a single F&A rate uniformly across all budget periods.)

One of the advantages to using the Budget Module is that multiple people can view it from their own computers (no need to send the latest versions back & forth), and the one who creates it can control whether the viewers can view only, or view and modify. It is a tool that invites productive collaborator work.

A Few Tips:

- If you are actively working on a budget proposal in SAGE Budget, and you want to ensure that the latest F&A rates are accurately applied, go to the F&A tab of your budget, and click **Refresh Rate**. Please note that this will delete any custom F&A rates that you have created.
- You can view the F&A rate applied to each of your budget periods by clicking **View F&A rate for each period** from the F&A tab of SAGE Budget.
- If you change the start date for one or more of your budget periods, SAGE Budget will automatically recalculate the F&A rates for your parent and sub-budgets.

For detailed information about this release, see [F&A Release Notes](#). If you are interested in a brief (that's really all that's needed) orientation for you and/or your research group, contact Sally Morgan.

Facilities & Administration charges (aka indirect costs): The message below was recently received from OSP in response to a proposed project that was a subcontract and was being offered to the University at a substantially reduced indirect cost rate. Our OSP analyst offered this explanation of how the policy works (names have been removed to protect the innocent). I would like to specifically call your attention to the final paragraph. In the case in point, the PI had agreed to a rate without consultation with OSP. Because it is a small grant, OSP was willing to entertain a request for waiver of F & A, but no PI should expect that such requests will routinely be granted. Increasingly, it appears that they will not be.

“When the prime sponsor is Federal, and this funding flows down to UW from the prime recipient, the Federal sponsor's rate is the one to which we are entitled. Any other rate set by the prime recipient is not applicable on a flow-through award.

When our prime sponsor is a non-profit organization and has a published rate that is applied across all grants in a given category, UW will accept that published rate.

Only OSP is authorized to negotiate or accept an F&A rate in discussion with the sponsor, not the PI and not the School. When the budget and rate are determined beforehand and then the award arrives at OSP, we request the full allowed F&A. In the above-referenced case, we have asked the School to submit to the Director of OSP an F&A waiver request, in favor of the F&A rate offered to us by the prime recipient. The latter is an exception. As a rule, UW will require the full F&A to which we have a right.”

The link to the UW F&A policy is <http://www.washington.edu/research/osp/gim/gim13.html> .

Proposals

Application Number: A65198

Faculty Member: Stanley Asah

Role: Principal Investigator

Title: **Family Forest Owners and Bioenergy: Anticipating the Diffusion and Adoption of Sustainable Biofuels Production**

Agency: UW Royalty Research Fund

Period: 6/15/2011 - 12/31/2012

Amount: \$28,450

New

Alternative cleaner sources of energy are vital to climate change mitigation and adaptation. Washington State is well placed to gain from the emerging and promising bioenergy economy as the state leads ongoing scientific and technological developments for biofuels. To avoid the failures of the bio-ethanol industry, the biofuels sector need prompt and adequate supply of feedstock. Despite the state's abundant forests, most are in the public domain, managed for competing uses and to reflect varied public demands. The short-term success of a biofuels economy in Washington strongly depends on feedstock supplements from private and family forests. Yet, we know very little about what may motivate and/or constraint, and to what extent, family forest production of feedstock. This study aims to assess family forest owners' values, knowledge, perceptions, and attitudes towards feedstock production and biofuels in general, and how these factors constitute and explain owners' motivations and constraints to feedstock production. Interviews, surveys and multivariate statistics will be used to identify factors that influence, and to what extents, feedstock production by family forest owners. The findings will be used to inform ongoing scientific and technological developments as well as efforts to encourage the diffusion and adoption of sustainable feedstock production. The need to shun inadequate feedstock supplies as a constraint to the promise of a vibrant bioenergy economy in the state necessitates this study.

Application Number: A65557

Faculty Member: Stanley Asah

Faculty Member: Joshua Lawler

Role: Principal Investigator

Role: Co-Investigator

Title: DRRC: Vulnerability to Climate-Induced Droughts: Eco-Behavioral Determinants for Rural Agricultural Communities in the Walla Walla River Valley

Agency: National Science Foundation

Period: 10/1/2011 - 9/30/2014

Amount: \$393,993

New

Climate change poses an immense challenge to agricultural communities in the form of long-term change punctuated with increasingly frequent extreme events and natural disasters. Although rural communities are generally expected to be relatively more vulnerable to climate change, until fairly recently, most natural disaster resilience efforts had been focused on urban communities. We will focus on rural agricultural communities and their capacity to maintain fundamental agriculture-dependent livelihood strategies if and when faced with extreme natural events. Specifically, we propose to assess the vulnerability to drought of rural agricultural communities in the Walla Walla River Valley in southeastern Washington. The major goal is to use case studies of a range of rural agricultural communities to develop qualitatively explained quantitative behavioral determinants of vulnerability to varied scenarios of climate-induced droughts. We intend to meet this goal by: (i) Identifying specific behaviors of farmers for various types of social-agricultural arrangements and determine the impact-probability areas for each behavior; (ii) Develop modeled scenarios of drought and pair each scenario with the impact-probability areas for each behavior to establish aggregate determinants of vulnerability; (iii) Assess farmers' perceptions and attitudes towards risks associated with drought events, local knowledge about drought mitigation behaviors and practices, perceptions and attitudes towards

existing technological and policy interventions, perceptions and attitudes towards institutional arrangements influencing agricultural practices, particularly water use and conservation. Disaster managers could benefit from knowledge about on-the-ground behaviors to minimise vulnerability to drought. The final report will contain a pilot social marketing plan for disaster planners and managers to use in efforts to enhance local self-organization towards minimizing vulnerabilities.

Application Number: A64938
Faculty Member: Gordon Bradley
Role: Principal Investigator
Title: **Seeking Clarity in the Provision of Ecosystem Services**
Agency: UW Royalty Research Fund
Period: 9/16/2011 - 12/31/2012
Amount: \$39,244
New

The successful provision of a comprehensive set of ecosystem services depends on the collective action of numerous natural resource land owners; many of whom have different land management objectives. Also critical to the provision of ecosystem services is an understanding of the importance of those services and their value by the public -- including a sense of what ecosystem services are, how they are produced on the landscape, and what their value is to society. While natural resource experts and academicians may have a general shared understanding of ecosystem services, there is limited research on whether and how land use decision makers and the general public themselves actually think about ecosystem services. This lack of understanding makes it difficult to design effective ecosystem services decision making frameworks and begs the question of what (and how) ecosystem services should be communicated to the public. The proposed study begins to address this knowledge gap by exploring how different landowners (including public, private, non-profits and tribes) and the public conceptualize and value ecosystem services. Study results will increase our understanding of the current role of ecosystem services in forest land management and will provide insights into strategies for communicating about ecosystem services and encouraging an ecosystem service approach to land management.

Application Number: A64588
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Quinault Indian Nation
Period: 1/1/2011 - 12/31/2011
Amount: \$7,968
Supplement and Extension

2011 membership dues to Stand Management Coop from Quinault Indian Nation

Application Number: A64772
Faculty Member: David Briggs

Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Olympic Resource Management (ORM)
Period: 1/1/2011 - 12/31/2011
Amount: \$17,698
Supplement and Extension

2011 Membership dues to Stand Management Coop from Olympic Resource Mgmt

Application Number: A64773
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: West Fork Timber Company, LLC
Period: 1/1/2011 - 12/31/2011
Amount: \$7,606
Supplement and Extension

Membership dues for 2011 from the West Fork Timber Co. to the Stand Management Coop.

Application Number: A64774
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Stimson Lumber Company
Period: 1/1/2011 - 12/31/2011
Amount: \$17,523
Supplement and Extension

2011 Membership Dues to Stand Management Coop by Stimson Lumber Co.

Application Number: A64871
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Hancock Forest Management
Period: 1/1/2011 - 12/31/2011
Amount: \$29,721
Supplement and Extension

2011 Membership Dues from Hancock Forest Mgmt to Stand Mgmt Coop

Application Number: A64924

Faculty Member: David Briggs
Role: Principal Investigator

Faculty Member: Monika Moskal
Role: Co-Investigator

Title: **REU: Terrestrial LiDAR Dynamic Monitoring of Leaf Area Index (LAI) Change in Intensely Managed Forest Types of the Pacific Northwest**

Agency: National Science Foundation

Period: 3/1/2011 - 2/29/2012

Amount: \$8,331

Competing Supplement

The University of Washington is a member of the Center for Advanced Forestry Systems (CAFS), a National Science Foundation Industry/University Cooperative Research Center (NSF I/UCRC), along with North Carolina State University, Virginia Polytech Institute and State University, Purdue University, Oregon State University, the University of Georgia, and the University of Maine. The mission of CAFS is to optimize genetic and silviculture systems to produce high-quality raw materials for existing and developing wood based industries. One of the current UW CAFS projects is 'Remote Sensing for Measuring and Monitoring the Response of Plantations to Intensive Management', focusing on utilizing active remote sensing, LiDAR, on terrestrial, aerial and satellite platforms to monitor growth response of genetic and nutrient enriched sites established by the Stand Management Cooperative. The undergraduate research funded by this proposal will be a further expansion of the research questions explored by the above mentioned project by focusing on monitoring individual tree parameters captured with terrestrial LiDAR. The student will georeference all tree locations within the study with a survey grade GPS (sub cm positional accuracy) connected to a mobile GIS hardware. The geospatial location of the trees and the parameters extracted from the terrestrial LiDAR point cloud will allow us to assess per tree changes in projected LAI (pLAI) at a diurnal temporal scale and to compare that diurnal variability of pLAI to monthly changes we capture over a span of 6 months as well as between site comparisons. Moreover the spatial locations of the trees will become part of a database applicable for future projects and research and will facilitate spatial statistical analysis to capture within plot variability in pLAI.

Application Number: A65091

Faculty Member: David Briggs

Role: Principal Investigator

Title: **Stand Management Coop**

Agency: Longview Timberlands, LLC

Period: 1/1/2011 - 12/31/2011

Amount: \$33,839

Supplement and Extension

Stand Management Coop Membership Dues for Longview Timberlands for 2011.

Application Number: A65092

Faculty Member: David Briggs

Role: Principal Investigator

Title: **Stand Management Coop**

Agency: Plum Creek Timber Company

Period: 1/1/2011 - 12/31/2011

Amount: \$26,294

Supplement and Extension

2011 Membership dues to Stand Management Coop from Plum Creek Timber Company.

Application Number: A65169

Faculty Member: David Briggs

Role: Principal Investigator

Title: **REU: Terrestrial LiDAR Dynamic Monitoring of Leaf Area Index (LAI) Change in Intensely Managed Forest Types of the Pacific Northwest**

Agency: National Science Foundation

Period: 3/1/2011 - 2/28/2012

Amount: \$8,331

Supplement and Extension

The University of Washington is a member of the Center for Advanced Forestry Systems (CAFS), a National Science Foundation Industry/University Cooperative Research Center (NSF I/UCRC), along with North Carolina State University, Virginia Polytech Institute and State University, Purdue University, Oregon State University, the University of Georgia, and the University of Maine. The mission of CAFS is to optimize genetic and silviculture systems to produce high-quality raw materials for existing and developing wood based industries. The funding will be used to support and undergraduate student who will collect a periodic scan using terrestrial LiDAR (hourly) to monitor temporal changes in plot level LAI to demonstrate nutrient treatment and genetics in intense forest management installations established by the UW Stand Management Cooperative (SMC). The student will specifically explore short term changes in LAI to establish our algorithm's sensitivity to the inherent variability of this measure due external factors such as wind. The results produced by the undergraduate student will allow us to better understand the various change factors that need to be quantified for efficient dynamic change monitoring of LAI.

Application Number: A65252

Faculty Member: David Briggs

Role: Principal Investigator

Title: **Stand Management Cooperative**

Agency: Oregon Department of Forestry

Period: 1/1/2011 - 12/31/2011

Amount: \$27,517

Supplement and Extension

2011 Membership Dues to Stand Management Coop from Oregon Department of Forestry, State of Oregon.

Application Number: A65453

Faculty Member: David Briggs

Role: Principal Investigator
Title: **Stand Management Coop**
Agency: International Forestry Consultants, Inc.
Period: 1/1/2011 - 12/31/2011
Amount: \$7,234
Supplement and Extension

2011 Membership dues payment to Stand Management Coop from International Forestry Consultants, Inc.

Application Number: A65468
Faculty Member: Sally Brown
Role: Principal Investigator
Title: **Use of Reclaimed Water for Wetland and Watershed Enhancement**
Agency: National Science Foundation
Period: 10/1/2011 - 9/30/2013
Amount: \$199,835
New

Faculty Member: Susan Bolton
Role: Co-Investigator

Urbanization has resulted in reduced fresh water availability for urban watersheds as a consequence of increased impermeable surfaces, combined sewer systems, and the common practice of direct wastewater effluent into surface waters. Reclaimed water from these same systems can be used to supplement flows into watersheds indirectly through subsurface flow and wetland enhancement. However, the safety of this practice is currently not fully understood. As a result of uncertainties, regulations governing ecological use of reclaimed water and public acceptance of this practice effectively restrict this potential beneficial use. The work is proposed in cooperation with the King County Wastewater Treatment division. The PI on this proposal has been working with the King County Wastewater division to test the risks and benefits associated with beneficial use of reclaimed water as part of the development of a comprehensive plan for reclaimed water use in the County. As part of this effort, potential ecological demands for reclaimed water have been evaluated. Research has shown that a number of watersheds in the County have sufficiently reduced flow as to endanger habitat. Total flow into Puget Sound from rivers and streams has decreased from 13-18% over a 50 year period that was also characterized by rapid urban growth.

The objectives of the proposed study are to examine the safety of reclaimed water use as an enhancement of flow to an existing wetland.

Application Number: A65387
Faculty Member: Sharon Doty
Role: Principal Investigator
Title: **Enhanced Phytoremediation Using Endophytes**
Agency: National Science Foundation
Period: 9/1/2011 - 8/31/2014
Amount: \$298,829
Competing Renewal

Our goals for the first phase of this NSF-funded project were to compare a variety of poplar and willow lines for TCE toxicity, uptake, and degradation, to isolate endophytic bacteria capable of degrading TCE, and to determine if phytoremediation of TCE can be improved by combining the best performing poplar and willow lines with the endophytic bacteria. These goals were met, as we identified a range of plant abilities to degrade TCE, we isolated an endophyte that can aerobically degrade TCE, and we confirmed that inoculation of the plants with this endophyte significantly improved phytoremediation capability. In addition, we have isolated endophytic bacteria capable of utilizing PAHs as a sole carbon source. When poplar was inoculated with this strain, there was a reduction in the PAH phytotoxicity compared to the uninoculated control plants. In this renewal application, we propose to begin field testing of these promising plant-microbe partnerships. Controlled field studies will be conducted at TCE and PAH contaminated sites in the Pacific Northwest, and TCE and PAH removal and degradation will be monitored and compared between inoculated and uninoculated poplar and willow.

Application Number: A65299

Faculty Member: James Fridley

Role: Principal Investigator

Title: **Ecological Engineering for Rehabilitation of Surface Coal Mines: Characterizing Hydraulic Properties of Post-Mining Soils**

Agency: National Science Foundation

Period: 10/1/2010 - 9/30/2013

Amount: \$265,580

New

Faculty Member: Kern Ewing

Role: Co-Investigator

Coal remains a primary energy source in the United States where it provides about 45% of the electricity generated and used. Opencast mining is a frequently used surface coal mining type in western and mid-continent U.S. With this approach the earth material that overlies a coal seam (overburden) is excavated and, consequently, devastating changes in nature are inflicted; natural ecosystems are quickly converted to barren wastelands. The coal mining industry must therefore rehabilitate open-cast mine lands and comply with strict federal and state regulations, e.g., the EPA National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act (CWA). This requires that hydrology and erosion modeled in order to properly design and evaluate post-mining restoration. Hydraulic properties of post-mining soils are thus crucial information for post-mining hydrology and erosion management yet reasonable means of estimating these soil properties are lacking. Consequently, current post-mining models are very possibly failing to reasonably predict water and sediment yield.

In this study, we propose to conduct two types of on-site simulations to determine hydraulic properties of post-mining soils: (1) rainfall simulation for hydraulic conductivity and interrill erodibility and (2) overland flow (runoff) simulation for rill erodibility and critical shear stress. Other important soil properties will also be measured, including bulk density, above ground biomass, organic matter content as well as vegetative information. The information is required for successful major post-mining restoration including: (a) mine spoil, (b) initial seeding (1-2 years after reclamation), (c) vegetation establishment (e.g., 5 years and over after reclamation), and (d) full revegetation. We will select for our study site an open-cast coal mine in eastern Montana, which is a primary coal mine region in the United States. The determined soil hydraulic property values will be immediately used for current post-mining hydrology and erosion modeling by regulatory authorities, consultants, and mining industry. With

reasonable soil hydraulic property values, the post-mining hydrology and erosion models will produce more reliable results; therefore, help designing and evaluating post-mining restoration.

Application Number: A65193

Faculty Member: Charles Halpern

Role: Principal Investigator

Title: **Effects of microclimatic stress on forest bryophytes: linking ecological responses to physiological traits**

Agency: Royalty Research Fund

Period: 6/15/2011 - 6/15/2012

Amount: \$37,366

Resubmission

Bryophytes (mosses and liverworts) contribute significantly to biological diversity, productivity, and ecosystem services of forests worldwide. However, their responses to environmental stress, and to stresses associated with forest management in particular, are poorly understood. It is commonly assumed that bryophytes respond to environmental changes as do vascular plants, yet basic aspects of the biology of bryophytes (induced dormancy) can result in very different responses to physiological stress. The objective of this study is to determine whether desiccation tolerance and related measures of physiological performance can explain responses of forest bryophytes to changes in understory microclimates associated with forest thinning. We propose three approaches to this problem: (1) use of chlorophyll fluorescence to measure photosynthetic efficiency (indicative of stress) among bryophyte species transplanted into contrasting understory environments (gaps, thinned forests, and undisturbed areas); (2) measurements of microclimatic conditions at each of these locations (direct and indirect light and seasonal patterns of temperature and humidity); and (3) desiccation trials, subjecting bryophyte species to different humidities and periods of drying to assess desiccation tolerance and capacity to recover photosynthetic function. Statistical analyses will explore relationships among microclimatic variables, desiccation tolerance, and stress responses, and whether these are consistent with changes in the frequency and abundance of these species observed in previous experimental treatments. The proposed research represents a first attempt to link the ecological responses of bryophytes to physiological traits and environmental changes associated with forest management. Opportunities exist to extend this work to a greater diversity of species, systems, and management contexts.

Application Number: A64260

Faculty Member: Thomas Hinckley

Role: Principal Investigator

Title: **2011 McIntire Stennis**

Agency: USDA

Period: 10/1/2010 - 9/30/2011

Amount: \$486,601

Pre-Application

The McIntire-Stennis act of 1962 provides the basis for federal funding in forestry research and graduate education programs at state-certified schools of forestry in the United States. The School of Forest

Resources, University of Washington, is eligible for McIntire-Stennis funding. This is a long-standing program, formerly administered by the Cooperative State Research, Education and Extension Service (CSREES); effective 10/1/2009, the program is administered through the National Institute of Food and Agriculture (NIFA). Funds are used to conduct research in areas such as: (1) ecological restoration, (2) catastrophe management, (3) valuing and trading ecological services, (4) energy conservation, biomass and bio-based materials development; and (5) ways of fostering healthy forests and a globally competitive forest resources sector. At the University of Washington research will focus on: Forest management, coarse woody debris, and soil processes, wildlife use of managed forests, modeling branch dynamics in coastal Douglas-fir and western hemlock plantations as affected by silvicultural treatments, understanding the systematics of commercial ornamental plants, and natural stand development in western coniferous forests. A proportion of the funds will be used for program administration.

Application Number: A65069

Faculty Member: Thomas Hinckley

Faculty Member: Jim Lutz

Role: Principal Investigator

Role: Co-Investigator

Title: **Annually resolved impacts of fire management on carbon stocks in Yosemite and Sequoia & Kings Canyon National Parks**

Agency: USDI National Park Service

Period: 8/5/2010 - 1/29/2013

Amount: \$57,575

Non-Competing Supplement

Forest biomass on Sierra Nevada landscapes constitutes one of the largest carbon stocks in the state of California, and the stability of that carbon stock is tightly linked to fire and the ecological factors that drive the fire regime. Recent research suggests that over a century of fire exclusion and fuel accumulation in Western forests have actually reduced the amount of carbon that such suppressed landscapes store, while increasing the likelihood of catastrophic, stand-replacing fire. For over 30 years, fire management at Yosemite (YOSE) and Sequoia and Kings Canyon (SEKI) National Parks has led the nation in restoring fire to park landscapes, however the impacts of that restoration on the stability and magnitude of carbon stocks are not yet known. This work proposes to quantify these effects over a 30 year timescale by leveraging detailed fire history, vegetation, and fuels datasets at YOSE and SEKI to quantify biomass in areas where fire has been suppressed vs. areas where fire has been restored.

Our dynamic approach to quantifying the carbon contained in trees will also involve dendrochronological analyses of recent tree growth. Although the dynamic approach will likely yield the best accounting of carbon pool dynamics over time, both the static and dynamic approaches need to be included in this project for the following reasons: 1) much of the information developed from the static approach (A51771) underpins the dynamic approach; 2) conducting the more complex dynamic approaches will allow us to evaluate how much more information is generated given the greater expenditure of time and funding required for the latter; and most importantly 3) the static approach is very feasible for any land management unit that has archived comprehensive vegetation plot data (e.g. FMH and FIA plots), and by "validating" this approach through the dynamic approach in our proposed study, potential users of these methodologies in other places can better decide which approach is best for their situation.

Application Number: A65078
Faculty Member: Soo-Hyung Kim
Role: Principal Investigator
Title: **Development of a Process-based Plant Growth Model for Garlic**
Agency: National Center for Agricultural Meteorology
Period: 3/1/2010 - 12/31/2012
Amount: \$30,000
Competing Supplement

Process-based crop simulation models have become an important tool for researchers who study crop responses to environmental changes as well as growers who need make economically and environmentally sound crop management decisions. Mechanistic crop models that are based on solid science can provide critical insights for understanding the linkages among individual components of the complex agroecosystems. These models can play a central role in developing adaptive solutions and strategies to sustain crop productivity while protecting the environment by optimizing resource management in a changing climate. Although numerous models have been developed and utilized for various major field crops, few models exist for specialty crops such as garlic. Garlic is an essential crop in many cultures and countries including Korea, United States, China, and European nations. The primary objective of this project is to develop a process-based crop simulation model for garlic by integrating up-to-date scientific knowledge and compiling experimental data on the physiology and ecology of this widely used, important specialty crop.

Application Number: A65022
Faculty Member: Joshua Lawler
Role: Principal Investigator
Title: **Mapping species range shifts in response to climate change**
Agency: Environment Canada
Period: 1/27/2011 - 1/26/2012
Amount: \$5,883
New

This is a project to provide digital maps of terrestrial vertebrate species range shifts projected for climate changes in Canada to 2100. It will make information available about projected climate-driven changes in terrestrial vertebrate species for Canada. This information can be used to assess effects of climate change on existing national protected areas networks and to inform other wildlife conservation planning in Canada.

Application Number: A65500
Faculty Member: Joshua Lawler
Role: Principal Investigator
Title: **Using Climate Change Vulnerability Assessment Tools to Plan for Climate Change Adaptation: Case Studies in the Great Northern LCC**
Agency: USDI Fish and Wildlife Service
Period: 9/16/2011 - 9/15/2013

Amount: \$116,303

New

The Pacific Northwest Vulnerability Assessment team is producing databases of climate sensitivities for species and habitats, as well as projections of vegetation shifts due to climate change. Case studies have been planned to put these products in the hands of managers but key questions remain on how to best structure them. Our project will build on the existing work of the Vulnerability Assessment to develop and implement up to three case studies in the Great Northern LCC, in order to 1) engage users in the application of climate adaptation tools and obtain feedback on the design and utility of the databases and products, 2) test the application of climate adaptation tools in specific areas with different climate shifts predicted in the future, and 3) test the application of climate adaptation tools across different spatial scales (small to large landscape extents).

For each case study we will work with our partners to produce the following deliverables, in addition to written reports: 1) a Climate Adaptation Plan that identifies its specific objectives and makes management recommendations based on the outcomes of the case study, 2) a list of specific recommendations for refinement of Vulnerability Assessment products and tools, and identify key information needs for the future, and 3) an evaluation of the outcome of the case study.

Application Number: A65388

Faculty Member: Monika Moskal

Faculty Member: Kathy Wolf

Role: Principal Investigator

Role: Co-Investigator

Title: **Geospatial Relationships of Urban Forest Conditions, Stewardship Activity and Environmental Equity**

Agency: UW Royalty Research Fund

Period: 6/16/2011 - 6/15/2012

Amount: \$27,777

Resubmission

Urban forest ecosystems need human intervention to enhance health condition and sustain production of goods and services. Few cities have adequate staff or budget resources that are needed to achieve urban forestry planning and management goals. The City of Seattle accomplishes 95% of its urban forest restoration projects through community volunteer activity. Citizen stewards often choose to volunteer at locations based on emotive connections or proximity to their homes. Thus urban restoration activities are volunteer focused, and may not be distributed equitably across the socioeconomic populations of a city. This research will examine urban forest structure and health condition in relation to stewardship activity, and assess the allocation of urban forest resources and stewardship activity for geographic, demographic, and social equity across the pilot location of the City of Seattle. The research will leverage recently completed, high spatial resolution, remotely sensed canopy structure data, spatial statistics, and U.S. Census demographic variables to bridge the gap between quantitative canopy assessment and socio-economic neighborhood characterization in the pilot area of Seattle. The results will aid agencies and organizations to strategically plan where and how stewardship recruitment and projects should happen to benefit both forest ecosystem restoration and community building. We propose an innovative approach to coupled human and natural systems that acknowledges the positive dynamics of stewardship and its consequences for both neighborhood and forest systems in cities. This work will

lead to new hypothesis and collaborative research agenda focused around these topics across any number of cities regionally, nationally and internationally.

Application Number: A64579

Faculty Member: Kristiina Vogt

Role: Principal Investigator

Title: **Assessing the Vulnerability of Ecosystem Services to Landscape Change in Madre de Dios, Peru**

Agency: National Science Foundation

Period: 8/15/2011 - 6/1/2013

Amount: \$11,900

New

Anthropogenic land use and land cover change (LUCC) is recognized to have many impacts on the earth system including the alteration of ecosystem services that support human society. To ensure ecosystem services are not placed at risk due to decisions related to planned LUCC a robust approach for profiling the vulnerability of ecosystem services to future scenarios is needed. A vulnerability profile for ecosystem services to LUCC, once developed could be shown to act as an essential tool in integrated research for the evaluation of potential risks from both future policy decisions and dominate biogeophysical processes. At present there is no tested method for determining (profiling) a region's vulnerability for sustained ecosystem services. This project is designed to establish an ecosystem vulnerability evaluation tool that explicitly combines the agents of change by social drivers with those of biophysical processes as they impact the resiliency of an ecosystem to provide goods and services. The specific research focus is on the future of ecosystem services in support of biodiversity and carbon cycling generated by the lowland tropical rain forests of Madre de Dios, Peru, and the combined social and biophysical LUCC dynamics that shape current alternative future policy scenarios. Vulnerability of ecosystem services is recognized to be a function of historical change, current stressors, and future development alternatives, which occur at multiple spatial and temporal scales. Therefore this project includes aspects of land use change analysis, social agent-based modeling, alternative futures analysis, and vulnerability assessment. The vulnerability profiles of regional ecosystem services will be illustrated with friction maps (least-cost surface modeling) and developed in an iterative manner through a detailed analysis of the recognized drivers of regional LUCC.

Application Number: A65137

Faculty Member: Daniel Vogt

Role: Principal Investigator

Title: **Calibration of a soil ecosystem health model integrating above- and belowground parameters validated using the LTER Network**

Agency: National Science Foundation

Period: 9/1/2011 - 8/31/2012

Amount: \$10,904

New

To make scientifically sound decisions and policy under a climate envelope, a diversity of stakeholder groups (general public, academics and land-managers) have to integrate science with other competing

resource-use values including landscape changes occurring through anthropogenic and environmental changes. The conventional decision process is built on measurable aboveground variables that easily reflect impacts from natural and anthropogenic disturbances. However this is only half the story as these impacts may be more strongly expressed on the belowground, so changes in long-term health and productivity of the site might not be revealed when just using those aboveground indicators. Therefore, a tool that reveals the effects of these impacts on soils, especially anthropogenic impacts, is needed so that aboveground measures can be synergistically integrated with those belowground indicators for even more robust decision-making. This integration can be synergistic because availability of soil nutrients and water directly affects the primary productive capacity of the ecosystem which in turn affects the productivity of dependent organisms. This decision support system could be based on a model that ranks soil ecosystem health with aboveground remote-sensed data within a programming environment that links multiple spatial data inputs derived from multiple agency sources. Using both remote sensing technologies and advanced GIS programming environments, an ecosystem-sensitive, factor-weighting method can be used to rank different inputs to create a ranked soil ecosystem health index system.

Application Number: A65246
Faculty Member: Miranda Wecker
Role: Principal Investigator
Title: **ONRC Educational Placemats**
Agency: Clallam County
Period: 3/1/2011 - 6/30/2011
Amount: \$9,350
New

This project represents an expansion of ONRC's highly successful educational placemats project that disseminated information on the accomplishments of the Olympic Region Harmful Algal Bloom (ORHAB) partnership. That work has led to a better public understanding of the conditions that give rise to toxin outbreaks and the necessity of closures.. We propose to reprint the educational ORHAB placemats, and distribute them to restaurants in all Washington Coastal Communities. For many of these communities, the impacts of shellfish harvesting is significant. The target audiences will be both residents and visitors to the area.

Application Number: A65417
Faculty Member: Aaron Wirsing
Role: Principal Investigator
Title: **Patterns of lynx predation on snowshoe hares in north-central Washington**
Agency: WA Department of Fish and Wildlife
Period: 7/1/2011 - 6/30/2012
Amount: \$38,404
New

The Canada lynx (*Lynx canadensis*) has declined precipitously in Washington, where it is listed by both state and federal agencies as Threatened. Lynx recovery in Washington will require restoration of forests that allow these predators to hunt successfully for their principal prey species – the snowshoe

hare (*Lepus americanus*). We currently know little, however, about what such forests should look like. Accordingly, as part of an ongoing multi-agency (UW, WSU, WDFW, DNR, and USFS) study of lynx ecology in north-central Washington, we are asking for support for volunteers to help explore patterns of hare abundance and vulnerability to lynx across a range of forest stand characteristics and management regimes. Our ultimate goal is to identify key forest features that are associated with high hare abundance and lynx hunting activity that can serve as management targets for lynx recovery.

Application Number: A65058
Faculty Member: Sandy Wyllie-Echeverria
Role: Principal Investigator
Title: **NPS Water Quality 2011**
Agency: USDI National Park Service
Period: 1/16/2011 - 6/30/2011
Amount: \$3,231
Supplement and Extension

This extension of an existing UW project would provide a 6-month extension to the collaborative effort between UW and the National Park Service to monitor the seawater quality in Garrison Bay on San Juan Island, Washington.

Awards

Application Number: A63890
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Hampton Resources, Inc.
Period: 1/1/2011 - 12/31/2011
Amount: \$9,050
Supplement and Extension

2011 Stand Management Coop Membership Dues for Hampton Resources Inc.

Application Number: A64545
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: TimberWest - Coast Timberlands
Period: 1/1/2011 - 12/30/2011
Amount: \$34,726
Supplement and Extension

2011 Membership dues to Stand Management Coop from Timberwest

Application Number: A64588
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Quinault Indian Nation
Period: 1/1/2011 - 12/31/2011
Amount: \$7,968
Supplement and Extension

2011 membership dues to Stand Management Coop from Quinault Indian Nation

Application Number: A64773
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: West Fork Timber Company, LLC
Period: 1/1/2011 - 12/31/2011
Amount: \$7,606
Supplement and Extension

Membership dues for 2011 from the West Fork Timber Co. to the Stand Management Coop.

Application Number: A64871
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Hancock Forest Management
Period: 1/1/2011 - 12/31/2011
Amount: \$29,721
Supplement and Extension

2011 Membership Dues from Hancock Forest Mgmt to Stand Mgmt Coop

Application Number: A65091
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Longview Timberlands, LLC
Period: 1/1/2011 - 12/31/2011
Amount: \$33,839
Supplement and Extension

Stand Management Coop Membership Dues for Longview Timberlands for 2011.

Application Number: A63167
Faculty Member: Sharon Doty
Role: Principal Investigator
Title: **Fungal Endophytes for Biofuel Pretreatment**
Agency: Edenspace Systems Corporation
Period: 11/15/2010 - 11/14/2011
Amount: \$40,000
Transfer from Another Institution

This Small Business Research Innovation project links with EdenSpace. We will be working with this company to develop endophytic fungi to aid in the pretreatment step of biofuel production from corn.

Application Number: A59693
Faculty Member: Gregory Ettl
Role: Principal Investigator
Title: **CSF-PF/WA State Parks Joint Appointment**
Agency: WA State Parks and Recreation Commission
Period: 7/15/2010 - 6/30/2011
Amount: \$60,000
New

The purpose of this Agreement is for the CSF-PF to provide technical expert assistance to a COMMISSION lead, in forest health assessment and management that protects and restores COMMISSION natural resources while engaging the public in their appreciation and stewardship. This contract describes the hiring of an Applied Forest Ecologist/Stewardship Forester (FOREST ECOLOGIST) who will serve both the CSF-PF and the COMMISSION. The FOREST ECOLOGIST will be a CSF-PF employee but with part of salary and benefits paid by the COMMISSION for work performed for the COMMISSION.