



UNIVERSITY *of* WASHINGTON

School of Forest Resources

RESEARCH NEWSLETTER ISSUE ONE, VOLUME 9

June 27, 2010

NEWS Page 1

PROPOSALS FUNDED Page 2

PROPOSALS SUBMITTED Page 6

NEWS

No worries! A recent email from Lynn Chronister, Director of OSP, had a mnemonic for the newly-emphasized GIM 19 deadlines: **10 days – no worries; 5 days – no promises; 2 days – no way.** Our research analyst recently refused to review an eGC1 that went in 4 days before the sponsor deadline that was not complete at the time it was submitted to OSP. Fortunately, we were able to supply the missing elements without significant delay, and the proposal was reviewed and submitted, but it made me very conscious of the necessary shift in thinking about deadlines. We are doing better than before and I hope all PIs will continue working ahead of the deadlines. Here is the text of Chronister's email:

"To insure that OSP can provide adequate review of applications and submit them through sponsor systems before the deadline, the following timelines must be met for all applications:

10 Days – No Worries. The approved eGC1 and the proposal with all final business elements should be received by OSP.

5 Days – No Promises. OSP must receive the final application in complete and final format (i.e., Ready to Submit). Any application sent to OSP less than 5 days in advance that is

incomplete and/or not “Ready to Submit” may be returned to the PI and department contact.

2 Days – No Way. Any application received by OSP after 12 noon 2 business days before the sponsor deadline will not be reviewed and will be sent back to the PI and Department.”

Remember, only business days are counted so, for example, a proposal due on July 20 should be submitted to OSP on Tuesday, July 6 and be complete by no later than July 13. You should submit to me a week before that (Monday, June 28, because there is a holiday). I will always try to work with you to get the proposal submitted on time, but if you miss the deadlines, I may not be able to.

Here’s the GIM 19 url: <http://www.washington.edu/research/osp/gim/gim19.html>

New Benefit and Tuition Rates: New rates for benefits and tuition were recently confirmed for the 2010-2011 period. We are still waiting for official word on the rate for Schedule 3 GSSA appointments (used for Forest Service proposals, where direct charges for tuition are not allowed).

Benefits:	Faculty (included post docs)	25.8%
	Graduate students	14.7%
	Classifies staff	36.6%
	Professional staff	30.6%
	Hourly (includes student hrly)	13.9%
Tuition:	\$3,624/quarter (includes fees allocable to proposals)	

How is “flow-through funding” defined? Example: State Department of Ecology funds. Clallam has received the funds for a specific purpose, and while they have discretion in how the funds are parceled out, they are merely the intermediary managers. If they had received unencumbered funds that they could spend on any project, of whatever nature, then it would not be pass-through. Even though the county has considerable latitude in determining which projects will be funded and how the objectives will be achieved, the funding must be spent on the subject of the legislative appropriation.

Awards

Application Number: A58650

Faculty Member: Gordon Bradley

Role: Principal Investigator

Title: **Pacific NW Coop Ecosystem Studies Unit Program Support**

Agency: USDI National Park Service

Period: 9/30/2007 - 9/29/2012

Amount: \$38,685

Non-Competing Supplement

The purpose of this supplement is to provide continued financial assistance to support the Pacific Northwest Cooperative Ecosystem Studies Unit, co-led by SFR faculty Gordon Bradley, and the NPS

Research Coordinator, to provide high-quality research, technical assistance and education to federal natural-resources managers.

Application Number: A58440
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: GMO Renewable Resources, LLC
Period: 1/1/2010 - 12/31/2010
Amount: \$7,034
Supplement and Extension

Payment of 2010 Membership dues to Stand Management Coop from GMO Renewable Resources, LLC

Application Number: A58824
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Roseburg Resources Company
Period: 1/1/2010 - 12/31/2010
Amount: \$18,296
Supplement and Extension

2010 Membership Dues payment to Stand Management Coop by Roseburg Forest Products

Application Number: A45614
Faculty Member: Ivan Eastin
Role: Principal Investigator
Title: **Rose Braden Staff Assignment**
Agency: Evergreen Building Products Association
Period: 2/1/2007 - 12/31/2010
Amount: \$18,433
Supplement

Admin support for Rosemarie Braden for the period, 10/1/2008 – 12/31/2010.

Application Number: A56332
Faculty Member: Charles Halpern
Role: Principal Investigator
Title: **Research on Ecology, Dynamics and Mgt of Mountain Meadows in the Oregon Cascades**

Agency: USDA Forest Service
Period: 9/1/2008 - 8/13/2013
Amount: \$27,500
Non-Competing Supplement

Mountain meadows comprise a relatively small, but important element of the western Cascade landscape in Oregon, providing many important ecological and societal functions. They host distinct assemblages of plant and animal species, serve as natural fire breaks, and offer scenic vistas and recreational opportunities. Widespread loss or degradation of these habitats through conifer encroachment has led forest managers to pursue strategies for meadow restoration and maintenance. Understanding the long-term dynamics of these systems and the potential for restoration via tree removal and prescribed fire will be useful in managing these systems in the future. The proposed research has three objectives: (1) to extend long-term studies of forest-meadow dynamics in the Three Sisters Biosphere Reserve (TSBR), Oregon, (2) to continue experimental studies of montane meadow restoration at Bunchgrass Ridge in the Willamette National Forest, Oregon, and (3) to provide critical input into a USFS classification of mountain meadow communities in northwestern Oregon.

Application Number: A57682

Faculty Member: John Perez-Garcia

Faculty Member: Bruce Lippke

Role: Principal Investigator

Role: Key Personnel

Title: **BC carbon accounting, Phase II**

Agency: Consortium for Research on Renewable Industrial Materials

Period: 3/15/2010 - 9/1/2010

Amount: \$72,755

New

Project goal is to provide the British Columbia Forest Sector Climate Action Steering Committee (FSCASC) with customized carbon tracking simulation graphs representing BC interior and coastal forests. The simulation graphs will be developed using UW forest landscape software and life cycle inventory based on the research provided by the Consortium for Research on Renewable Industrial Materials (CORRIM). FSCASC will use the charts to demonstrate the role representative forests play in sequestering carbon in the forest, in products, and displacing other energy sources through substitution for other fuels or fossil intensive products such as concrete and steel building materials.

A Phase I contract has been completed providing such data for representative BC coastal and interior forest stands. This project extends the coverage to broaden the range of forest conditions modeled and to provide additional sensitivity analysis of key assumptions. CORRIM, through its member institution the UW, will run simulations for selected example stands that will include: 1) forest carbon pools (stem, root, crown, branches, dead residuals, but not soil carbon) from initial stand initiation to at least two 70-year rotations or alternatively from a given stand condition to at least two 70-year rotations; 2) product carbon pools or co-product pools including long lived structural wood products, short lived fiber products including pulp based or other mill residual co-products, net of processing and forest management energy requirements; 3) biofuel residuals from the mill including bark or collected forest residuals as carbon

offsets, i.e. displacement for non-bio-based fuels; 4) substitution for other structural products and their resulting displacement of more fossil intensive product carbon emissions. These simulations will be designed to characterize: 1) for coastal forests: a) the impacts of a representative second growth coastal forest, b) the impact of harvesting an old forest that will be converted to a commercial rotation forest, c) a no-harvest alternative for comparison; 2) for interior forests: a) representative of an old forest converted to a commercial rotation under current conditions, b) delayed harvest of a forest that is undergoing accelerated mortality with restocking to a commercial harvest regime and c) a no-harvest alternative with accelerated mortality example .

Application Number: A58802
Faculty Member: Sarah Reichard
Role: Principal Investigator
Title: **2010 USFS Seed Collection**
Agency: USDA Forest Service
Period: 6/1/2010 - 12/31/2010
Amount: \$8,997
New

The U.S. Forest Service is mandated to manage threatened and endangered species to achieve their recovery and sensitive species to avoid trends toward listing and avoid loss to species viability (FS 2670). Collection of seed for long term storage has been part of the strategy to achieve these objectives for threatened, endangered, and sensitive plants. Collection and storage of seed not only preserves genetic variation but can be used to re-establish historic populations or rehabilitate existing populations. The University of Washington Botanic Garden has been designated by the Center for Plant Conservation as the Pacific Northwest regional seed bank for rare vascular plants and has provided support in this capacity to both Forest Service and the Bureau of Land Management in Washington. Under the current project, Washington Rare Plant Care and Conservation will collect and store seeds of populations sensitive plant species on US Forest Service lands. The current project is a part of a multi-year collaboration with the US Forest Service to develop germplasm resources of sensitive plant species on Forest Service lands.

Application Number: A57441
Faculty Member: Luke Rogers
Role: Principal Investigator
Title: **GIS-based LiDAR ground plot selection protocol**
Agency: USDA Forest Service
Period: 4/1/2010 - 3/31/2011
Amount: \$30,000
New

Project goal is development of Geographic Information System (GIS) protocols for stratifying forest lands using LiDAR-derived canopy structure metrics. LiDAR data can be used to map forest inventory and structure across large areas when appropriate ground sample plots are carefully located and measured.

Primary project objective is development of a GIS-based protocol for ground plot selection in areas with high-density LiDAR coverage for approximately 250,000 acres of USDI Bureau of Land Management and Coquille tribal forests in the south Oregon coastal forests embedded in a 1.6 million acre area over which LiDAR data were collected in 2008 and 2009.

With the proliferation of LiDAR data collection in heavily forested areas, new methods for selecting field ground plots need to be developed. Prior methods of photographic interpretation were cumbersome and labor intensive. The primary products will be: a GIS protocol for stratifying forests with LiDAR coverage using LiDAR metrics; and, a GIS protocol for selecting plot locations in each stratum.

Application Number: A56681

Faculty Member: Kathy Wolf

Role: Principal Investigator

Title: **Environmental stewardship assessment in the Puget Sound Region**

Agency: USDA Forest Service

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

Amount: \$63,236

New

Project goal is a preliminary, detailed assessment of environmental stewardship activity and locations, focusing on the metro Seattle area. Based on a pilot study, about 600 organizations, NGOs, and groups conduct environmental stewardship projects in King and Pierce counties. The work ranges from neighborhood parks clean ups, to street tree plantings, to ecological restoration of natural areas. Thousands of people participate every year. This citizen-based activity is a considerable resource for addressing the environmental issues of our urban areas. Yet we know little about the patterns, scope, and outcomes of environmental stewardship. Project will conduct a geospatial mapping analysis of programs and participant densities, followed by an organizational network analysis. Project findings will provide a “footprint” of stewardship activity and its correlation to environmental mitigation need (such as priorities identified in the Puget Sound Action Agenda). Results will enable organizations, agencies, and project sponsors to build more effective programs, and engage greater numbers of stewardship participants.

Proposals

Application Number: A58650

Faculty Member: Gordon Bradley

Role: Principal Investigator

Title: **Pacific NW Coop Ecosystem Studies Unit Program Support**

Agency: USDI National Park Service

Period: 9/30/2007 - 9/29/2012

Amount: \$38,685

Non-Competing Supplement

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Application Number: A58440
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: GMO Renewable Resources, LLC
Period: 1/1/2010 - 12/31/2010
Amount: \$7,034
Supplement and Extension

Payment of 2010 Membership dues to Stand Management Coop from GMO Renewable Resources, LLC

Application Number: A58824
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Roseburg Resources Company
Period: 1/1/2010 - 12/31/2010
Amount: \$18,296
Supplement and Extension

2010 Membership Dues payment to Stand Management Coop by Roseburg Forest Products

Application Number: A58882
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Stimson Lumber Company
Period: 1/1/2010 - 12/31/2010
Amount: \$14,990
Supplement and Extension

2010 Membership Dues to Stand Management Coop by Stimson Lumber Co.

Application Number: A58885
Faculty Member: David Briggs

Role: Principal Investigator
Title: **Stand Management Coop**
Agency: Pilchuck Tree Farm
Period: 1/1/2010 - 12/31/2010
Amount: \$5,338
Supplement and Extension

2010 Membership Dues to Stand Management Coop from Pilchuck Tree Farm.

Application Number: A59031
Faculty Member: David Briggs
Role: Principal Investigator
Title: **Bureau of Land Management - Stand Mgt Coop**
Agency: USDI Bureau of Land Management
Period: 1/1/2010 - 12/31/2010
Amount: \$80,000
Non-Competing Supplement

Bureau of Land Management membership dues for 2010 in the UW Stand Management Cooperative.

Application Number: A58765
Faculty Member: Sally Brown
Role: Key Personnel
Title: **Mountains to Sound Greenway Biosolids Program 2010 Design and Monitoring Advisory**
Agency: King County Wastewater Treatment Division
Period: 7/1/2010 - 6/30/2011
Amount: \$40,001
Supplement and Extension

The University of Washington (UW) has conducted research and developed application technologies for the use of biosolids for enhancement of forest ecosystems for almost 40 years. This expertise was gained at the University's Pack Forest, and now has continued for over 20 years at Hancock's Snoqualmie Tree Farm in association with the King County Department of Natural Resources (KC DNR). We continue to provide design and monitoring oversight, conduct site-specific research, and help with other necessary technical matters for application of biosolids and biosolids compost to both Hancock and Washington State Department of Natural Resources (WS DNR) lands.

Application Number: A57918
Faculty Member: Ivan Eastin
Role: Principal Investigator
Faculty Member: John Perez-Garcia

Faculty Member: Indroneil Ganguly
Role: Co-Investigator

Role: Key Personnel
Title: **National Needs Grant Program Fellowship**
Agency: USDA
Period: 1/1/2011 - 12/31/2015
Amount: \$198,000
New

The international competitiveness of the US forest products industry is affected by the interplay of various economic, social, environmental and political factors. The proposed graduate students' training program aims to provide students with the necessary skills and exposure to understand the contemporary issues and externalities that affect the US forest products' industry and assess their impact on international competitiveness. Curricular emphasis will be given to developing a deeper understanding of phenomenon like illegal logging and global warming which have resulted in an increased interest in 'green' living and environmental procurement policies, globally. The students will be encouraged to explore the linkages between the international competitiveness of the US forest products industry and trade restrictions, including public procurement policies, green building programs and various tariff/non-tariff barriers (thereby addressing USDA's strategic goals 1 and 2 for FY 2007-2012). As a result of developing a strategic partnership with a Native American college, this program will identify qualified students from tribal communities to transfer the necessary technical and forestry business skills into Native American communities.

The proposed training program will train three masters and one doctoral student in the area of 'Agricultural Management and Economics' (TESA no. 4) with specialization in forest trade policy. The disciplinary focus for the program is agricultural marketing and management (Code M) and international competitiveness of the forest products industry (Code I). The program includes relevant interdisciplinary components designed to enhance students' understanding of environmental science, international marketing, decision modeling and public policy analysis (Code G).

Application Number: A58877
Faculty Member: Jerry Franklin
Role: Principal Investigator
Faculty Member: Van Kane
Role: Co-Investigator

Faculty Member: Jim Lutz
Role: Co-Investigator

Title: **Integrated, observation-based carbon monitoring for wooded ecosystems in Washington, Oregon, and California Park**
Agency: Pending - to be added to database
Period: 1/1/2012 - 12/31/2014
Amount: \$203,093
New

The project goal is to develop an integrated satellite, plot, and lidar-based system to characterize and monitor the effects of land management and natural processes on carbon fluxes in the wooded ecosystems across large geographic areas. Key characteristics of the system will be explicit, map-based calculation of

uncertainties in estimates of both carbon stocks and fluxes yearly from 1990 to present, and a modular structure that will allow rapid inclusion of new data for improving maps and reducing uncertainties as the system matures. Core components of the project are a time-series based approach to mine the Landsat Thematic Mapper archive to monitor an unprecedented range of change processes on the landscape and to develop temporally-stable data for mapping, a proven nearest-neighbor mapping approach to integrate satellite data, environmental data, and USDA Forest Service Forest Inventory and Analysis (FIA) data, and small-footprint lidar data used to assess map error. Processes whose carbon effects will be mapped include all levels of forest harvest and fire, including both mechanical thinning and low-intensity fire, as well insect-related mortality, post-disturbance regrowth and encroachment, and land-use change away from forest types. The resultant West Coast-wide maps of carbon will be useful for state agencies tasked with carbon monitoring roles, federal land management agencies needing context and guidance for land management decisions, and carbon modelers needing detailed maps of disturbance and growth effects on carbon change to train, calibrate, and validate the process-based models needed for futuring and decision support. The project addresses both sections 3.1 and 3.4 of the A.5 proposal call by 1) addressing the effects of land management and land use on carbon, and 2) developing the scientific foundations and analytical approaches for monitoring effects or efficacy of management-based carbon mitigation strategies.

A key limitation of Landsat-based approaches to estimating carbon stores has been the ability to ground truth the results. While field plots such as the FIA plots partially resolve this issue, they cover a tiny fraction of the areas to be studied. Estimates of carbon stores from LiDAR data provide a new method to ground truth Landsat-based estimates over large areas. Extensive work over the past decade has shown that LiDAR data can be used to estimate forest carbon stores with high accuracy. For this study, University of Washington researchers will use existing field and LiDAR data to estimate forest carbon for several forest types over areas of several tens to ~100 square kilometers for four to six study areas.

Application Number: A57966

Faculty Member: Robert Harrison

Role: Principal Investigator

Title: **Management of PNW Forest Plantations: Additional Site Characterization and Instrumentation for MSC/CIPS paired-Tree Fertilization Projects**

Agency: USDA Forest Service

Period: 6/30/2010 - 12/31/2012

Amount: \$25,000

Non-Competing Supplement

This proposal addresses seven top priority R&D needs identified in the Agenda 2020 roadmap with ranked priorities (in order of relative ranking) as follows:

- 1) update growth and yield models to account for changes in stand conditions, management practices and environmental variables,
- 3) Develop rapid, cost-effective methods for measuring wood properties that affect end uses,
- 4) Develop new fertilizer formulations, application practices, and diagnostic techniques to enhance the economic and environmental performance of forest fertilization programs and

6) determine how key measures of wood quality are affected by site factors, stand conditions, management practices, and genetics.

The proposed work includes new efforts to increase the impact of existing and planned studies of forest management and fertilization being carried out by Center for Intensive Plantation Silviculture (CIPS) and Stand Management Cooperative (SMC) on intensively-managed forest plantations in the PNW. Current funding limits the scope of these studies being installed by the CIPS/SMC using a combination of industry and other funding. The proposed additional work would provide expansion and additional utility of the current study design by better characterizing site parameters that could predict inherent site quality, including soil sampling and characterization, installing continuous rainfall, temperature and soil moisture monitoring and collection equipment. We will also add to the extent possible evaluation of site and treatment impacts on wood quality, stand mortality and density. Though the paired-plot design utilized has significant limitations in terms of predicting long-term response on an area basis, data from these studies will be incorporated into current growth and yield models in the PNW to the extent possible, particularly in terms of predicting potential for response based on site and characterization, as development and refinement of G&Y models is a priority for both coops.

Application Number: A58971
Faculty Member: Thomas Hinckley
Role: Principal Investigator
Title: **2010 McIntire Stennis**
Agency: USDA
Period: 10/1/2009 - 9/30/2010
Amount: \$486,601
New

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 use for program administration.

Application Number: A57746
Faculty Member: Joshua Lawler

Role: Principal Investigator

Title: **Assessing the vulnerability of species and ecosystems to projected future climate change in the Pacific Northwest**

Agency: USDI US Geological Survey

Period: 11/1/2009 - 3/31/2012

Amount: \$197,459

New

To develop effective adaptive management plans, conservation and natural resource managers need to know how climate change will affect the organisms and ecosystems they manage. To meet this need, we will model potential shifts in the distributions of at least 12 focal animal species (chosen in discussions with land managers) and assess the vulnerabilities of species and managed lands to future climate change. We will summarize the projected changes in climate and biota for the entire study region as well as for specific land management units including: national parks, fish and wildlife refuges (both state and federal), and The Nature Conservancy (TNC) owned and managed sites. This research contributes to USGS Science Strategy science directions, "Understanding Ecosystems and Predicting Ecosystem Change" and "Climate Variability and Change" (USGS Circular 1309) and USGS contributions to the U.S. Climate Change Science Program Strategic Plan Question 8.3 (Product 3) by enhancing our understanding of potential climate-change effects on important ecological systems.

Application Number: A58908

Faculty Member: Joshua Lawler

Role: Principal Investigator

Title: **Connectivity Analysis Toolkit**

Agency: Wilburforce Foundation

Period: 6/1/2010 - 7/31/2010

Amount: \$18,000

New

We will use the support of an experienced programmer to make new connectivity analysis methods developed by the Wilburforce-supported NCEAS Connectivity Working Group useable by a broad group of grantees and other conservation planners. We have developed new methods that overcome two key limitations (described below) of current tools used by grantees to map wildlife linkages. However, these methods are currently only useable by a researcher with experience in command-line programming in Python or C++. We propose to develop an accessible GUI-based Toolkit for connectivity analysis incorporating three significant new methods which can greatly enhance the ability of grantees to assess wildlife connectivity. The proposed support is strategic because a) our group has already done the bulk of the work, which consists of developing the underlying methods, and b) an experienced programmer is available with familiarity in programming for Hexsim, a related software tool.

Application Number: A57682

Faculty Member: John Perez-Garcia

Faculty Member: Bruce Lippke

Role: Principal Investigator

Role: Key Personnel

Title: **BC carbon accounting, Phase II**

Agency: Consortium for Research on Renewable Industrial Materials

Period: 3/15/2010 - 9/1/2010

Amount: \$72,755

New

Project goal is to provide the British Columbia Forest Sector Climate Action Steering Committee (FSCASC) with customized carbon tracking simulation graphs representing BC interior and coastal forests. The simulation graphs will be developed using UW forest landscape software and life cycle inventory based on the research provided by the Consortium for Research on Renewable Industrial Materials (CORRIM). FSCASC will use the charts to demonstrate the role representative forests play in sequestering carbon in the forest, in products, and displacing other energy sources through substitution for other fuels or fossil intensive products such as concrete and steel building materials.

A Phase I contract has been completed providing such data for representative BC coastal and interior forest stands. This project extends the coverage to broaden the range of forest conditions modeled and to provide additional sensitivity analysis of key assumptions. CORRIM, through its member institution the UW, will run simulations for selected example stands that will include: 1) forest carbon pools (stem, root, crown, branches, dead residuals, but not soil carbon) from initial stand initiation to at least two 70-year rotations or alternatively from a given stand condition to at least two 70-year rotations; 2) product carbon pools or co-product pools including long lived structural wood products, short lived fiber products including pulp based or other mill residual co-products, net of processing and forest management energy requirements; 3) biofuel residuals from the mill including bark or collected forest residuals as carbon offsets, i.e. displacement for non-bio-based fuels; 4) substitution for other structural products and their resulting displacement of more fossil intensive product carbon emissions. These simulations will be designed to characterize: 1) for coastal forests: a) the impacts of a representative second growth coastal forest, b) the impact of harvesting an old forest that will be converted to a commercial rotation forest, c) a no-harvest alternative for comparison; 2) for interior forests: a) representative of an old forest converted to a commercial rotation under current conditions, b) delayed harvest of a forest that is undergoing accelerated mortality with restocking to a commercial harvest regime and c) a no-harvest alternative with accelerated mortality example .

Application Number: A58802

Faculty Member: Sarah Reichard

Role: Principal Investigator

Title: **2010 USFS Seed Collection**

Agency: USDA Forest Service

Period: 6/1/2010 - 12/31/2010

Amount: \$8,997

New

The U.S. Forest Service is mandated to manage threatened and endangered species to achieve their recovery and sensitive species to avoid trends toward listing and avoid loss to species viability (FS 2670). Collection of seed for long term storage has been part of the strategy to achieve these objectives for threatened, endangered, and sensitive plants. Collection and storage of seed not only preserves genetic variation but can be used to re-establish historic populations or rehabilitate existing populations. The University of Washington Botanic Garden has been designated by the Center for Plant Conservation as the Pacific Northwest regional seed bank for rare vascular plants and has provided support in this capacity to both Forest Service and the Bureau of Land Management in Washington. Under the current project, Washington Rare Plant Care and Conservation will collect and store seeds of populations sensitive plant species on US Forest Service lands. The current project is a part of a multi-year collaboration with the US Forest Service to develop germplasm resources of sensitive plant species on Forest Service lands.

Application Number: A58472

Faculty Member: Luke Rogers

Role: Principal Investigator

Title: **DOH Parcel Database Development Phase II**

Agency: WA Department of Health

Period: 7/1/2010 - 6/30/2011

Amount: \$120,000

Supplement and Extension

The Washington State Department of Health (DOH) needs a spatially explicit database of land ownership in the State of Washington to use in drinking water protection efforts. It assists in helping identify potential sources of contamination near drinking water sources.

The already completed Phase I piece of this project collected available geographic information systems parcel data and attributes for Washington's thirty-nine counties, State and Federal land management agencies, integrated the data into a single geospatial database, and created a project website to document the data collection and integration process to help streamline future data collection efforts. Phase II of the project developed processes and infrastructure to periodically update the integrated parcel database, collect updated GIS data from local, state and federal data providers, integrate the data into the normalized statewide database to test procedures, research archival and temporal storage options for historical data and convene at least monthly meetings of the Parcels Working Group to present progress. The current proposal is for Phase III, which focuses on refining processes and infrastructure to increase automation of the updating of the integrated parcel database, automate metadata documentation procedures, collect updated GIS data from data providers, and integrate the data into a 2010 normalized statewide parcel database.

Application Number: A58863

Faculty Member: Christian Torgersen

Role: Principal Investigator

**Title: Floodplain diversity and spawning area productivity in the Yakima River, Part III:
Multiscale habitat associations**

Agency: National Oceanic and Atmospheric Administration

Period: 7/1/2010 - 6/30/2011

Amount: \$86,583

Supplement and Extension

The proposed work takes advantage of the unique cultural and natural landscape in the Yakima basin by examining groundwater connectivity and floodplain complexity in relation to spawning site selection by salmon in a regulated river that is managed for both hatchery and wild populations. Long-term collaborations in the basin have been established through the Yakama/Klickitat Fisheries Project (Yakama Nation, WDFW, USFWS, NOAA, USGS, BOR; with funding from the Bonneville Power Administration), which has stimulated integrated science between multiple state, federal, and tribal agencies and leveraged funds from multiple sources. Much of this work has focused on the effects of supplementation on wild anadromous and resident populations of salmon and trout. The Cle Elum Supplementation and Research Facility, part of the Yakima Fisheries project, has been remarkably effective at enhancing populations of spring Chinook salmon in the upper Yakima River Basin while reducing adverse ecological interactions.

The initial phases of the proposed work (funded by NOAA) involved collecting and georeferencing spatially continuous data on aquatic habitat and fish assemblages throughout the entire upper Yakima basin (160 km). In this third phase, we will use these data to develop spatially explicit models that predict habitat selection by hatchery versus wild salmon.
