

# **Communities and Forests: Linked Drivers of Landscape Change in Wallowa County, Oregon**

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Project Information Report

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## **Project Description**

Northeastern Oregon demonstrates many of the characteristics of a post-productivist landscape. Lands used for the production of standardized, mass market commodities have been converted for production of specialty products on a smaller scale. Significant urban to rural migration is occurring and there is a significant increase in the amount of private land dedicated to non-productive uses. The ongoing disintegration of the industrial timberland estate appears to be facilitating the transition of working forests to residential real estate because of higher and better use values. In many regions of the United States, this transition has included high rates of parcelization and declining timber management. If this occurs on a large scale within Wallowa County, it is likely that many of the new buyers will effect ecological changes in the surrounding forest. Simultaneously, the health of many of the forests in the Interior Northwest has declined due to fire suppression policies and changes in harvesting patterns. Whether these changes are ecologically or socially harmful or beneficial remains an open question.

This study will develop an integrated methodology to detect, analyze, and synthesize the social and ecological changes in coupled forest and human communities, using Wallowa County as a case study. We will examine changes in forest area, health, composition, and structure using satellite imagery analysis across all ownership and management regimes. We will assess the shifting importance of forests to local people in response to demographic change, the decline in timber production, the growth of the tourism sector and an increase in amenity-driven migration. By coupling social and ecological field research, we will address linkages between social and ecological change at multiple scales. Finally, we will determine the role that appropriately scaled forest products enterprises can play in improving both forest and community health. The research framework and results will be used to establish a working research methodology that will serve as the foundation for future integrative longitudinal (and comparative) social and ecological studies.

This project responds to the clear need for interdisciplinary, engaged research called for in UNH's Strategic Plan. Through development of this project, I have created new partnerships and strengthened existing ones so that I am assisting to local capacity building, reshaping and redirecting management plans, answering policy-relevant questions, and contributing to the

training of students and practitioners. This project cuts through disciplinary lines in order to develop an integrative research framework, to train undergraduate and graduate students, and to move beyond case-study research.

### **Background information**

Forecasted growth of large-scale natural disturbances such as insect outbreaks and catastrophic wildfire in North American forests implies the potential for large, abrupt releases of carbon as well as socio-economic costs to communities whose livelihoods depend heavily on forests. Coupled with those risks are ongoing ecological deterioration, declining commodity timber-production and changing management goals, which combined are completely transforming the ways that forests in working landscapes are perceived, valued, and managed. This project will employ an interdisciplinary, multi-scale approach combining remote sensing techniques, vegetation and soil field measurements, and social science surveys to better understand the carbon cycle, as well as distribution, origin, and fate of potential sources and sinks of terrestrial carbon in response to land use and land cover change and natural disturbances.

### **Project Details**

#### *Objectives*

The primary objective is to quantify the influence of natural disturbances on the linked human-ecological system at multiple scales in a managed ecosystem of high potential carbon flux, with specific attention to feedbacks between humans and disturbance risk, and the consequences of those feedbacks for carbon cycling. Further objectives of our study include:

- i. a regional assessment of carbon storage and flux,
- ii. tracking land-use and land-cover changes related to disturbance and human activity,
- iii. incorporation of the human dimension into carbon cycling,
- iv. analysis of the complex relationships between general-public perceptions of forest characteristics and patterns of land-use change and carbon storage.
- v. and provide input to stakeholder groups for managing carbon sources and sinks.

#### *Engagement*

From the beginning of the project in 2008, I have set out to develop relationships with key stakeholders. The reasons for community engagement are threefold. The first is to learn about the issues from a local perspective. In developing research questions, I want work to address real needs and be inclusive rather than prescriptive. Research must have practical implications and be directly relevant to circumstances on the ground; otherwise I will never achieve local buy-in and participation in the research. I returned in July 2009 to return preliminary results to local landowners. I held informal meetings with landowners and solicited feedback so that we could learn whether our impressions and results truly meshed with what was happening in Oregon.

Second, I want to develop partnerships that will be built upon to address research needs. A true partnership must be mutually beneficial and identifying and working with key partners will

help to facilitate effective and meaningful research. I continue to spend time with local partners through my visit in July 2008 to countless conference calls with partners – Oregon Department of Forestry, US Forest Service, Wallowa Resources, Sustainable Northwest, Oregon State Forestry Extension – to cultivate meaningful relationships that will further the research agenda. As an example of this, I have worked closely with Oregon State University in developing the research design for the newly released Wallowa County Indicators of Vitality 2009 Report, which will serve as the socio-economic baseline dataset for my research.

Third, together with community-vetted preliminary results and research design, I work together with community partners to develop proposals for external funding. Initial funding has come from seed grants and over this last year, I have worked closely with local the director of NGO Wallowa Resources, US Forest Service forest supervisor and district rangers, Oregon Department of Forestry unit foresters, and Oregon State University county extension agents to submit proposals to research calls. Along with co-Is from UNH, I have worked with these partners to develop a proposal to the joint National Science Foundation-US Department of Agriculture, which is still pending. Currently, my co-Is are cooperatively developing a proposal for the joint NASA-USDA grant.

Table 1. Summary of outcomes from research and scholarly engagement from this partnership since the pilot study began in 2008

Traditional Outcomes	Expanded Outcomes
<ul style="list-style-type: none"> <li>• 1 journal article in preparation</li> <li>• 3 national conference presentations</li> <li>• 2 regional conference presentation</li> <li>• 2 major external grant proposals submitted (not funded), 2 small seed grants (funded)</li> <li>• 1 grant proposal in preparation</li> <li>• Collaborator for 1 regional report</li> </ul>	<ul style="list-style-type: none"> <li>• Assisted in PhD student research for students at University of Florida and Oregon State University.</li> <li>• Coordinated collaboration with various stakeholder groups in community-vetted research.</li> <li>• Influenced interorganizational relationships within Wallowa County, OR.</li> <li>• Data helped in land and resource planning at county level.</li> <li>• Information will be used in forest management plans, monitoring forest health, assessing locales of high priority, and informing stakeholders.</li> <li>• Presented findings to stakeholder groups and organizational leaders including:               <ul style="list-style-type: none"> <li>○ Oregon Department of Forestry, US Forest Service, local NGOs, OSU Forestry Extension, members of Small Woodland Owners Association, and Wallowa County Land Planning Commission, and local landowners</li> </ul> </li> <li>• Data used to build into proposals for external funding.</li> </ul>

*Scholarly Connection and Impact*

While the project remains unfunded, I continue scholarly research and close communication with research partners. Examples of my outputs are displayed in Table 1. I collaborate closely with 1 PhD student at University of Florida, whose dissertation focuses specifically on landscape change in this area and 1 PhD student at Oregon State University who is focusing on the impacts of landownership change. Not only have results been presented in traditional formats:

national and regional conferences, and a publication in preparation, much of this research has been disseminated in more non-traditional formats. I have incorporated this research into my GEOG 573 Biogeography course. Many of the ecological relationships (e.g., landscape fragmentation, management of working lands, dispersal and distribution) play out directly in eastern Oregon and my research has served as an important case study to illustrate topics in class. Further I have met with Wallowa Resources, Oregon Department of Forestry, and US Forest Service. Results have been incorporated into monitoring forest health and assessing locales of high priority for targeting further land cover change assessments. In addition, the Oregon State University Forestry Extension Agent has used these results to inform local landowners about the impacts of landscape fragmentation and forest management.

### **Evaluation Plan**

Since pilot research for this project began in early 2008, there have been numerous mechanisms to evaluate the partnerships and engagement. The first way that success of this project can be tracked is by monitoring communication between the partners and me. This is more of a subjective and qualitative assessment of the communication to determine whether communication is open, honest, and helpful in developing, maintaining, and strengthening partnerships between Wallowa Resources, the US Forest Service and Oregon State University Forestry Extension and I. The partnership will be deemed successful if two-way communication continues and leads to co-development of research design, implementation, and community engagement. The second measure of success is through transparency of methods and data sharing, including archival, collected, and derived datasets will be available to partnerships where appropriate. A third measure of success is when co-development of research objectives and design leads to collaboration on external grants. Fourth, assuming the project is funded at some point, we will work together to develop mutually-beneficial research outcomes within academic and community outlets in order to best disseminate results, such as collaboration on grants conference papers, peer reviewed journals, extension publications, and other community outlets. The final measure of success is that our partnership leads to change in local land use and management policy and further solicitation by local partners for particular research or parts to research project.