The Hinkle Creek Paired Watershed Study: Outreach and Education

Introduction

Established in 2002, the Hinkle Creek Paired Watershed Study is designed to help fill a critical gap in knowledge about the environmental effectiveness of current forest practices on intensively managed forestlands in Oregon. Much of the focus of the Hinkle Creek Paired Watershed Study is on carefully characterizing the local aquatic resources and their unique responses to both natural and management influences.

Although designed primarily as a research study, the Hinkle Creek project offers a unique and important array of educational opportunities for diverse audiences as well as the potential for extensive media coverage over the duration of the project. This report describes these opportunities and discusses planned and potential strategies and actions for pursuing them. This discussion could become even more important given the long-term goal to replicate the Hinkle project in at least two other locations in Oregon and the recent success in securing federal support for the studies at Hinkle Creek.

Messages

- The study is examining whether the Oregon Forest Practices Act, in place for more than three decades, is sufficiently protecting water quality and aquatic habitat in forested watersheds that are managed for timber production.
- The forest sector is eager for a sound, scientific multi-agency evaluation of the Act's effectiveness to determine if its requirements do too little, are just about right or place non-productive burdens on landowners to protect watershed health and other environmental values.

Objectives

- Confirm that intensive forest management can be conducted without detriment to the environmental benefits that forests provide.
- Build recognition that Oregon timber is grown and harvested under environmentally sound and sustainable practices.

Audiences

The Hinkle Creek study area and the data and knowledge generated are of interest and potential value to a broad array of audiences. Some are focused on the specific and detailed questions that are addressed, while other audiences, including the public, have more general interests.

Students and educators: Teachers in grades K-12 in Douglas County already have discovered the Hinkle Creek project and some of its valuable opportunities for science education in both the field and classroom. Involvement of OSU faculty in the project has led to formal and informal use of Hinkle project data and study designs in graduate-level teaching. Both local and statewide Extension faculty find Hinkle Creek to be an ideal setting for research- and issue-based educational programs. Given its existing physical access and improved awareness and access to project data and information, a much larger sphere of educators and students could benefit.

Natural resource professionals: The data and knowledge generated by the Hinkle Creek study are of great interest to many foresters, fish and wildlife biologists, hydrologists and other natural resource professionals. Such individuals help manage or work with policies that affect important resources and the understanding of resource conditions and management effects gained through research at Hinkle could

influence their plans and practices. Many professionals are now familiar with the project, particularly those in the area, but many more could be reached with greater awareness and access to Hinkle Creek data and key findings.

Landowners and other citizens: Like the natural resource professional, forest landowners have an interest in the knowledge emerging from the Hinkle Creek project because it could influence their management practices and plans. Such landowners often are concerned about resource protection policies affecting management options, but most also want to help maintain healthy populations of fish and wildlife as well as good water quality. Many citizens have an active interest in public and private forest lands and the values associated with them. Water quality and fish and wildlife habitat are at or near the top of the list of Oregonians' concerns about forest policies and practices. The cutting-edge research also is likely to be of broad public interest simply due to its novelty (e.g., the "PIT tag" fish tracking technology) and contemporary natural resource management context.

Non-governmental organizations: Some non-governmental organizations (NGOs), such as Oregon Trout are already aware of the Hinkle Creek project and their interest and use could expand significantly with greater awareness and access to emerging information. Clearly, watershed councils will have substantial interest in the Hinkle Creek project at many levels. In Oregon most of these councils are focused on watershed assessments and improvement projects for the specific purpose of maintaining and enhancing native fish populations. Given their diverse membership of landowners, citizens, and technical specialists, watershed councils actively seek the type of basic and problem-solving education and information opportunities Hinkle Creek offers. Other NGOs likely to have a strong interest include landowner associations, conservation groups, Native American tribes, and natural resource professional societies.

Public leaders: The Hinkle Creek project will provide important knowledge and information for public leaders and decision makers involved with forest resource issues. Many of these leaders already are aware of the project and some have played instrumental roles in its support and funding, including the Douglas County Commissioners and Oregon's Congressional delegation. The Oregon Board of Forestry and the State Forester have toured the area and will be especially interested in the research findings as they emerge because much of the study is designed to help answer questions relevant to forest practice policies for private and state lands. However, the nature and breadth of research conducted at Hinkle Creek should also promote wide interest among other federal, state and local leaders and institutions involved with natural resources, including the Oregon Watershed Enhancement Board and staff, Oregon Fish and Wildlife Commission and staff, and National Marine Fisheries Service staff.

Scientists: As one of the newest and most innovative watershed and forest resource studies in the region, Hinkle Creek is already attracting attention among scientists. Even during the "calibration stage" prior to implementing and monitoring the effects of watershed treatments, the scientific community is taking note of the unique study methods being developed. This interest is expected to grow as research results emerge and are shared in various professional conferences, journals and other venues. Some scientists are likely to be interested in using some of the raw data (e.g., streamflow, water quality) generated by the Hinkle Creek project for purposes, such as modeling and comparison studies.

Valuable Attributes

The Hinkle Creek Paired Watershed Study offers a blend of both unique and representative attributes that make it highly attractive for outreach and media activities.

Environment: The forests, soils, terrain, streams and climate of the Hinkle Creek study area are representative of this region of western Oregon. The research findings and educational programs and materials are expected to have broad applications and value well beyond the specific study area.

Access: The Hinkle Creek study area is located within 20 miles of Interstate-5 and about a 45-minute drive from Roseburg and Umpqua Community College. Day trips for educational activities thus are possible from such widely located areas as Albany and Medford. A network of all-season roads provides excellent access within the study area.

Ownership: The Hinkle Creek study area is situated on forest lands owned and managed by Roseburg Forest Products (RFP). The company is an active and enthusiastic supporter of the research and educational goals of the project participants. RFP also is a flexible and innovative company willing to accommodate most research and teaching needs, attributes further enhanced by its private and local ownership.

Support: In addition to the local landowner and appropriations from the U.S. Congress, a broad array of groups and individuals are providing financial and in-kind support for the Hinkle Creek Project. Notable among those providing significant support include the Douglas County Board of Commissioners, the Oregon Forest Resources Institute, the U.S. Geological Survey and Oregon State University.

Focus: The Hinkle Creek study focuses on resources and issues of broad interest and importance. The patterns and behavior of native fish in Pacific Northwest forest streams capture the imagination of scientists, citizens and youth alike. These and other groups also raise important questions and concerns about how such fish may be affected by management practices used on private lands in the region.

Scope: Most paired watershed studies in Oregon have focused on basic observations of water quantity and quality and the local effects of management practices. The Hinkle Creek study is considerably broader in scope in terms of specific resource conditions as well as how they vary in the landscape and over time. The result will be a more complete and useful understanding of key patterns and relationships among local stream and riparian conditions, fish behavior and productivity, and forest practices.

Authenticity: The primary goal of the Hinkle Creek project is to provide significantly expanded management-relevant knowledge through highly credible research studies. At the heart of the project are scientists conducting research with a level of quality and care that will ensure the work is approved and validated by peers in the scientific community. Such authentic research provides a unique compelling background for educational efforts.

Innovation: From its inception the scientists working at Hinkle Creek have used, and in some cases even developed, new and innovative methods for data collection and analysis. For example, electronic devices are being used to carefully track the movement of native fish both upstream and downstream within the watershed.

Data: Even before treatments are applied and effects monitored and analyzed, the Hinkle Creek study is generating extensive and important data. Much of this data provides a baseline of key watershed characteristics essential to clearly identify subsequent management effects. Given the scope and quality, both pre- and post-treatment data from Hinkle Creek are of broad interest to researchers and educators for many different uses.

Model: The Hinkle Creek project began with a primary interest in high quality, state-of-the-art forest watershed research and the companion goal to generate knowledge useful to management and policy decisions. Thus, the project includes cooperators and participants who recognize and strongly support its potential as a model for both research and outreach. This potential is further shown by substantial interest in replicating the project at other locations in Oregon.

Momentum: Oregon's Congressional delegation was successful in securing support for the Hinkle Creek project through the Federal-spending bill (FY05) passed in late 2004. This is one of many signs that Hinkle Creek is gaining broad recognition and momentum as a premier research enterprise. At the same time, use and interest in Hinkle Creek for outreach activities is expanding, and has included tours ranging for audiences from state leaders to K-12 students.

Action Plan

Outreach Education

Hinkle Creek Outreach Activities through July 2005:
Arne Skaugset and Paul Adams compiled the following list of the outreach activities at the Hinkle Creek Paired Watershed Study from 2002-2005. Activities on the list come primarily from Roseburg Forest Products (RFP), Resource Management Services and Douglas County Extension.

2002

- May 2 – Salem staff from the Department of Environmental Quality (DEQ), 6 participants
- August 22 – A timber industry leaders field tour including Allyn Ford, Jim Brown, and Hal Salwasser, 50 participants
- Fall - Initial Hinkle Creek project information brochure produced
- **2002 total = 56 participants**

2003

- February 18 – Roseburg Forest Products (RFP) woods and lumber personnel, 4 participants
- Spring - Basic interpretive display installed near Hinkle Creek confluence
- Spring - Outdoor classroom seating area installed near Hinkle Creek confluence
- May 3 – Oregon Department of Forestry (ODF) forest practices staff, 10 participants
- May 7 – Field tour for teachers from the Roseburg School District, 18 participants
- June 3 – RFP customer, WMB, 10 participants
- July 3 – Douglas Timber Operators Tour, 24 participants
- July 7 – Tour with local RFP logging contractors, 40 participants
- July 17 – Tour with the Oregon Board of Forestry, 60 participants
- July 25 – Field Tour with Guthrie Lumber, 3 participants
- Sept. 18 – Field Tour with Wholesale Building Materials, 9 participants
- Oct. 8 – Students from Roseburg School District, 95 participants
- Oct. 28 - Students from Roseburg School District, 30 participants
- Nov. 18 – Field Tour with Allied Building Stores, 25 participants
- Dec. 8 – Field tour with Meeks, 6 participants
- December - Initial meeting to discuss Hinkle Creek outreach planning
- **2003 total = 331 participants**

2004

- February - Field trip to discuss Hinkle Creek outreach planning
- Feb. 12 – Presentation to the DTO forum, 35 participants
- March 17 – Students from Roseburg School District, 85 participants
- March 18 - Students from Roseburg School District, 80 participants
- March 31 – DEQ staff, 8 participants
- May 17 – Presentation to the Chamber of Commerce forum, 125 participants
- May 28 – Roseburg School District students – after school, 15 participants

- June 4 – Forest Service and Bureau of Land Management hydrologists, 5 participants
- June 7 – Bureau of Land Management hydrologists and fisheries biologists, 7 participants
- June – RFP customers, 6 participants
- July - Forest Watershed Science 101 posters developed
- July – Douglas Timber Operators Field Tour, 24 participants
- August – RFP customers, 6 participants
- August 26 – Oregon Forest Resources Institute Board Tour, 65 participants
- September 14 – Weyerhaeuser Company, Jack Taylor, 8 participants
- September 30 – Bureau of Land Management Director Kathleen Clark and Elaine Brong, 10 participants
- October 6 – Area teachers K-12, 25 participants
- Summer & Fall - Initial background & development of OFRI brochure
- November 23 – Field tour for family forestland owners and professional foresters, 6 participants
- November 24 – Field tour for Extension co-worker, 1 participant
- November – RFP customer Foxworth Galbraith, 4 participants
- November – RFP customer Capital Lumber, 5 participants
- December – RFP customer Cook County Lumber, 6 participants
- December – RFP customer Jim White Lumber, 5 participants
- December - Initial planning meeting for 2005 Technical Conference & Tour
- **2004 total = 531 participants**

2005

- February 12 – Douglas Timber Operator forum, 35 participants
- March 15 – Roseburg School District Students, 190 participants
- March - Hinkle Creek outreach opportunity & approach report completed
- March - Planning meeting for Community Technical Conference & Tour
- March - OFRI Special Report brochure on Hinkle Creek released
- January-May - Hinkle Creek project web site design & activation
- May 7 – OSU COF Forest Hydrology Field Lab, 9 participants
- May - Oregon Society of American Foresters field tour, 65 participants
- June 8 – Field tour with Sierra Pacific Industries, 11 participants
- July 16 – Field Tour for the International Forest Engineering Institute, 10 participants
- **2005 total to date = 320 participants**

Grand total to date = 1,238 participants

Tools and Techniques

As a long-term research project with extensive field studies encompassing a rich scope of resources and data, many educational tools and techniques can be used or drawn upon from Hinkle Creek.

Teaching materials and curricula: The interesting, diverse and data-rich field studies at Hinkle Creek are well-suited to the development of teaching materials and curricula at all levels (i.e., K-12, higher & adult education). A variety of these materials and curricula have already been developed and used, including some for students in the Roseburg School District, watershed science posters for public field tours, and a display for the Douglas County fair.

K-12 Outreach: K-12 outreach at Hinkle Creek offers both challenges and opportunities. As a scientific study site, Hinkle Creek offers K-12 teachers and students a unique environment for learning as well as restrictions in the ways that the site can be used and the number of people that can use it. As a

result, outreach needs to include a range of in-the-field (on site) and in-the-classroom (off site) opportunities in order to make the best use of Hinkle Creek for K-12 student and teachers.

Future plans

- Technology and web-based education will allow students and teachers to use the site while off-site. Priorities include utilizing
    - Interactive Video Conferences (IVC) to allow students to talk to Hinkle Creek scientists working in the field.
    - A website that provides basic background information about the project and the various studies being conducted using video clips and computer slide shows.
    - Website posting of Hinkle Creek data for students statewide to compare with data they have collected in their "home watershed"
    - Teaching materials (videos, resources, curriculum) that will be available both online and as "hard copies" for teachers.

- For students: A variety of educational formats will be available for students on-site ranging from one-day to multi-day and including:
    - One-day field trips/tours that will provide students with a general introduction to Hinkle Creek and an overview of the studies taking place there.
    - One-day focused field trips to Hinkle Creek that provide hands-on activities for students during the visit.
    - One or more pre/post visits to the classroom by a natural resource professional for an introduction to Hinkle Creek, then one or more visits to Hinkle Creek.
    - Long-term projects including senior projects to be done relative to the science at Hinkle Creek.

- For teachers: A variety of educational formats will be available for teachers on-site ranging from one-day to multi-day and including:
    - One-day workshops that include a tour of Hinkle Creek and discussion of the science.
    - Multi-day workshops that include training in the field and in the computer lab. This will allow teachers to see the site and then understand the ways that the technology and online data can be used with their students.
    - Internships-Hinkle Creek Research Cooperative will host an Oregon Teacher on Summer Assignment (ORTOSA), a six-week summer program for teachers to earn while they learn.

Kiosks and displays: An information kiosk installed near the main confluence at Hinkle Creek introduces the project for field visitors.

Future plans

- Opportunities for additional or enhanced displays about the Hinkle studies are nearly limitless, for extended or temporary uses on-site and at various public gathering points, meetings and other events and settings.
- Portable freestanding or tabletop displays are especially attractive because of the many opportunities for use with diverse audiences and outreach settings.
- At the watershed, an ideal enhancement would be electronic displays or other digital access to real-time data being generated by the various research installations.

Driving and walking tours: Many driving and walking tours already have been conducted at the Hinkle Creek study area and some routes and information points are well established.

Future plans

- Compile for interested users, as a complement to other educational materials and curricula, information about field tour opportunities, characteristics (e.g., driving/walking distances) and major educational features and teaching points.
- Developing self-guided driving and water tours with specific stops and information points.
- Develop on-site features and facilities to support field tours and visits, such as sheltered gathering points, multiple toilets and all-weather footpaths and bridges.

Seminars and conferences: Most scientists involved with studies at Hinkle Creek are presenting research results to their peers and students in seminars and conference presentations and poster sessions.

Future plans

- Adapt presentations and posters for other audiences interested in the Hinkle project, such as the local conference and optional field tour. October 2005, Roseburg.
- Adapt computer slid shows developed by the Hinkle scientists for broader use by educators or via the Internet or CD-ROM.
- Develop a presentation for the OFRI speakers Bureau on Hinkle Creek watershed research and the Oregon Forest Practices Act rules.
- Regional "Paired Watershed Research" conference. 2006
- North American Benthological Conference technical session. 2006

Challenges

Clearly, the opportunities for outreach education and media coverage related to the Hinkle Creek project are substantial. At the same time, recognition and consideration of some important related challenges are needed to achieve even a portion of the potential that exists.

Resources: This report describes many of the opportunities for substantial and diverse outreach activities based on the Hinkle Creek project, but only a portion of these are possible or can achieve their full potential without additional personnel and/or financial resources. The long-term nature of the project also presents challenges for the continuity and allocation of resources to support both ongoing and intermittent needs for outreach materials and events. To date, scientists and educators and various sources of public and private funds have supported Hinkle outreach activities. Given their potential positive impacts, it may be possible to identify and secure major grants or foundation support specifically for outreach related to the Hinkle project.

Complexity: Many of the Hinkle Creek studies are inherently complex, which is compounded as resource interactions and spatial and temporal patterns are investigated in considerable detail. While most scientists understand such complexity and find it stimulating, other outreach audiences may find it challenging to comprehend and appreciate. Hinkle researchers who are involved with outreach will need to make a concerted effort to identify ways to clearly communicate their key points to non-technical audiences. Another need is for outreach educators to resist the temptation to avoid or oversimplify complex topics that inherently require some development and depth for a reasonable level of understanding.

Diverse Interests: The many audiences that could be drawn to the Hinkle Creek project have diverse awareness, interests and motivations. Those who develop outreach materials and events will be

challenged to recognize and consider the wide array groups and individuals that may be engaged. Some audiences may be skeptical of the overall project or specific findings or they may seek out or interpret research results in a manner that only supports their preconceived views. The credibility and positive impact of the scientists and educators involved with outreach will depend heavily on both their objectivity and their diplomacy in dealing with complex and sometimes controversial natural resource issues.

Access and Maintenance: Even with a modest level of outreach activity focused on Hinkle Creek, the location of the project on rural private land with gated, gravel roads presents some challenges for visitor and landowner alike. Issues such as timely access, transportation, safety, traffic and road maintenance already are a concern and could grow significantly as more groups and individuals discover the attractions of this unique area and project.

Hinkle Creek Paired Watershed Study Communications Plan Summary

The attached table presents a summary of the Hinkle Creek Communications Plan. Past and potential future events are listed chronologically. The appropriate research stage and audience are also identified. The table also includes important events in the watershed study and important outreach products.

Date	Research Stage	Event	Audience
8/01	**Hinkle Creek Study Formally Begins**		
2001	**Pre-Study Logging in South Fork Hinkle Creek**		
2002	**Stream Temperature and Fish Count Data Collection Begins**		
2003	**Hydrology, Water Quality, PIT tag and Fish Census Data Collection Begins**		
2003	Precalibration	General Tours	Foresters, Policy Makers & Public
Sept 2003	Precalibration	School Tours	K-12 Students & Teachers
May 2004	Precalibration	School Tours	K-12 Students & Teachers
Aug 2004	Precalibration	OFRI Tour	Foresters, Policy Makers & Public
Sept 2004	Precalibration	School Tours	K-12 Students & Teachers
March 2005	**Calibration Data Collection Complete**		
March 2005	**OFRI Special Report**		
April 2005	Calibration	SAF Tour	Foresters & Biologists
May 2005	Calibration	School Tours	K-12 Students & Teachers
July 2005	**WRC Webpage Live**		

Sept 2005	**WRC** 1st **Annual Report**		
Sept 2005	Calibration	School Tours	K-12 Students & Teachers
Nov 2005	Calibration	General Conference	Foresters, Policy Makers & Public
July 2005-March 2006	**First Logging in South Fork**		
May 2006	1st Logging	School Tours	K-12 Students & Teachers
June 2006	1st Logging	General Tours	Foresters, Policy Makers & Public
Sept 2006	1st Logging	School Tours	K-12 Students & Teachers
Sept 2006	**WRC Annual Report**		
Oct 2006	1st Logging	Science Conference	Regional Watershed Scientists
May 2007	1st Interim	School Tours	K-12 Students & Teachers
June 2007	1st Interim	General Tours	Foresters, Policy Makers & Public
Sept 2007	**WRC Annual Report**		
Sept 2007	1st Interim	School Tours	K-12 Students & Teachers
July 2007–March 2008	**Second Logging in South Fork**		
Oct 2007	1st Logging	General Conference	Foresters, Policy Makers & Public
May 2008	2nd Logging	School Tours	K-12 Students & Teachers
June 2008	2nd Logging	General Tours	Foresters, Policy Makers & Public
Sept 2008	**WRC Annual Report**		
Sept 2008	2nd Logging	School Tours	K-12 Students & Teachers
Oct 2008	2nd Logging	General Conference	Foresters, Policy Makers & Public
May 2009	2nd Interim	School Tours	K-12 Students & Teachers
June 2009	2nd Interim	General Tours	Foresters, Policy Makers & Public

Sept 2009	**WRC Annual Report**		
Sept 2009	2nd Interim	School Tours	K-12 Students & Teachers
July 2009-March 2010	**Third Logging**		
Oct 2009	2nd Interim	Science Conference	Regional Watershed Scientists
May 2010	3rd Logging	School Tours	K-12 Students & Teachers
June 2010	3rd Logging	General Tours	Foresters, Policy Makers & Public
Sept 2010	**WRC Annual Report**		
Sept 2010	3rd Logging	School Tours	K-12 Students & Teachers
Oct 2010	3rd Logging	General Conference	Foresters, Policy Makers & Public
May 2011	3rd Interim	School Tours	K-12 Students & Teachers
June 2011	3rd Interim	General Tours	Foresters, Policy Makers & Public
Sept 2011	**WRC Annual Report**		
Sept 2011	3rd Interim	School Tours	K-12 Students & Teachers
Oct 2011	Study Complete	**Final Conference**	Foresters, Policymakers, Public