



Olympic Experimental State Forest Research and Monitoring Program

Introduction

The basis for research and monitoring on the Olympic Experimental State Forest (OESF) is rooted in the recommendations made by the Commission on Old Growth Alternatives for Washington's Forest Trust Lands (OGC) in 1989:

The purpose of creating an experimental forest on Department of Natural Resources trust lands in the Olympic Region is to produce a level of timber harvest comparable with contemporary forest practices and simultaneously provide for ecological values. The intent of this recommendation is to recognize that the Department of Natural Resources lands are a commercial forest within which there is special opportunity to experiment with harvest techniques. These techniques are intended to enhance habitat characteristics and commodities production and to provide opportunities for research into forest harvest and habitat management.

This recommendation has provided the vision for planning and management on the OESF. The OESF is treated as a unique planning unit in Washington State Department of Natural Resources' (DNR) multispecies Habitat Conservation Plan (HCP) for management of state trust lands. The OESF is included as a separate planning unit in order to fulfill one of the stated purposes of the HCP:

To enable DNR to conduct management and research opportunities within the OESF in areas currently occupied by listed species in order to build knowledge relevant to trust management obligations and species conservation. There are three components to this experiment: a) habitat conservation strategies based on an experimental concept of an "unzoned" forest, that is, a forest without areas deferred from timber management; b) a commitment to research, monitoring, and information sharing as the basis for experimental management; and, c) creation of a process for integrating intentional learning with management decision making and course adjustments (HCP p. I.15).

DNR's OESF Research and Monitoring Program seeks to fulfill the vision for the OESF as an experimental forest. It is comprised of four program areas:

- *Adaptive Management* that provides a framework for incorporating new information into management and experimentation on the OESF;

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- *Integrated Monitoring* that evaluates the ability of conservation strategies to achieve conservation objectives and tests the assumptions underlying the conservation strategies on the OESF;
 - *Research Projects* that evaluate forest management techniques designed to support a wide range of forest ecosystem values and those that improve our understanding of the ecosystems addressed by the HCP; and,
 - *Program Coordination* to provide the basic infrastructure for development and implementation of research and monitoring projects on the OESF.

An overview of these program areas is outlined below. In the near-term, the DNR will be considering the role of research and monitoring via the OESF Forest Land Plan process. The planning process could inform priorities for future research and monitoring. The planning process could identify specific information gathering activities. A basis for such consideration is needed. Therefore, the OESF Research and Monitoring Program presented herein provides a foundation for development of research and monitoring projects near-term, through the Forest Land Plan, and beyond.

Overall, the OESF Research and Monitoring Program is a unique opportunity to conduct experimentation, at a scale rarely matched, supporting sustainable forest management. Results will have benefit beyond the OESF. As we move forward, DNR will seek to fulfill the on-going and widely-held vision for the OESF as an experimental forest.

Adaptive Management

The HCP outlines a focused approach to intentional learning – the Systematic Application of Knowledge Gained – that is described in the HCP (p. IV.84) as:

... a program of experiments that can, over the course of the planning horizon, identify or verify potential avenues for successfully meeting targets for commodity production and ecosystem conservation within the unzoned forest context. The assumptions and hypotheses will be tested through implementation, intentional testing and learning, and making adjustments as activities are conducted and feedback loops provide new information.

This management process provides the basis for Adaptive Management on the OESF. The Research and Monitoring Program supports this process via the following:

- *Syntheses of Science Findings* provide a basis for identifying potential avenues for successfully meeting the conservation objectives. Syntheses also provide feedback from on-going activities, and provide a basis for verifying assumptions underlying the conservation strategies and for making course corrections. Syntheses are a key step in integrating intentional learning with management decision making. The DNR is currently initiating a synthesis of past riparian research and monitoring addressing both of these themes. Other such syntheses may be considered informed by information-gathering completed to-date. DNR anticipates additional syntheses over time addressing future intentional learning.

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- *Landscape Planning and Operations* provide the primary mechanism for defining programs of experimentation and their evaluation via forest management activities. Within our framework, this embraces the unique notion that management of the OESF is the experiment. The current Forest Land Plan seeks to accomplish this through syntheses that occur through the Forest Land Plan process. As the Research and Monitoring Program matures, DNR anticipates using future syntheses to inform subsequent Landscape Planning and Operations.
 - *Research and Monitoring* provide the basis for testing assumptions underlying the conservation strategies and developing and testing refined approaches to meeting conservation objectives. Research and Monitoring also provide the basis for adjustments made in Landscape Planning and Operations. Described in greater detail below, they fulfill the basic information gathering goals of the OESF. Such intentional learning integral to Adaptive Management on the OESF.

DNR anticipates that an Adaptive Management process will be discussed in the Forest Land Plan reflecting this framework. Long-term, it is anticipated that Adaptive Management on the OESF will be DNR-led, but utilize a broader collaborative process to foster contribution and understanding among stakeholders and research partners.

Integrated Monitoring

The DNR will seek to integrate monitoring activities in evaluating experimentation conducted at an operational scale following the unzoned approach. The unzoned approach is a strategy unique to the OESF HCP that seeks to integrate commodity production and habitat conservation over the entire landscape. Integrated monitoring reflects the integrated nature of this strategy. This means that monitoring will address commodity and habitat conservation objectives, that it will be integrated with operations, and that it that it will address multiple conservation objectives. In the near-term, DNR will focus on two monitoring objectives via this Research and Monitoring Program:

- *Effectiveness Monitoring* is intended to describe changes in habitat condition that result from timber harvest and forest management activities carried out pursuant to the HCP. This is a monitoring commitment in the HCP (see HCP p. V.2). It also supports Adaptive Management. Information gained through Effectiveness Monitoring can provide the basis for adjustments made in Landscape Planning and Operations. In the near-term, DNR's Environmental Services Section will be developing and testing integrated monitoring protocols to meet these needs. The Forest Land Plan process will provide greater clarity regarding critical uncertainties that need to be addressed via effectiveness monitoring.
- *Validation Monitoring* provides the basis for testing the assumptions about population-habitat relationships that underlay the conservation strategies for the OESF. This is a commitment in the HCP (see HCP p. V.2) and provides an opportunity to gain greater understanding about the complex nature of population response to management activities. It also fulfills an Adaptive Management need, providing feedback on experimentation conducted at scale large enough to effect populations of interest: spotted owl and marbled murrelet use of areas managed to

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provide nesting habitat and salmonid use of streams crossing DNR-managed lands. But, the feasibility of any validation effort needs to be carefully evaluated. In the near-term, DNR's Environmental Services Section is leading efforts to identify landscapes across the OESF where meaningful Validation Monitoring could be conducted and to evaluate the nature and extent of Validation Monitoring that can be reasonably achieved over the life of the HCP.

DNR anticipates integrating these two monitoring objectives with one another, as well as with Implementation Monitoring objectives which are being addressed separately.

Research Projects

Conservation strategies for the OESF are unique in that they explicitly outline the use of a "restoration phase" as an opportunity to develop, implement, test, and refine stand- and landscape-level management techniques (see HCP pp. IV.87, IV.99, IV.107, IV.109, and IV.117). As described above, it is anticipated that some experimentation will be conducted at an operational scale and that such experiments will be evaluated via Effectiveness and Validation Monitoring. But, there is also a need to foster innovation at a trial scale that is consistent with the intent of stand-level experimentation envisioned during restoration phase. Such research can also play an Adaptive Management role in identifying and verifying potential avenues for successfully meeting conservation objectives. In the near-term, DNR will focus on two efforts in achieving this objective:

- *Remeasurement of Existing Research Installations* provide the near-term opportunity to evaluate the effects of a variety of management techniques. Several research installations have been established on or near the OESF. Most were established during implementation of the HCP; most directly address research priorities identified in the HCP. Opportunities to capitalize on existing investments in research installations include the following:
 - In-Stream Conditions and Trends Monitoring (Richard Bigley, DNR)
 - Riparian Silviculture Monitoring (Richard Bigley, DNR)
 - Riparian Windthrow Monitoring (Richard Bigley, DNR)
 - Young-Stand Thinning Trials (Richard Bigley, DNR)
 - Long-Term Ecosystem Productivity Project (Richard Bigley, DNR)
 - Young-Stand Spacing Trials (Scott McLeod, DNR)
 - Little Tree and Dry Tree Thinning Trials (Scott McLeod, DNR)
 - Nelder Tree Spacing Trials (Scott McLeod, DNR)
 - Silvicultural Research Cooperative Plots (Scott McLeod, DNR)
 - Olympic Habitat Development Studies (Connie Harrington, PNW)
 - Rainey Ridge Habitat Development Study (Dan Underwood, WWU)

In the near-term, DNR will be re-evaluating these trials and will be assessing their ability to meaningfully contribute to intentional learning on the OESF.

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- *Establishment of Complementary Research Installations* provide the opportunity to develop, implement, test, and refine stand-level techniques, addressing critical gaps and innovations not covered by existing research installations. DNR currently envisions four areas of project development that may be addressed:
 - Experimental Approaches to Riparian Buffer Management
 - Accelerating Habitat Development in Precommercial Stands
 - Accelerating Habitat Development in Commercial Stands
 - Management Opportunities in Older/Old-Growth Forests

External researchers will be encouraged to participate in establishing research installations addressing these topic areas. In the near-term, DNR will be identifying locations where stand-level experimentation could be conducted while limiting risk to species and limiting conflicts with other experimentation.

Another research priority on the OESF is improving “the general understanding of the animals, habitats, and ecosystems addressed by the HCP” (HCP p. V.6). DNR is addressing this research priority via the following comprehensive topic:

- *Habitat Characterizations* play an Adaptive Management role in helping to identify and verify potential avenues for meeting conservation objectives. In the near-term, DNR will emphasize two lines of study. First, we will be seeking a greater understanding of natural site conditions, how they vary, and the disturbance factors that influence them. Second, we will be seeking greater understanding of habitat required by the animal populations these strategies are intended to benefit. Example topics are anticipated to include:
 - Natural Variability of Disturbance Patterns and Site Conditions
 - Natural Variability of Riparian and Aquatic Habitat Conditions
 - Characterizations of Young- and Old-Forest Habitat Conditions
 - Northern Spotted Owl Habitat Relationship Studies
 - Marbled Murrelet Habitat Relationship Studies

External researchers will be encouraged to participate in this research.

As research projects are being developed, they will be prioritized accordingly. Priorities will seek to focus our efforts on addressing those uncertainties that limit our ability to successfully meet the OESF HCP conservation objectives.

Program Coordination

Coordination of research and monitoring is integral to overall management of the OESF. The HCP explicitly states that information gathering is to be: a) carried out in a scientifically credible manner; b) well coordinated and that results of different investigations are integrated; and, c) rapidly incorporated into management of the OESF (see HCP p. IV.83). These objectives are part of the overall vision for the OESF and are

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vital to its success. In the near-term, DNR is building a foundation for achieving this vision via the following initiatives:

- *Project Management Guidelines* will provide simple, structured processes by which information gathering projects are managed. These guidelines are intended to directly address each of the information gathering objectives stated above. Project Development Guidelines will provide a basis for rigorous coordination of research and monitoring efforts. Project Implementation Guidelines will provide a basis for efficient execution of study plans. These guidelines are currently being developed and prototyped by the OESF Research and Monitoring Manager.
- *A Catalog of Research and Monitoring* will provide a comprehensive reference of information gathering activities for the western Olympic Peninsula. A catalog of science findings is primarily intended to support coordination objectives. The catalog will be developed in two phases and will require on-going maintenance. The first phase, currently on-going, consists of compiling a bibliographic record of relevant studies conducted on the western Olympic Peninsula. The second phase will add value to this bibliography by indexing studies for rapid query and retrieval. This catalog is being developed by the Environmental Services Section and will be deployed on the Program Website Platform (see next).
- *Program Website Development* will provide a simple, effective platform for informing stakeholders and research partners about the OESF research and monitoring program and for disseminating science findings to a broad, diverse audience. A website platform is intended to generally support coordination. Content is being developed in two phases and will require ongoing maintenance. The first phase will provide an overview of the research and monitoring program, latest information on program initiatives, and access to the Research and Monitoring Catalog. The second phase will provide access to publications and data compiled through information gathering activities. This platform is being developed in coordination with the DNR's Communication Group.

As the OESF Research and Monitoring Program matures, additional projects (e.g., access to monitoring database or virtual tours of demonstration projects) may be undertaken that enhance further Program Coordination as well as provide support for other OESF management processes (e.g., information management and communication outreach).

For More Information

Research and monitoring activities on the OESF are being coordinated by DNR's Land Management Division and Olympic Region. For more information on the Program, or if you are interested in conducting research on the OESF, please contact Teodora Minkova, OESF Research and Monitoring Manager, teodora.minkova@dnr.wa.gov or (360) 902-1175.