# Washington State Department of Natural Resources

# **Olympic Experimental State Forest**

# **CATALOG OF RESEARCH AND MONITORING**

GENERAL INVESTIGATIONS OF OESF ECOSYSTEMS

June 2008



# **Characteristics of the OESF Ecosystems**

#### **Federal Agencies**

# National Park Service, Olympic National Park

## National Vegetation Mapping Survey of Olympic National Park

Thompson, C. On-going. Vegetation mapping using national vegetation mapping system standards. U.S. Department of Interior, National Parks Service, Olympic National Park. Personal communication.

#### US Forest Service, Pacific Northwest Experiment Stations

#### Chemical Composition of Coniferous Stands

Little, S.N. and D.R. Waddell. 1987. Highly stocked coniferous stands on the Olympic Peninsula, chemical composition and implications for harvest strategy. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. PNW-RP-384.

#### **Encroachment of Exotic Herbaceous Plants**

Heckman, C. 1999. Encroachment of exotic herbaceous plants in the Olympic Peninsula. Northwest Science. 73(4): 264-276.

#### Historic Forest and Timber Resources

Bassett, P. and D. Oswald. 1961. Timber resource statistics for the Olympic Peninsula. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. RB-PNW-093.

Bolsinger, C.L. 1969. Timber resources of the Olympic Peninsula. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. RB-PNW-031.

Harrington, C.A. 2003. The 1930's survey of forest resources in Washington and Oregon. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. PNW-GTR-584.

MacLean, C.D., J.L. Ohmann, and P.M. Bassett. 1991. Preliminary timber resource statistics for the Olympic Peninsula, Washington. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. RB-PNW-178.

Turner, M.G., D.N. Wear, and R.O. Flamm. 1996. Land ownership and land-cover change in the southern Appalachian highlands and the Olympic Peninsula. Ecological Applications. 6(4): 1150-1172.

#### Role of Dead Wood in Forest Management

Duncan, S. 1999. Dead and dying trees: essential for life in the forests. PNW Science Findings. 20.

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#### Spatial and Temporal Variability in Tree Growth

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Nakawatase, J.M. and D. Peterson. 2006. Spatial variability in forest growth. Canadian Journal of Forest Research. 36: 77-91.

#### US Forest Service, Regional Ecosystem Office

#### NWFP Old-Growth Status and Trends

Moeur, M., T.A. Spies, M. Hemstrom, J.R. Martin, J. Alegria, J. Browning, J. Cissel, W.B. Cohen, T.E. Demeo, S. Healey, and R. Warbington. 2005. Northwest Forest Plan, the first 10 years (1994-2003), status and trend of late-successional and old-growth forest. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. PNW-GTR-646.

# US Geological Survey, Forest and Range Ecosystem Science Center

# <u>Detecting Changes in Vegetation and Wildlife</u>

Shelley, A., T. Cardoso, and J. Courbois. 2002. Detecting changes in vegetation and wildlife populations. U.S. Department of Interior, United States Geological Survey, Forest and Rangeland Ecosystem Science Center. Unpublished report.

#### Long Term Ecological Monitoring Framework

Jenkins, K.J., A. Woodward, and E.G Schreiner. 2003. A framework for long-term ecological monitoring in Olympic National Park, prototype for the coniferous forest biome. U.S. Department of Interior, United States Geological Survey, Biological Resources Division, Forest and Rangeland Ecosystem Science Center. USGS/BRD/ITR--2003-006.

#### **State Agencies**

#### Washingtion State Department of Natural Resources, Land Management Division

#### Plant Associations for the OESF

Bigley, R.E. and S. Hull. 2001. A guide to plant associations on the Olympic State Experimental Forest, third approximation. Washington State Department of Natural Resources. Unpublished report.

#### Wind Hazard Assessment Mapping

Jaross, W.S. 2007. A proposal for the development of GIS data on wind hazard assessments. Washington State Department of Natural Resources. Unpublished report.

Mitchell, S. 2007. Wind hazard assessment mapping, phase I. University of British Columbia. Unpublished report.

# Washington State Department of Natural Resources, Asset Management and Protection Division

#### Site Assessments for DNR Natural Areas

Washington State Department of Natural Resources. 2007. Shipwreck Point natural area preserve, site evaluation. Washington State Department of Natural Resources, Washington Natural Heritage Program. Unpublished report.

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#### Site Summary Books for DNR Natural Areas

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#### **Tribal Governments**

#### Hoh Indian Tribe

# Hoh Basin Tree Age and Characterization Project

Silver, J.A. 2000. Hoh basin tree age and characterization project. Hoh Indian Tribe. Unpublished report.

#### **Non-Government Organizations**

#### 10,000 Year Institute

#### Old-Forest Characteristics and Development

Hagen, M. 2003. Pilot project to characterize the conditions of mature to old riparian forest stands on the Olympic Peninsula, Hoh River watershed. 10,000 Year Institute. Unpublished report.

#### **Academic Institutions**

#### Oregon State University

#### Tree Seedlings on Cedar and Hemlock Logs

Harmon, M.E. and J.F. Franklin. 1989. Tree seedlings on logs in Picae-Tsuga forests of Oregon and Washington. Ecology. 70: 48-59.

#### Pennsylvania State University

Disturbance and Persistance of Sitka Spruce

Taylor, A.H. 1990. Disturbance and persistence of sitka spruce (Picea sitchensis) in coastal forests of the Pacific Northwest, North America. Journal of Biogeography. 17(1): 47-58.

# Rice University

#### **Old-Forest Characteristics and Development**

Harcombe, P.A. 1986. Stand development in one 130-spruce-hemlock forest based on age structure and 50 years of mortality data. Forest Ecology and Management. 14: 41-58.

#### The Evergreen State College

#### Epiphytes in Old-Growth Douglas-firTree Crowns

Clement, J.P. 1995. Structural diversity and epiphyte distribution in old-growth Douglas-fir tree crowns. The Evergreen State College. Master's thesis.

#### University of Washington

#### Below Ground Traits of Herbaceous Species in Coniferous Forests

Lezberg, A. 1998. Survival of herbaceous species after canopy closure - role of below ground traits. University of Washington. Master's thesis.

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#### Climate Landscape Interaction Studies

Anders, A.M., G.H. Roe, D.R. Durran, and J.R. Minder. 2006. Small-scale spatial gradients in climatological precipitation on the Olympic Peninsula. Journal of Hydrometeorology. 8: 1068-1081.

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Gavin, D. and L.B. Brubaker. 1999. A 6000-year soil pollen record of sub-alpine meadow vegetation in the Olympic Mountains, Washington. Ecology. 87: 106-122.

Huff, M.H. 1995. Forest age structure and development following wldfires in the western Olympic Mountains, Washington. Ecological Applications. 5(2): 471-483.

McLachlan, J.S. and L.B. Brubaker. 1995. Local and regional vegetation change on the northeastern Olympic Peninsula during the Holocene. Canadian Journal of Botany. 73: 1618-1627.

Mindera, J.R., D.R. Durrana, G.H. Roeb, and A.M. Anderson. 2007. The climatology of small-scale orographic precipitation over the Olympic Mountains: patterns and processes. Quarterly Journal of the Royal Meteorological Society. In-press.

Peterson, D.L., E.G. Schreiner, and N.M. Buckingham. 1997. Gradients, vegetation and climate: spatial and temporal dynamics in the Olympic Mountains, U.S.A. Global Ecology and Biogeography Letters. 6: 7-17.

Prichard, S.J., D.L. Peterson, and R.D. Hammer. 2000. Soil carbon storage in subalpine forest ecosytems of the Olympic Mountains. Soil Science Society of America. 64: 1834-1845.

Woodward, A., E.G. Schreiner, and D.G. Silsbee. 1995. Climate, geography, and tree establishment in subalpine meadows of the Olympic Mountains, Washington, U.S.A. Arctic and Alpine Research. 27: 217-225.

Zolbrod, A.N. and D.L. Peterson. 1999. Response of high-elevation forests in the Olympic Mountains to climatic change. Canadian Journal of Forest Research. 29: 1966-1978.

#### Soil Seedbanks in Closed Canopy Forests

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#### Western Washington University

#### Ecology of Lake Ozette Wetlands and Prairies

Bach, A. and D. Conca. 2005. Natural history of the Ahlstrom's and Roose's prairies, Olympic National Park, Washington. Western Washington University. Unpublished report.

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Bach, A.J., Gutchewski, M., Ramsden, K. and D. Conca. 2007. Holocene history of two wetlands in the coastal temperate rainforest of Olympic National Park, Washington, U.S.A. Physical Geography. In-press.

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DuBose, K., S. Woolett, E. Bilderback, G. Friskopp, S. Armes, K. Lagueux, D. Conca, and A. Bach. 2002. Soil evidence for fire expansion of the Ozette Prairies, Olympic National Park, Washington. Annual Meeting of the Association of American Geographers, Los Angeles, CA. Unpublished report.

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# Fire and Forest Ecology in Subalpine Forests

Dinkla, J. 1987. Gradient analysis of alpine vegetation on Buckhorn Mountain, Olympic National Forest. Western Washington University. Master's thesis.

Fonda, R.W. 1967. Ecology of montane and subalpine forests: Olympic Mountains, Washington. Western Washington University. Master's thesis.

Milliren, P.A. 1983. Vegetation ecology of an early snowmelt meadow at timberline in Olympic National Park, Washington . Western Washington University. Master's thesis.

Stevenson, P. 1983. Physiological ecology of subalpine fir at timberline on Hurricane Ridge, Olympic National Park. Western Washington University. Master's thesis.

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#### Olympic Peninsula Carbon Budget Analysis

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## Vegetation Analysis of Sitka Spruce Communities

Kratz, A.M. 1975. Vegetational analysis of the coastal Picea sitchensis forest zone in Olympic National Park, Washington. Western Washington University. Master's thesis.

# **Research Cooperatives**

# National Council for Air and Stream Improvement

# Growth of Old-Growth Douglas-fir Forests

National Council for Air and Stream Improvement. 1993. Growth variations in old growth Douglas-fir forests of the Puget Sound area. National Council for Air and Stream Improvement. Technical Bulletin No. 0648.

# **Management to Benefit OESF Ecosystems**

### **State Agencies**

#### Washington State Department of Natural Resources, Forest Practices Division

#### Basin, Channel and Habitat Characteristics

Osborn, J. 1990. Quantitative modeling of the relationships among basin, channel and habitat characteristics for classification and impact assessment, with appendices. Timber/Fish/Wildlife Cooperative Management, Evaluation, and Research Committee. TFW-AM3-90-010.

#### Forest Road Drainage and ErosionInitation

Veldhuisen, C. and P. Russell. 1995. Forest road drainage and erosion initation in four west-cascade watersheds. Timber/Fish/Wildlife Cooperative Management, Evaluation, and Research Committee. TFW-MAG1-99-001.

# **Research Cooperatives**

#### National Council for Air and Stream Improvement

#### Land Management Tools for Biological Diversity

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# **Effects of Management on OESF Ecosystems**

#### **Federal Agencies**

# US Forest Service, Pacific Northwest Experiment Stations

#### Stand Response to Variable-Density Thinning

Harrington, C., S. Roberts, and L. Brodie. 2005. Tree and understory responses to variable-density thinning in western Washington. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Pages 97-106 in C.E. Peterson, D.A. Maguire, editors. Balancing ecosystem values: innovative experiments for sustainable forestry--proceedings of a conference. Gen. Tech. Rep. PNW-GTR-635.

Harrington, T.B. 2006. Five year growth response of Douglas fir, western hemlock and western redcedar seedlings to manipulated levels of overstory and understory competition. Canadian Journal of Forest Research. 36: 2439-2453.

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## US Forest Service, Regional Ecosystem Office

# NWFP Old-Growth Effectiveness Monitoring

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#### US Geological Survey, Forest and Range Ecosystem Science Center

#### Effectiveness of Restoration of High Altitude Vegetation

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#### **State Agencies**

#### Washingtion State Department of Natural Resources, Land Management Division

#### **Evaluation of Commercial Thinning Sales**

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### Long-Term Ecosystem Productivity Project

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#### Misc. Silvicultural Research Installations

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#### Washington State Department of Natural Resources, Forest Practices Division

#### Management of Annosum Root Rot

Omdal, D., A. Ramsey and M.K. Ricklefs. 2006. The effects of thinning and Borax application on Heterobasidion annosum infected stands on the Olympia Peninsula. Washington State Department of Natural Resources. Unpublished report.

#### Wildlife Use of Managed Forests

Aubry, K., S. West, D. Manuwal, A. Stringer, J. Erickson, and S. Pearson. 1998. Wildlife use of managed forests, a landscape perspective, vol 1, executive summaries, introduction and technical approach. Timber/Fish/Wildlife Cooperative Management, Evaluation, and Research Committee. TFW-WL4-98-001.

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