National Council for Air and Stream Improvement's

Western Wildlife Program

A Status Report

July 27, 2015

I. EXECUTIVE SUMMARY

The Forest Industry's Western Wildlife Program (WWP) is documenting wildlife habitat support and biodiversity in managed forests of the Pacific Northwest. WWP research results provide a scientific foundation for industry efforts to advance cost-effective approaches to conserving wildlife and biodiversity in managed forests.

The WWP is managed by the National Council for Air and Stream Improvement (NCASI) on behalf of four industry associations that provide core funding support (American Forest Resources Council, Oregon Forest Industries Council, Washington Forest Protection Association, and NCASI). Program oversight and guidance are provided by industry representatives serving on the technical Western Wildlife Task Group and the strategic Program Steering Committee.

Activities of the WWP are managed by Dr. Jake Verschuyl (NCASI) and directed by sponsoring organizations (AFRC, OFIC, WFPA and NCASI) working through a Program Steering Committee (PSC) and Western Wildlife Task Group (WWTG). The PSC comprises representatives of AFRC, OFIC and WFPA. Important functions of the PSC include (a) ensuring that WWP activities are properly aligned with strategic priorities of AFRC, OFIC and WFPA; and (b) coordinating efforts to obtain core regional funding support for the WWP. The WWTG comprises industry wildlife biologists and other technical experts who (a) provide detailed technical guidance and oversight to NCASI staff, and (b) provide program / budget recommendations to the PSC and NCASI's Forest Environment and Sustainability Task Group

II. PROGRAM ORGANIZATION

Background

The scientific basis for sustaining wildlife and biological diversity in managed forests is weak and must be significantly improved. Why? Several responses justify investing scarce research funding in biological diversity:

- Federal and state regulations designed to protect wildlife and biodiversity have major effects on forest management and wood supplies in the Pacific Northwest.
- The public increasingly expects biological diversity to be sustained in private as well as public forests.
- Viewing of wildlife remains the primary means through which the public judges whether forest practices rules are effective.
- The Sustainable Forestry Initiative and the Forest Stewardship Council-U.S. have incorporated standards for biodiversity conservation into their forest certification processes. Those standards must be supported by strong science and demonstrations.
- Congress and states likely will consider new regulations for biological diversity.

What We Do

The Western Wildlife Program (WWP) helps the forest products industry support cost-effective approaches to conserving wildlife and biological diversity in managed forests. Functions of the WWP include:

- Provide timely technical input for near-term topics such as petitions to list T&E species or new agency regulatory initiatives.
- Organize short-term scientific research that informs impending forest management decisions and forest policy discussions.
- Develop long-range research and demonstration projects that support industry environmental goals for managed forests.

Technical goals of the WWP include:

- Generate demonstrably reliable scientific and technical information to support costeffective management alternatives for sustaining wildlife populations and biological diversity within managed forest landscapes of the western U.S.
- Improve the scientific basis for predicting wildlife population responses to forest management alternatives at multiple scales from stands to landscapes.
- Support wildlife and biodiversity assessments that place private forestry in proper context of complementing state and federal habitat contributions and contributions from other land uses.
- Integrate research results with decision-support tools that can forecast likely consequences of forest management alternatives.

III. CURRENT RESEARCH TOPICS:

- Marbled Murrelet Nest Site Selection at Three Spatial Scales
- The Influence of Forest Herbicides on the Nutritional Ecology of Black-tailed Deer in Western Washington
- Black-backed woodpecker Ecology in Green (unburned) Forests of the Southern Cascades, Oregon
 - o Black-backed Woodpecker Occupancy and Density in Green Forests
 - Black-backed Woodpecker Nest Density and Site Characteristics in Green Forests
- Effects of Intensive Forest Management on Biodiversity and Ecosystem Services
 - o Ungulate Browse and Vegetation Community Composition
 - Avian Abundance
 - Nest box Period Survival
 - White Crowned Sparrow Demography
 - Moth Abundance/Diversity
 - Arthropod Biomass and Exclosure Sampling
- Variation in Structural Retention Pattern and Aggregation
 - o Small Mammal Response

- Plant Community Characteristics
- Avian Use of Patches and Created Snags
- Forestry Effects on Wildlife in Cool Moist Eastside Forests
- Meta-analysis of Cavity-nesting Bird use of Post-disturbance Environments
- Northern Spotted Owl and Barred Owl Meta-Analysis
 - o Barred Owl Habitat Relationships/Home Ranges
 - Spotted Owl Response to Thinning
 - Northern Spotted Owl Habitat Relationships, Three Study Areas in Douglas Fir Forests
 - Test Survey Protocol for Spotted Owls in Areas with Barred Owls
- Northern Spotted Owl Micro-Habitat Characteristics Assessed with Telemetry and LiDAR
- Comparing Detection Methods for the Pacific Fisher
- Bat Hibernacula, Roosts and Winter use of Managed Forests
- Coastal Marten Occupancy and Distribution in the Coast Range, Oregon
- Black-bear Damage of Planted Douglas Fir: Risk Modelling
- Monitoring Elk Habitat and Population Responses to Early-Seral Landscape Restoration Practices in the Clearwater Basin of Idaho
- Elk Habitat Model Development for Coastal and Cascade ecoregions in Western Washington/Oregon and for the Blues Mountains ecoregion in northeastern Oregon

WESTERN WILDLIFE PROGRAM

Selected Presentations and Publications by NCASI Staff and Cooperators

(2012-2015)

Updated: July, 2015

- Betts, M. G., J. P. Verschuyl, J. Giovanini, A. J. Kroll. 2013. Initial effects of herbicides on bird abundance in plantation forests. Forest Ecology and Management
- Cook, R. C., J. G. Cook, D. J. Vales, B. K. Johnson, S. M. McCorquodale, L. A. Shipley, R. A. Riggs, L. L. Irwin, S. L. Murphie, K. A. Schoenecker, F. Geyer, P. B. Hall, R. D. Spencer, D. A. Immell, D. H. Jackson, B. L. Tiller, P. J. Miller, L. Schmitz. 2013. Regional and Seasonal Patterns of Nutritional Condition and Reproduction in Elk. Wildlife Monographs.
- Cook, J., R. C. Cook, R. W. Davis, L. L. Irwin. 2013. Nutritional Ecology of Elk During Summer and Autumn in the Pacific Northwest. Wildlife Monographs.
- Geary, A. B. 2014 Succession, herbicides, forage nutrition and elk body condition at Mount St. Helens, Washington. Thesis. University of Alberta. Edmonton, AB, Canada. 191 pp.
- Giovanini, J., A. J. Kroll, J. E. Jones, B. Altman, and E. B. Arnett. 2013. Effects of Management Intervention on Post-Disturbance Community Composition: An Experimental Analysis Using Bayesian Hierarchical Models. PLoS ONE 8:e59900.
- Harrington, T. B. and S. M. Holub. 2014. Managing for long-term soil productivity in Pacific Northwestern forests. Western Forester 59(3) 1-4.
- Homyack, J. A., and A. J. Kroll. 2014. Slow Lives in the Fast Landscape: Conservation and Management of Plethodontid Salamanders in Production Forests of the United States. Forests 5:2750–2772.
- Irwin and Verschuyl 2013. Potential for Silviculture to Contribute to Conservation of Spotted Owls. Western Forester 58(2):16-18
- Irwin, L. L., D. F. Rock, and S. C. Rock. 2012. Presentation: Do northern spotted owls use harvested areas? The Wildlife Society National Conference, Portland Oregon, October 14th 2012.
- Irwin, L. L., D. F. Rock, and S. C. Rock. 2012. Habitat selection by northern spotted owls in mixedconiferous forests. The Journal of Wildlife Management 76:200–213.
- Irwin, L. L., D. F. Rock, and S. C. Rock. 2013. Do northern spotted owls use harvested areas? Forest Ecology and Management 310:1029–1035.
- Irwin, L. L., D. F. Rock, S. C. Rock, C. Loehle, and P. Van Deusen. 2015. Forest ecosystem restoration:
 Initial response of spotted owls to partial harvesting. Forest Ecology and Management 354:232–242.
- Kroll, A. J., J. Giovanini, J. E. Jones, E. B. Arnett, and B. Altman. 2012. Effects of salvage logging of beetlekilled forests on avian species and foraging guild abundance. The Journal of Wildlife Management 76:1188–1196.
- Kroll, A. J., Y. Ren, J. E. Jones, J. Giovanini, R. W. Perry, R. E. Thill, D. White Jr., T. B. Wigley. 2014. Avian community composition associated with interactions between local and landscape habitat attributes. Forest Ecology and Management 326:46-57.

- Linden, D. W., G. J. Roloff, and A. J. Kroll. 2012. Conserving avian richness through structure retention in managed forests of the Pacific Northwest, USA. Forest Ecology and Management 284:174–184.
- Linden, D. W. 2012. Retained structures and bird communities in clearcut forests of the Pacific Northwest, USA Dissertation, Michigan State University.
- Linden, D. W. and G. J. Roloff. 2013. Retained structures and bird communities in clearcut forests of the Pacific Northwest, USA. Forest Ecology and Management 310: 1045–1056
- Linden, D. W., and G. J. Roloff. 2015. Improving inferences from short-term ecological studies with Bayesian hierarchical modeling: white-headed woodpeckers in managed forests. Ecology and Evolution
- Loehle, C., L. Irwin, B. F. J. Manly, and A. Merrill. 2015. Range-wide analysis of northern spotted owl nesting habitat relations. Forest Ecology and Management 342:8–20.
- Loehle, C. 2014. A minimal model for estimating climate sensitivity. Ecological Modelling 276:80 84.
- Loehle, C. 2014. Climate change is unlikely to cause a biodiversity crisis: evidence from northern latitude tree responses to warming. Energy & Environment 25(1):147-153.
- Loehle, C., T. B. Wigley Jr., A. Lucier Jr., E. Schilling, R. J. Danehy, and G. Ice. 2014. Toward improved water quality in forestry: opportunities and challenges in a changing regulatory environment. Journal of Forestry 112(1):41-47.
- Loehle, C. 2013. Differential sorting of individuals in territorial species affects apparent habitat quality. J. Wildlife Management DOI: 10.1002/jwmg.574.
- Loehle, C., and N. Arghami. 2013. Reduced-variance methods for detectability correction of population abundance. Communications in Statistics—Simulation and Computation 42:1343–1351.
- Loehle, C. 2012. A conditional choice model of habitat selection explains the source-sink paradox. Ecological Modelling 235–236:59–66.
- Loehle, C. 2012. Relative frequency function models for species distribution modeling. Ecography 35:001–012.
- Loehle, C., and W. Eschenbach. 2012. Historical bird and terrestrial mammal extinction rates and causes. Diversity and Distributions 18(1):84-91.
- National Council for Air and Stream Improvement, Inc. (NCASI). 2014. USFWS and NMFS Threatened and endangered species - Proposed rules and draft policy to revise agency approach to critical habitat designation and consultations. Corporate Correspondent Memorandum No. 14-006. Research Triangle Park, NC: National Council for Air and Stream Improvement, Inc.
- Riffell, S. K., J. P. Verschuyl, D. A. Miller, and T. B. Wigley. 2012. Relationships between intensive biomass production and biodiversity in US forests. Presentation at Forestry and Environmental Resources Seminar, North Carolina State University. February 13, 2012.
- Riffell, S., J. P. Verschuyl, D. Miller, and T. B. Wigley. 2012. Potential biodiversity response to intercropping herbaceous biomass crops on forest lands. Journal of Forestry 110(1):42-47.
- Rupp, S. P., L. Bies, A. Glaser, C. Kowaleski, T. McCoy, T. Rentz, S. Riffell, J. Sibbing, J. P. Verschuyl, and T. Wigley. 2012. Effects of bioenergy production on wildlife and wildlife habitat. Wildlife Society Technical Review 12-03. The Wildlife Society, Bethesda, Maryland, USA.

- Stokely, T. 2014. Interactive Effects of Silvicultural Herbicides and Cervid Herbivory on Early Seral Plant Communities of the Northern Oregon Coast Range. Thesis. College of Forestry, Oregon State University. Corvallis, OR, USA. 93pp.
- Swiers, R. 2013. Non-Invasive Genetic Sampling and Mark-Recapture Analysis of a Fisher (*Martes pennanti*) Population in Northern California used as a Reintroduction Source. Master's Thesis North Carolina State University
- Roloff, G., D. Linden, J. P. Verschuyl. 2013. Green trees and snags in Pacific Northwest clearcuts: Does wildlife care? Western Forester 58(2): 21-2
- Vance, E. D., W. M. Aust, R. E. Froese, R. B. Harrison, L. A. Morris, and B. D. Strahm. 2014. Biomass harvesting and soil productivity: Is the science meeting our policy needs? Soil Science Society of America Journal 78:S95-S104.
- Vance, E.D., C. Loehle, T.B. Wigley, and P. Weatherford. 2014. Scientific basis for sustainable management of *Eucalyptus* and *Populus* as short-rotation woody crops in the U.S. Forests 2014, 5, 901-918
- Van Deusen, P. C., and L. L, Irwin. 2012. Propensity score methods for assessing habitat selection with telemetry data. Forestry 85(4): 523-529.
- Van Deusen, P. C., and L. L. Irwin. 2012. A robust weighted EM algorithm for use-availability data. Environmental and Ecological Statistics 19(2):205–217.
- Van Deusen, P. C., F. A. Roesch, and T. B. Wigley. 2013. Estimating Forestland Area Change from Inventory Data. Journal of Forestry 111:126–131.