

Ecological Society of America

Abstract View

[Volume 17, Issue 1 \(January 2007\)](#)

Ecological Applications

Article: pp. 66–80 | [Full Text](#) | [PDF \(466K\)](#)

DISTRIBUTION OF SALMON-HABITAT POTENTIAL RELATIVE TO LANDSCAPE CHARACTERISTICS AND IMPLICATIONS FOR CONSERVATION

Kelly M. Burnett¹, Gordon H. Reeves¹, Daniel J. Miller², Sharon Clarke^{3,3}, Ken Vance-Borland³, and Kelly Christiansen¹

1. USDA Forest Service, Pacific Northwest Research Station, 3200 SW Jefferson Way, Corvallis, Oregon 97331 USA, 2. Earth Systems Institute, 3040 NW 57th Street, Seattle, Washington 98107 USA, 3. Department of Forest Science, Oregon State University, 321 Richardson Hall, Corvallis, Oregon 97331-5752 USA

The geographic distribution of stream reaches with potential to support high-quality habitat for salmonids has bearing on the actual status of habitats and populations over broad spatial extents. As part of the Coastal Landscape Analysis and Modeling Study (CLAMS), we examined how salmon-habitat potential was distributed relative to current and future (+100 years) landscape characteristics in the Coastal Province of Oregon, USA. The intrinsic potential to provide high-quality rearing habitat was modeled for juvenile coho salmon (*Oncorhynchus kisutch*) and juvenile steelhead (*O. mykiss*) based on stream flow, valley constraint, and stream gradient. Land ownership, use, and cover were summarized for 100-m analysis buffers on either side of stream reaches with high intrinsic potential and in the overall area encompassing the buffers. Past management seems to have concentrated nonindustrial private ownership, agriculture, and developed uses adjacent to reaches with high intrinsic potential for coho salmon. Thus, of the area in coho salmon buffers, 45% is either non-forested or recently logged, but only 10% is in larger-diameter forests. For the area in steelhead buffers, 21% is either non-forested or recently logged while 20% is in larger-diameter forests. Older forests are most extensive on federal lands but are rare on private lands, highlighting the critical role for public lands in near-term salmon conservation. Agriculture and development are projected to remain focused near high-intrinsic-potential reaches for coho salmon, increasing the importance of effectively addressing nonpoint source pollution from these uses. Percentages of larger-diameter forests are expected to increase throughout the province, but the increase will be only half as much in coho salmon buffers as in steelhead buffers. Most of the increase is projected for public lands, where policies emphasize biodiversity protection. Results suggest that widespread recovery of coho salmon is unlikely unless habitat can be improved in high-intrinsic-potential reaches on private lands. Knowing where high-intrinsic-potential stream reaches occur relative to landscape characteristics can help in evaluating the current and future condition of freshwater habitat, explaining differences between species in population status and risk, and assessing the need for and feasibility of restoration.

Options:

- [Create Reference](#)
- [Email This Article](#)

Search Google Scholar for:

- [Kelly M. Burnett](#)
- [Gordon H. Reeves](#)
- [Daniel J. Miller](#)
- [Sharon Clarke](#)
- [Ken Vance-Borland](#)
- [Kelly Christiansen](#)

Key words: Coastal Landscape Analysis and Modeling Study, Coastal Province, Oregon (USA), coho salmon, conservation

planning, habitat modeling, intrinsic potential, steelhead

Received: May 20, 2005; Revised: December 16, 2005; Accepted: January 4, 2006

DOI: 10.1890/1051-0761(2007)017[0066:DOSPRT]2.0.CO;2

ESA Publications Office | 127 W. State Street | Suite 301 | Ithaca, NY 14850-5427 | phone 607-255-3221 | email esa_journals@cornell.edu
Frontiers Editorial Office | 1400 Spring Street | Silver Spring, MD 20910-2749 | phone 301-588-4691 | email frontiers@esa.org
ESA Headquarters | 1707 H Street, NW | Suite 400 | Washington, DC 20006 | phone 202-833-8773 | email esahq@esa.org

Copyright © . All rights reserved.