

Cover

Land Cover on the Western Slopes of the Central Oregon Cascade Range

W. B. COHEN, T. A. SPIES, FREDERICK J. SWANSON

USDA Forest Service, Pacific Northwest Research Station, Forestry Sciences Laboratory, 3200 SW Jefferson Way, Corvallis, OR 97331, USA.

and D. O. WALLIN,

Department of Forest Science, Forestry Sciences Laboratory 020, Oregon State University, Corvallis, OR 97331, USA.

The forests of the Pacific Northwest region of the United States have been at the center of much political debate for more than 10 years. At issue is finding a new balance between jobs and maintenance of biological diversity. Mature and old-growth forests of the region support a diverse and specialized flora and fauna, but since the middle of the last century the amount of old-growth forest in the region has steadily declined (Bolsinger and Waddell, 1993). During the last several decades, the focus of harvest activity in old-growth forests transitioned from privately owned land to public land managed by Federal and State agencies. This heightened environmental concerns and led to acceleration of existing studies and the initiation of many new studies on old-growth dependent species (Ruggiero *et al.* 1991). A central question to emerge was 'how much mature and old-growth forest remains, and where is it?' This question led to a number of studies using remote sensing to map the forest conditions of the region.

Two early studies (Morrison *et al.* 1991; Congalton *et al.* 1993) used satellite and other remote sensing data to map mature and old-growth forests on large portions of public lands. As the debate expanded to the entire landscape, however, the focus shifted to forest conditions across all ownerships and land-use designations (e.g., Spies *et al.* 1994). What are the patterns of forest composition and structure across all ownerships? How fragmented is the forest, and is there sufficient dispersal habitat for old-growth dependent species to migrate among fragments of old-growth forest? What has been the flux of carbon from the region over the past several decades associated with forest harvest and regrowth? What forest harvest strategies are commensurate with conservation of species and production of multiple resource values? These and other important questions came to the fore, and required maps from remote sensing data for large, multi-ownership landscapes.

The cover image (taken from Cohen *et al.* p. 738 this issue) is the first published map produced from satellite remote sensing data, showing the location and extent of mature and old-growth forest across all ownership categories over a part of the Pacific Northwest region. The image encompasses over 1.2 million ha from the crest of the Cascade Range to the floor of the Willamette Valley in west-central Oregon. It was produced from a 1988 Landsat Thematic Mapper image acquired in late

summer, and is part of our more extensive mapping effort for the full 14 million ha forest area from the crest of the Cascades to the Pacific Coast in the states of Oregon and Washington. In conjunction with other imagery from the Landsat data archive, changes in forest composition and structure from 1972 to present are being mapped (e.g., Cohen *et al.* 1994; Spies *et al.* 1994). These maps are then used in a number of other studies, facilitated by geographic information systems and requiring spatially-explicit forest cover and forest change information, other spatial data layers, and models incorporating carbon dynamics, biodiversity, socio-economic, and other important factors crucial in formulating forest and river ecosystem management strategies. Additionally, this information can support evolution and refinement of regional conservation strategies for critical species (e.g., northern spotted owl, salmon spp.), help establish baseline conditions for projection of landscape patterns into the future (e.g. Wallin *et al.* 1994), and similar studies.

Acknowledgments

This research was supported in part by the Ecology, Biology, and Atmospheric Chemistry Branch, Terrestrial Ecology Program, of NASA (Grant numbers W-18,020 and W-18,437), and by the National Science Foundation-sponsored H. J. Andrews Forest LTER Program (BSR 90-11663), the Global Change Research Program and the Inventory and Economics Program of the PNW Research Station, USDA Forest Service.

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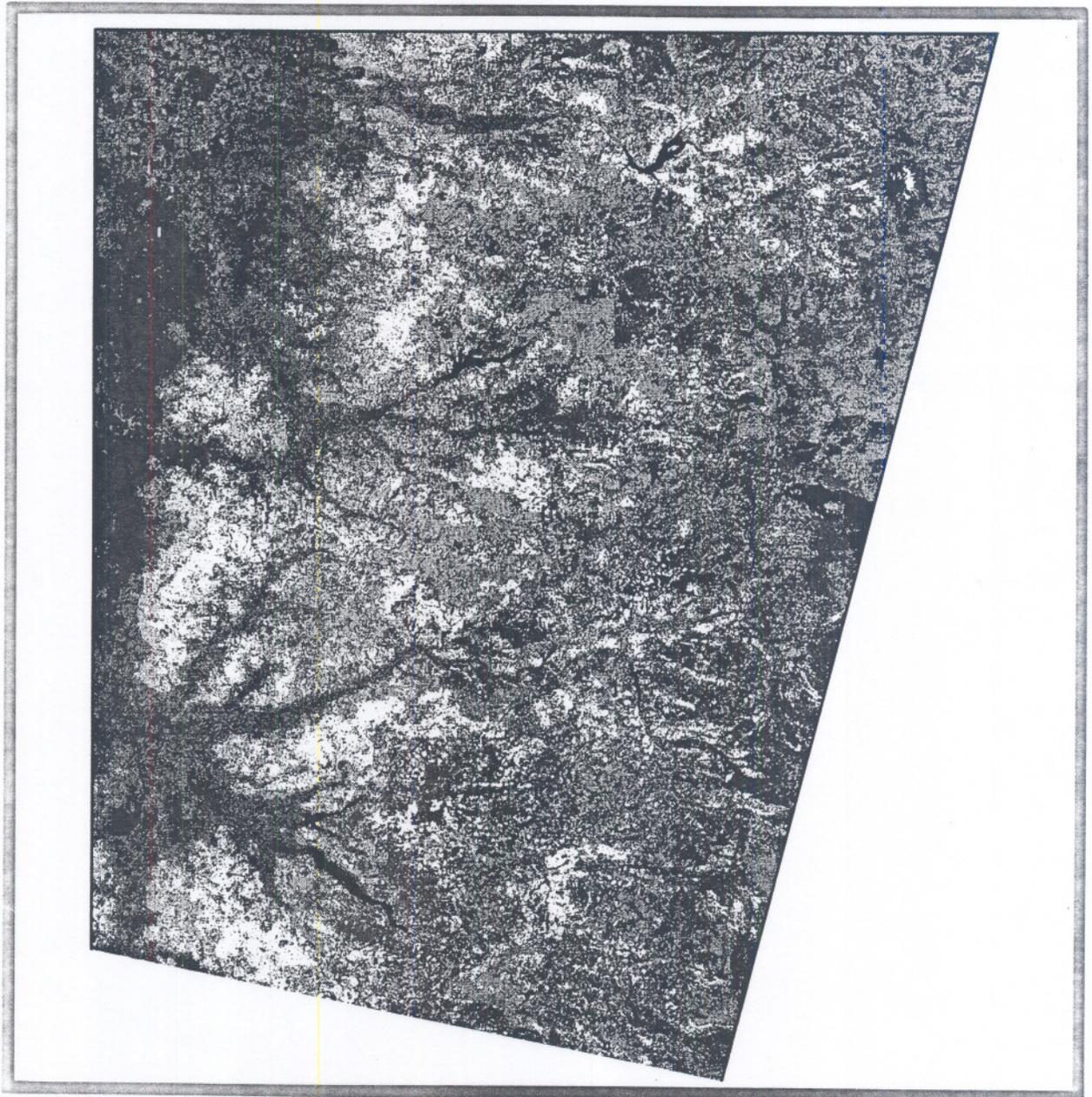
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ISSN 0143-1161

2033

INTERNATIONAL JOURNAL OF
**REMOTE
SENSING**

Volume 16 Number 4 10 March 1995



*An official journal of the
Remote Sensing Society*



Taylor & Francis
Publishers since 1798