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## Chapter IV

# TERRESTRIAL FOREST ECOSYSTEM ASSESSMENT

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## Descriptions of Terrestrial Forest Ecosystems

### Overview of Biological Communities and Ownership Patterns for Each Physiographic Province

The area addressed in this report is the range of the northern spotted owl within the United States, which includes western Washington, western Oregon, and northwestern California south to Marin County. With the exception of some lowland interior valleys and coastal plains, this area is dominated by mountainous terrain and coniferous forests.

The range of the northern spotted owl within the United states encompasses approximately 57 million acres, of which 24.3 million acres (43 percent) is federal land (table IV-1). Of the federal lands, 19.5 million acres are administered by the U.S. Forest Service, 2.7 million acres are administered by the U.S. Bureau of Land Management, and 2.0 million acres are administered by the U.S. National Park Service (table IV-1). Other federal lands within the range of the owl include military installations and national wildlife refuges.

# **Forest Ecosystem Management: An Ecological, Economic, and Social Assessment**

**Report of the Forest Ecosystem  
Management Assessment Team**



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Lands administered by the U.S. Forest Service are widely distributed within the range of the northern spotted owl. In contrast, Bureau of Land Management lands within the range of the owl are largely concentrated in western Oregon. Because of historical land grants, lands administered by the Bureau of Land Management in western Oregon tend to be distributed in a checkerboard pattern of alternating square-mile sections of federal and private land. In contrast, lands administered by the U.S. Forest Service tend to be more contiguous, with fewer inclusions of private land.

Some portions of the range of the owl contain little federal land. Most notable in this regard are the northern Coast Range Province in Oregon, the western Washington lowlands, and most of the coastal mountains of northern California. Nonfederal lands within the range of the owl include a variety of privately owned lands and areas owned and administered by state governments. Private lands include a multitude of small holdings and extensive areas owned by large timber companies. Indian reservations cover significant portions of the range of the owl, especially in the Olympic Peninsula, Eastern Cascades, and Klamath Provinces.

The Northern Spotted Owl Recovery Team (USDI 1992c) divided the range of the spotted owl into 12 provinces based on differences in vegetation, soils, geologic history, climate, land ownership, and political boundaries (see figure II-5). The physiographic provinces (also referred to as "provinces") incorporate physical, biological and environmental factors that shape broad-scale landscapes. Physiographic provinces reflect differences in geology (e.g., uplift rates, and recent volcanism, tectonic disruption) and climate (e.g., precipitation, temperature, and glaciation). These factors result in broad-scale differences in soil development and natural plant communities. Within each province, variable characteristics of rock stability affect steepness of local slopes, soil texture, soil thickness, drainage patterns, landforms, and erosional processes. Thus, physiographic provinces have utility in the description of both terrestrial and aquatic ecosystems (see Aquatic Ecosystem Assessment Appendix A for more detail). Rates of harvest and natural disturbance have varied tremendously among the 12 different provinces, depending on land ownership patterns, topography, climate, soils, and proximity to centers of human population. As a result, some provinces, such as the Oregon Coast Ranges and Western Washington Lowlands, contain little remaining late-successional/old-growth forest, whereas other provinces, such as the Oregon Cascades, still retain extensive areas of such forests. These patterns have been described in detail elsewhere (e.g., Franklin and Dyrness 1973; Thomas et al. 1990; Ruggiero et al. 1991; USDI 1992) and will only be briefly summarized here.

### Olympic Peninsula

The Olympic Peninsula Province in northwestern Washington is a mountainous region bounded on three sides by water and on the fourth side by an extensive region of cutover state and private lands (the Western Washington Lowlands). Vegetation on the peninsula includes temperate rain forests of western hemlock, western red cedar, and Sitka spruce on the western slopes of the Olympic Mountains and forests of Douglas-fir and western hemlock in the rain shadow on the east side of the peninsula (Henderson et al. 1989). This province is occupied by a number of vertebrate species associated with late-successional/old-growth forests, including northern spotted owls, goshawks, American marten, and marbled murrelets. Although only a few nests have been found, large numbers of marbled murrelets are resident offshore and apparently nest on the

## **Eastern Washington and Eastern Oregon Cascades**

The Eastern Cascades Provinces in Washington and Oregon include the east slope of the Cascades Range from the Okanogan Highlands of northern Washington south to the California border. This region is dominated by mixed-conifer forests and ponderosa pine forests at mid to lower elevations and by true fir forests at higher elevations. Land ownership patterns include a mixture of Forest Service, private, state, Indian, National Park Service and Bureau of Land Management lands. Forests in this region are highly fragmented due to logging and a variety of natural factors (poor soils, high fire frequencies, high elevations).

Before the development of modern methods of fire suppression, wildfire played a major role in shaping the forests of this region. Fire suppression efforts in the last 60 years have resulted in significant fuel accumulations in some areas and shifts in tree species composition. These changes may have made forests more susceptible to catastrophic fires and to epidemic attacks of insects and diseases. Any plan to protect late-successional/old-growth forests in this area must include considerable attention to fire management and to the stability of forest stands.

## **Oregon Coast Range**

The Oregon Coast Range Province includes the coastal mountains of western Oregon from the Columbia River south to the Middle Fork of the Coquille River. This area is dominated by forests of Douglas-fir, western hemlock, and western red cedar, with a narrow band of Sitka spruce along the coastal headlands. The southern half of the province includes a mixture of private, Forest Service, and Bureau of Land Management lands. The northern half is largely in private and state ownership. Heavy logging and a number of extensive wildfires during the last century have eliminated most late-successional/old-growth forests in the northern half of the province. Older forests in the southern half of the province are highly fragmented, especially on Bureau of Land Management lands, which are typically intermixed with cutover private lands in a checkerboard pattern of alternating square-mile sections.

Before the advent of fire suppression, the Coast Range Province was subject to frequent fires caused by lightning. As a result, many of the remaining natural forests consist of a mosaic of mature stands and remnant patches of old-growth trees. Because it is heavily cutover and relatively isolated from other forested areas, the Coast Range Province has been identified as an area of concern for spotted owls, marbled murrelets, and anadromous fish.

## **Willamette Valley**

The Willamette Valley Province includes the lowland valley area between the Coast Range and Cascades Provinces in western Oregon. This area was originally covered by a mosaic of lowland coniferous and deciduous forests and native prairie grasslands. It was mostly cleared in the 1800's and early 1900's and converted to farmland, residential areas and metropolitan areas. Land ownership is largely private.