Pre-EuroAmerican Scenario

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The Scenario

Analysis of trajectories of ecosystem change is based on future projections of land use and land cover. Mapping of historical conditions offers an important context for understanding current conditions and the relative magnitude of past and future changes. The map at right represents a depiction of land cover that likely existed in the Willamette River Basin prior to EuroAmerican settlement circa 1850. It is based on actual surveys of vegetation and serves as a scenario of the land cover that existed in the period immediately before settlement of the Willamette Valley. As such, we do not depict the small areas of settlement present at the time of the actual surveys.

We depicted the Pre-EuroAmerican Scenario (PESVEG) by combining three sources: 1) a transcription of the 1850s General Land Office survey (GLO) by The Nature Conservancy (VEG1851), 2) the 1993 Oregon Actual Vegetation developed by the Oregon Natural Heritage Program (ORVEG1850), and 3) the digital version of H. J. Andrews' 1936 Oregon Forest Type map (ORVEG1936). The Nature Conservancy of Oregon constructed a pre-settlement land cover map for the Willamette Valley by interpreting the survey notes of the General Land Office taken over a period from 1851 to 1909. This map, VEG1851, formed the basis for the valley portion of the map at right. However, the 1850 GLO survey included little of the upland forest in the Coast Range and Cascade Mountains (pp. 38-39). To create a representation of the higher elevation forests of the Willamette Basin prior to settlement, another historical map (ORVEG1936) was used to depict the remaining basin area. This polygonal map is based on the Oregon Forest Types map created by H. J. Andrews for the PNW Research Station of the USFS. This survey, published in 1936, mapped the forests of the Willamette Basin. Most of the higher elevation public forest lands had not been harvested by 1936; therefore this map is a close approximation of land cover in the higher elevations of the Willamette Basin prior to settlement. Forest conditions in this map were adjusted for known fires that occurred between 1850 and 1936, and adjacent forest types were used to fill in areas that had burned after the mid-1800s. Boundaries or areas of overlap between these maps were adjusted using the likely vegetation that would occur at a particular location, based on adjacent vegetation types, elevation, and position along valleys. This composite map was checked against another representation of historical vegetation that was developed by the Oregon Natural Heritage Program (ORVEG1850). The different vegetation classifications used in these three mapping efforts were cross-referenced to develop a uniform basis for comparison of land cover, and the comparative description of the different vegetation categories is documented in the Appendices, pp. 162-165. The map of the Pre-EuroAmerican Scenario was then converted to the 30 m x 30 m pixel resolution of the LULC ca. 1990 map and the alternative futures.

Kalapuyan practices

Recent anthropological and ethnographic research provides two broad sets of reasons why native peoples regularly burned the land. The first of these was to achieve immediate desired effects, the second was to achieve deferred desired effects. Immediate effects include instances where fire was used as a tool in hunting and gathering certain food staples. Circle drives for deer hunting, preparing the land for harvesting of tarweed, and as an aid in collecting grasshoppers and acorns are examples.[116] Deferred effects include maintenance of deer and elk habitat as well as facilitating their tracking and hunting, and as a soil preparation for the cultivation of tobacco, berries, and root species such as camas.

While direct contact with EuroAmericans began in 1812 with exploring parties of Robert Stuart and Donald McKenzie, it was a series of annual disease outbreaks commencing in 1831, now considered to have been malaria, that devastated the native population. By 1841 the practice of regular annual burning that had occurred in the Willamette Valley for centuries had ended. The landscapes produced by burning and other forces are depicted in the map at right. These were the conditions that greeted pioneers as they arrived in the Willamette Basin in the middle of the 19th century. We next describe briefly these lowland and upland landscape characteristics.

Lowlands

Lowlands of the Willamette River Basin were mosaics of grasslands, wetlands, and forests prior to arrival of early EuroAmerican settlers. Native American burning practices benefited the fire-resistant oaks, creating oak savannas that also provided food in the form of acorns. Wildfire and intentional burning strongly influenced the higher areas of the Willamette Valley floor. Fire was not as prevalent in the wet habitats close to the rivers. Wide floodplain forests surrounded almost all of the major tributaries and the mainstem Willamette River (see pp. 23-24). The resulting vegetation of the valley was a complex mosaic of wetlands, grasslands, oak savannas, woodlands, and floodplain forests of black cottonwood, Oregon ash, bigleaf maple, alder, willow, Douglas-fir, western hemlock, western red cedar, and Ponderosa pine.

Uplands

Old-growth coniferous forests dominated the upland forests of the Coast Range and Cascade Mountain Range prior to EuroAmerican settlement. Burning by Native Americans was most intensive in the lower elevations of the Willamette Valley and its foothills. Fire was more scattered in the uplands, creating large expanses of late successional forests (>200 yr. old) with scattered patches of younger forests. Estimates of the extent of old-growth forests in western Oregon and Washington prior to settlement range from 60 to 75% of the forested area. These older forests were dominated by Douglas-fir, western hemlock, western red cedar, Pacific yew, and white pine in the lower elevations, shifting to mountain hemlock, noble fir, and subalpine fir at higher elevations. Deciduous species, such as bigleaf maple, red alder, and willow were scattered through the forests, particularly along streams and river valleys. The high gradients and boulder-bedded channels of these mountainous portions of the basin create aquatic habitats that differ markedly from the low gradient, finer sediment streams of the Willamette Valley. Lower elevations experience low flows during the dry summers and floods during winter storms, particularly during rain-on-snow events. Higher elevations exhibit typical snowmelt hydrology, with high flows during the spring melt. Several remarkable lakes within the uplands, such as Waldo Lake and Odell Lake, are the result of volcanism and represent some of the most pristine, oligotrophic lakes in the world.

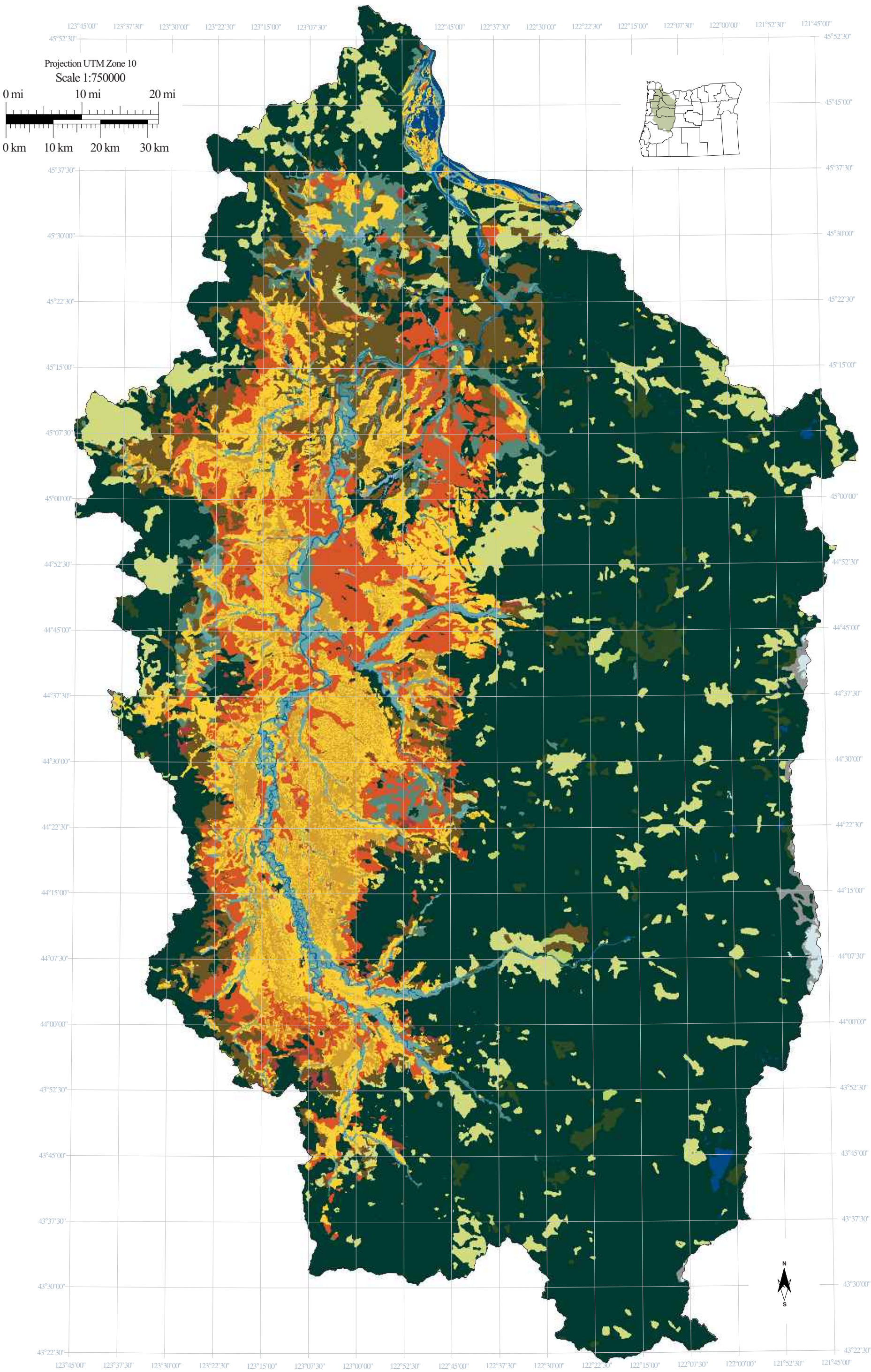
Setting for Settlement and Environmental Change

The geology, vegetation, and hydrology of the landscape of the Willamette Basin set the stage for the patterns of biodiversity, human settlement, and population growth of the more recent past. The human history and settling of the West determined contemporary land ownership patterns, with more than one third of the basin eventually becoming publicly owned. The majority of these lands are steep upland forests less suited to human habitation.

Early logging practices occurred primarily in the Coast Range and lower elevations of the Cascade Mountains. Rivers were used to transport logs to the lumber mills. Streams were dammed to create floods to carry logs downstream during low flows, a practice known as splash damming.

The lowlands, in contrast, were prime land for agriculture and cities, and are now mostly private lands subject to changing land use practices. Human settlement is concentrated in the lowlands particularly along surface waters, such as the larger rivers and streams. Terrestrial and aquatic ecosystems in the lowlands are potentially some of the most productive habitats in the basin because of their rich soils, warmer temperatures, low relief, and abundant water supply from the mountain rivers and groundwater. Today's land use and land cover emerge powerfully from this history and landscape, which together chart the course for future alternatives.

Map 28. Pre-EuroAmerican Scenario



Note: *Legend for this map is the same as Land Use / Land Cover ca. 1990 on p. 78*