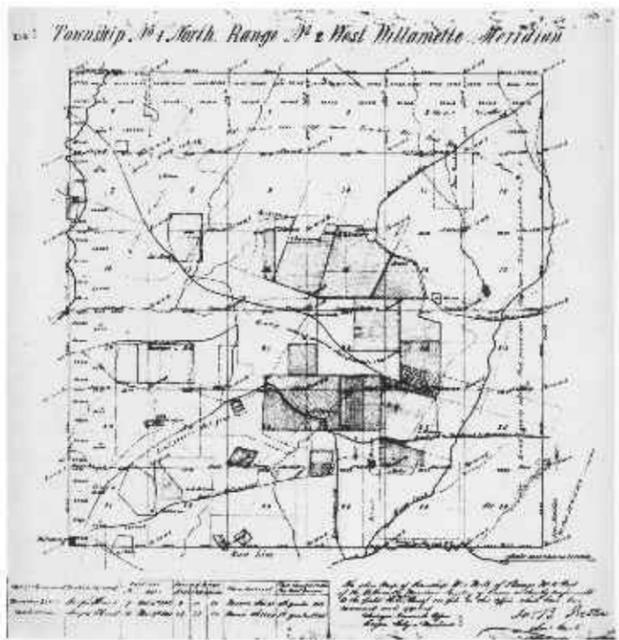


Introduction

Vegetation of the Willamette Valley at the foothills of the Coast Range and Cascade Mountains was mapped by early surveyors soon after the beginning of EuroAmerican settlement. Native Americans had occupied the basin for more than 11,000 years before EuroAmerican settlers arrived. Numbers of humans at any date prior to the 1850s were very low, probably fewer than 15,000. We will refer to the vegetation circa 1851 as “presettlement vegetation,” while acknowledging the long history of human presence before that date.

The Data Source

From 1851 to 1865, the federal land survey office, known as the General Land Office (GLO), mapped the Willamette Valley in preparation for settlement. The surveyors used “witness” or “bearing” trees to locate the corners of square mile sections, and their notes detailed the vegetation, soils, and topography encountered as they crossed the landscape (Fig. 51). As part of the Oregon Natural Heritage Program,⁴⁸ The Nature Conservancy (TNC) in concert with Oregon Division of State Lands is using these records to reconstruct the historic vegetation of the valley. The map, opposite, displays the major vegetation units. Substantially more detail exists within the historic record with each of these major vegetation units subdivided into plant associations. For example, “savanna” comprises ten different native plant communities including “white oak-ash savanna” and “white oak-black oak-fir savanna.” See the Appendix for more details.



Township 8 North-Range 5 West, Willamette Meridian
North between sections 22 and 23
3.50 A road, course East and West
12.00 A swale or drain, 50 links wide, course East and West
30.00 Leave prairie and enter oak openings
40.00 Set quarter section post from which a
W. oak 40 inches in diameter, bears 3 1/2° W 214 links
W. oak 36 inches in diameter, bears N 86 1/2° E 332 links
80.00 Set post corner of sections 14, 15, 22, and 23, from which a
W. oak 16 inches in diameter, bears N 53° E 175 links
W. oak 14 inches in diameters, bears S 3 E 54 links
....
South 30 chains gently rolling prairie.
North 50 chains scattering oak timber

The bottoms along the Willamette are heavily timbered with fir, maple, ash and a dense undergrowth of vine maple, hazel and briars...there are numerous sloughs which would make the township almost impossible to survey in the winter (T13S-R4W)

Figure 51. Examples of the survey maps and surveyor’s notes for the Willamette Basin in the General Land Office Survey.

Willamette Valley in the mid-19th Century

When the first EuroAmerican settlers arrived in the Willamette Valley, they found the valley clothed in tall grasses, so tall that cattle were hidden from view. The appearance was that of a “park” with wide swaths of grass punctuated by groves of spreading oak trees (Oregon white oak, and in Lane County some California black oak). Dense gallery forests lined the Willamette and its tributaries with associations of Douglas-fir, Oregon ash, black cottonwood, alder, bigleaf maple, western red cedar, and willows. Dense patches of Douglas-fir forest and oak forest were locally found in ravines, on hilltops, and on the floodplain. This landscape would change as settlement proceeded.

Even before the EuroAmericans arrived and began farming, the vegetation of the valley had been managed. This landscape was manipulated and highly influenced by native people through their use of fire as a tool of ecological disturbance. The native people of the region, called ‘Kalapuya’ by the settlers after the native term for “long grass,” had periodically burned the valley in order to maximize their food and fiber resources.^{49,116} Tree-ring studies reveal that frequent fires occurred in the valley from at least 1647 to 1848. These native peoples lived in the valley south of Willamette Falls and, in addition to the abundant salmon resources of the lower Willamette River, relied primarily on plants and secondarily on game for food. The burning of the dry prairie grasses in late summer suppressed the invading shrubs and tree seedlings without harming the buds of the grasses or the dormant underground bulbs of the camas, which was a staple of the Kalapuya diet.⁵⁰ The valley floor was thus kept in an early successional ecological stage that was essential for the persistence of the camas and tarweed, another dietary staple. Extensive shrubby ecotones between the prairies and the upland and gallery forests provided browse and cover for deer.⁵¹ As the Kalapuya were displaced by EuroAmerican settlers, the amount of burning decreased, and as early as 1852, young firs and “oakgrubs” were reported growing up on the prairies.³⁷ Present-day conditions show that, without fire disturbance, succession leads to invasion by trees and shrubs, often non-native, and the unique communities that evolved under the fire regime of presettlement times are lost.

Today, bottomland prairie grasslands are among the rarest of the native communities with over 97% of the estimated 768,000 acres (310,823 hectares, ca. 1851) having been converted to agricultural and urban uses (Table 16). In the 1850s, these prairies consisted of communities dominated by tufted hairgrass and other species adapted to the saturated soils of winter and the droughty conditions of summer.⁵² There were also mesic prairie communities that inhabited the non-hydric soils of the valley floor. Settlers drained wet areas and converted both wet and dry prairie lands to the production of grain, hay, and cattle grazing.

The riparian forests, also called gallery or bottomland forests, grew abundantly on the floodplains of the Willamette River and its tributaries.⁵³ These forests included a diverse mosaic of brushy thickets, marshes, and ash openings, maintained through annual inundation by floods. On average, these forests were 1-2 miles (1.5-3 km) wide, but reached up to 7 miles (11 km) in width at the confluence of the Willamette and Santiam Rivers. Today, approximately 20% of the area occupied by riparian vegetation ca. 1851 remains, much of it now only one to two tree lengths in width.

In the 1850s, diverse conifer forests were found at higher elevations and on steeper slopes. Periodic fires maintained the tree communities on the hilltops and edges of the valley as either savannas with herbaceous understories or woodlands with open canopies and brushy undergrowth. Cessation of burning changed the structure of these open woodlands by allowing repopulation of the openings with tree seedlings. Rapidly growing Douglas-fir began to proliferate in many places, shading out the oaks. Settlers introduced exotic plants and grazing by cattle, sheep, and horses which significantly reduced the native herb layer. Approximately 12% of the lower elevation 1851 woodland and savanna/prairie communities remain (Table 16).

Land Cover	1851 area (ha)	1990 area (ha)	1851 % of area	1990 % of area	Change in Cover (%)
Development	0	175928	0.0	10.7	N/A
Agriculture	0	552552	0.0	33.5	N/A
Natural Grass	310823	9333	18.9	0.6	-97.0
Natural Shrub	219275	124895	13.3	7.6	-43.0
Hardwood Forest	89249	107901	5.4	6.5	20.9
Mixed Forest	60476	255299	3.7	15.5	322.1
Conifer Forest	603050	384967	36.6	23.3	-36.2
Savanna	213580	0	13.0	0.0	-100.0
Wetland	130324	7221	7.9	0.4	-94.5
Water	21275	25635	1.3	1.6	20.5

Table 16. Comparison of areas of presettlement and contemporary vegetation classes from land cover classification of satellite spectral data in the Willamette Valley areas mapped by GLO surveys. Areas reported for 1990 are adjusted to the area mapped in 1851 for comparison, thus values differ from basin totals reported for land use/land cover in 1990 on page 80. Categories in 1990 were adjusted to 1851 equivalents for comparison (see pp. 164-65). These adjusted categories for 1990 will differ from those reported for 1990 on pp. 78-81. Percent changes in development and agriculture between 1851 and 1990 are not available (N/A) because we assumed zero area in development and agriculture to represent presettlement conditions. Note: 2.47 acres equals 1 hectare.

