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An 11 000-year-long record of fire and vegetation history at Beaver Lake, Oregon, central Willamette Valley

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Abstract

High-resolution macroscopic charcoal and pollen analysis were used to reconstruct an 11 000-year-long record of fire and vegetation history from Beaver Lake, Oregon, the first complete Holocene paleoecological record from the floor of the Willamette Valley. In the early Holocene (ca 11 000–7500 calendar years before present [cal yr BP]), warmer, drier summers than at present led to the establishment of xeric woodland of *Quercus*, *Corylus*, and *Pseudotsuga* near the site. Disturbances (i.e., floods, fires) were common at this time and as a result *Alnus rubra* grew nearby. High fire frequency occurred in the early Holocene from ca 11 200–9300 cal yr BP. Riparian forest and wet prairie developed in the middle Holocene (ca 7500 cal yr BP), likely the result of a decrease in the frequency of flooding and a shift to effectively cooler, wetter conditions than before. The vegetation at Beaver Lake remained generally unchanged

into the late Holocene (from 4000 cal yr BP to present), with the exception of land clearance associated with Euro-American settlement of the valley (ca 160 cal yr BP). Middle-to-late Holocene increases in fire frequency, coupled with abrupt shifts in fire-episode magnitude and charcoal composition, likely indicate the influence anthropogenic burning near the site. The paleoecological record from Beaver Lake, and in particular the general increase in fire frequency over the last 8500 years, differs significantly from other low-elevation sites in the Pacific Northwest, which suggests that local controls (e.g., shifts in vegetation structure, intensification of human land-use), rather than regional climatic controls, more strongly influenced its environmental history.



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1200 years of fire and vegetation history in the Willamette Valley, Oregon and Washington, reconstructed using high-resolution macroscopic charcoal and pollen, the unitary state, taking into account regional factors, makes us look differently on what is the law. Stratigraphic principles and practices as related to soil mantles, in

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