Can Human Cultural Activities be Included in Reference Ecosystems?

Mark V. Wilson, Oregon State University

Presentation to the symposium
“Value and limits of understanding early human cultural impacts
on the Willamette Valley landscape”

Joint annual meetings of the Ecological Society of America and
the Society for Ecological Restoration, 2002

Published in the Bulletin of the Ecological Society of America (Supplement)

Abstract: Selecting reference ecosystems involves criteria like similarity of environment, historical conditions, and ecosystem health. Restoration and conservation in Oregon's Willamette Valley illustrate the impact of human cultural activities on each of these standards. 20,000 years of climate change caused dramatic changes in vegetation from boreal forest to coniferous forest to oak savanna and prairie. As climate turned cooler and moister 4,000 YBP, oak savanna and prairie ecosystems were maintained only by frequent fires set by native people to stimulate food plants and help in hunting. The period that ended with Euro-American settlement is a natural historical benchmark. To aim for reference ecosystems that occurred before human cultural activities is to insist on ecosystems that can no longer be supported by current climatic conditions; to aim for reference ecosystems that match current climatic conditions is to aim for ecosystems that never existed. In contrast to its important role in defining reference ecosystems, knowledge of early human influences contributes little to effective landscape management in the Willamette Valley. Measures like prescribed burning that attempt to mimic early cultural activities can have unintended harmful effects in the fragmented and weedy current landscape. Prescribed burning maintains prairie structure, but does little for native species diversity and can degrade ecosystems by promoting non-native plants. Burning generally promotes threatened and endangered plants, but must be applied in small patches to prevent extirpation of rare insects.