

Pre-workshop statement for the NCSSF/PNW Old Growth Workshop—
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Naturalness matters

It is important that we include “naturalness” as a benchmark for our discussions regarding old growth.

A central premise of conservation biology and evolutionary ecology is that management of natural systems close to conditions consistent with their evolutionary environments will prevent their further degradation while simultaneously conserving their native plants and animals.

Naturalness

The terms "natural" and naturalness are two of the most controversial concepts in ecosystem management. Although fuzzy, these terms are ecologically, aesthetically, spiritually, and politically important. When used to connote the evolutionary environment, naturalness is fundamental to conservation biology, evolutionary theory, restoration ecology, and sustainable wildland management. Naturalness implies native species, structures, and processes, in contrast to exotic species, structures, and processes. At the heart of these distinctions is the evolutionary principle that species which have interacted over evolutionary time will have developed coevolved regulatory mechanisms and interdependencies which lead them to function as self-regulating ecological systems and that some species may depend upon naturalness for their continued survival.

One of the most important definitions of "naturalness" is those conditions which are consistent with of the evolutionary environment.

Evolutionary Environment Concept

The concept of the evolutionary environment is central to conservation biology and restoration ecology. The term evolutionary environment is used to refer to the environment in which a species or groups of species evolved--the environment of speciation (sometimes referred to as the habitat of speciation).

Over evolutionary time species not only adapt to their evolutionary environment, but they may also come to depend upon those conditions for their continued survival. Thus, the greatest threat to biological diversity is the loss of evolutionary habitats, and the greatest hope for reversing the losses is restoration of these habitats. Because old-growth ecosystem components and processes are slow variables (they take hundreds of years to develop) and have been disproportionately lost since Euro-American settlement, their loss represents a fundamental threat to sustainability

But on what time-scale is the evolutionary environment measured?

In the context of contemporary communities the relevant evolutionary environment is that of the past several thousand years (sometimes estimated as 50-100 x the average generation time of the longest lived ecological dominant). Based on this relationship, Robert MacArthur (1972) concluded that "...the length of time it normally takes for a species to split and diverge sufficiently to be regarded as two species is a small, uncertain number of thousands of years".

For North America, the recent evolutionary environment is typically taken to be on the order of 5-10 thousand years and to include AmerIndians as participants in evolutionary processes for at least the past ten thousand years. However, the environmental pressures associated with Euro-American settlement, especially the introduction of exotic plants, animals, and land use practices, as well as the disruption of natural disturbance regimes, are unprecedented in the recent evolutionary environment and thus viewed as disrupting evolutionary trajectories and leading to pervasive degradation of ecological systems. This is particularly true for old growth ecosystems.