

In Summary: Fire in the Evolution of the Eastern Landscape - A Timeline

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Over time fire has played many roles in the modification of the earth's landscapes. In the beginning there was only "natural" fire, but it came from several sources (i.e., volcanoes, spontaneous combustion, lightning, etc.). Then came a new source of fire that has drastically altered the Earth's landscapes - cultural fire. Some 100,000 years ago, as modern man evolved from earlier homo species, there was a seminal event in mans "rise to civilization" - it was his controlled use of fire. It is now recognized that this accomplishment was a primary factor that enabled Neanderthal man to move from Africa into the colder reaches of central Europe. Much later (e 12,000 years ago) this same tool enabled modern man to cross Berengia (the land bridge between Siberia and Alaska that was exposed as continental glaciation lowered ocean levels by capturing much of the Earth's water) and populate the Americas. The original people of the Americas were modern human beings whose arrival brought the first taste of "un-naturalness" to our landscape.

There is strong public sentiment in the East today to establish (restore??) "natural" forest conditions. Accepting the environmentalists stance that "natural" means without a human (cultural) influence, restoring this condition is an impossibility as it has never before existed with the current complement of trees. The deciduous forest moved northward into the Eastern landscape between five and eight thousand years ago as the Wisconsin Ice event ended. However, "man" had arrived several millennia earlier when boreal forests (spruce, larch, jack pine) extended as far south as Atlanta. His activities (especially setting fires) possibility aided in the northward migration of trees. Thus our present forest cover evolved in a culturally altered environment and many trees exhibit traits that adapt them to cultural modifications of the environment (e.g., cones that do not open until burned).

If it could be argued that prior to 1492 Native Americans lived "in harmony" with their environment and no effect on it, then the existence of a "natural" environment at that time could be valid. However, the intent of this presentation is to show that this was not the case; that throughout the Holocene (last 10,000 years) mans' activities have resulted in marked modifications in the Eastern landscape to the extent that, then or now, few places can claim to display "natural" conditions.

There were four preColumbian cultures that occupied the Eastern landscape prior to 1492. The original settlers were Paleo-Indian (10,000-8,000 BC), hunter-gathers who used fire to drive and trap the megafauna (wooly mammoth, mastodons, etc.) that served as a primary food source. These fires also maintained the open, grassy conditions essential for these animals (closed forests do not support grass). The following period -the Archaic (8,000-1,000 BC) saw the beginnings of agriculture with fire essential to control the aggressive native vegetation that threatened to close over their fields. Recent research indicates that landscape-scale fires of cultural origin were occurring in the Southern Appalachians during this Period. Next came the Woodland period (1,000 BC-800 AD) in which agriculture was refined and fire was widely used to open the landscape for hunting, travel and for protection. The Mississippian Period (800-cl, 600 AD) brought PreColumbian time to a close with Native American fire practices passed on to early white settlers.

Ecologists now know enough about forest dynamics and tree biology to model a close approximation of the "natural" forest condition for Eastern forests. For our present complement of trees, the "natural" forest condition would be a closed, multi-canopied, forest composed of shade tolerant hardwoods. The only conifer in the mix would be hemlock on moist, cool sites. The highly productive "pioneer" species characteristic of earlier stages of forest succession (the change in species composition over time, from light-demanding "pioneer" trees to shade tolerant "climax" species) would occur only as widely scattered individuals or in the rare areas where natural disturbances opened the forest. The characteristic trees of today's landscape (yellow pines, yellow-poplar, oaks, sweetgum, ash, hickory, etc.) that represent early- to mid-successional stages, would be largely absent. Examples of the final stage of forest succession (climax forest) may actually exist on a few sites that have not been disturbed for several centuries thus allowing succession to run its full course.

Shifts toward this condition are well underway on public lands in the East. Sites that once supported pure yellow pine or pine-hardwood stands are now converting to hardwoods, and oaks are being replaced by red maple and black gum. These shifts are due largely to 70+ years of highly effective fire protection. The recent reductions in harvesting and additions to wilderness (legislating protection from disturbance in perpetuity) will further erode the productivity of Eastern forests for both wildlife and forest products. Accepting that this trend will continue, the widespread use of prescribed fire offers the only hope for establishing (maintaining) the early successional stages that contribute significantly to the health and productivity of Eastern forests.

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