

# Comments on Fire and Natural Landscape

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LANDSCAPES are probably most often judged to be natural merely on the basis of appearance. Randomness in growth and form present an uncultivated aspect that has popular appeal. With the accelerated encroachment of land development and the tremendous expansion of economic land use, particularly the row-planted forest has come a greater awareness that natural landscape is worth preserving.

The term natural landscape, however, has a broad interpretation which is influenced by personal interest and education. There are those, for example, who extoll the "return of nature" where interference by the hand of man is not tolerated though surely the hand of man left its mark on the natural wild scene. And we should be aware too, that the return of nature may mean the destruction of aesthetic qualities, the possible elimination of certain types of floral beauty or the eviction of some forms of plants and animals. On the other hand, the forester schooled in the statistics of efficient silviculture may become insensitive to the ecology of the natural ecosystem and see no conflict in use of the saw to make certain a forest does not fall apart with age.

Somewhere between these two extremes, I believe, is room for greater appreciation of a place where the return of nature is bridled and not altogether permitted free rein so the greatest possible assortment of living things that may reside there in a state of nature

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may have a chance at survival; where naturally occurring ecological influence capable of being manipulated can be invoked to approximate its effect in a state of nature; and where "management" does not necessarily mean degradation by tools of a technological society.

A statement in the Leopold Report on Wildlife Management in the National Parks offers a brief but adequate guideline to achieve this end and it can be applied to areas large and small, not necessarily in national parks. It states that ". . . biotic associations be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by the white man." This focus on the maintenance of biotic associations implies the maintenance of productivity and diversity in plant and animal life. It provides also, opportunity for creative expression, opportunity to recreate natural scenery though it may only be an approximation. But above all it sets the stage when events occurred which profoundly influenced the appearance of the natural landscape, events which may be simulated and ecological effects approximated. That stage was dominated by fire, lightning-set by chance, set by the hand of man on purpose.

The Proceedings of the Tall Timbers Fire Ecology Conferences abundantly document the world-wide ecological influence of lightning-set fires which together with burning of wild vegetation by early occupants of the land created a mosaic of diverse landscape. That landscape possessed in varying proportions certain easily observed but basic characteristic: old age which gave character to the scene; youth which permitted perpetuation of varied biotic community development; and open space which was attractive to sun-loving plant communities, and their animal associates including man. In the right mix, these characteristics, shaped by fire, often resulted in natural scenes of great beauty where continuity of diversity in plant and animal community was perpetuated.

Not all lightning-set fire or burning by the aborigine left a scene of scorched earth. A raging fire wherever it occurs makes spectacular writing but a creeping surface fire that permits a wild orchid a chance for survival could hardly be expected to make headlines. These fires whether in grassland, forest or marsh were free-running

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fires that may have burned for many days and nights under varied conditions of season, wind, humidity, fuel accumulation and fuel moisture. Fire behavior and its ecological effects varied with these varying conditions. Some areas burned with a hot fire, some frequently with a light surface fire which left no historic record and some scarcely burned at all. An understanding of fire behavior resulting from such widely varying conditions is, therefore, essential to understanding the influence of fire in molding diversity in natural landscapes or in attempting to approximate their development and maintenance.

The natural landscapes when first viewed by European visitors to this country, I suggest, were *managed* landscapes. The word "manage" implies control and it is clearly evident that biotic community development and open space were to a large extent controlled by lightning-set fires and fires set by the hand of man on purpose. And these landscapes can be approximated because it makes no difference if vegetation is burned by a fire set by a lightning strike, an aborigine twirling a fire stick or by a college educated ecologist with a drip torch, the ecological effects can be simulated.

Much of our knowledge concerning burning techniques and the effect of fire on natural vegetations has resulted from the use of fire as a tool in forestry, wildlife and range management but a wider ecological orientation will be required in the preservation of natural biotic communities where fire must not be regarded simply as a tool but as an ecological factor, capable of manipulation, that has existed in a state of nature for a very, very long time. This knowledge has permitted some programs to move forward in restoring natural landscapes but experimental research, especially long term experimentation in the management of natural vegetations is badly needed. Stone (1965) in an article concerned with preserving natural vegetation noted, "There is an impressive number of competent plant ecologists scattered throughout related professions who are oriented toward management, but there are relatively few who have had experience in a detailed assessment of the environmental complex and even fewer who have had experience in manipulative techniques."

Our minds have been conditioned from early youth by scenes of

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destructive wildfires and by a conservation policy of wise use that has projected a goal of economic use. As a result preconceived ideas have developed that have influenced the species productivity and appearance of natural landscapes and old attitudes must, therefore, be questioned. We were told, for example, that fire has no place in the southern hardwood forest, that a basal fire scar destroys the economic value of the butt log. No one cautioned us, however, that that nature reserved no special place for the economics of butt logs. To an ecologist the question should be, "Does a basal scar have an ecological place in the southern hardwood forest?" A few years ago an accidental fire in a large area of beech-magnolia on Springhill Plantation not far from here aroused curiosity about the question because a heavy stand of beech seedlings appeared on the burn. Surface fires during primitive times no doubt entered the climax beech-magnolia forest at indeterminate times and their long term influence can only be conjectured. Casual observations indicate that many hardwoods are not as fire tender as one might suspect and will tolerate light surface fires. Twenty-five years of annual controlled burning in a mixed pine-hardwood forest on Greenwood Plantation has not eliminated the beech and magnolia and not all have noticeable fire scars.

Lightning-set fires were spring and summer fires and burning by the aborigine who was very much a part of the primitive ecosystem was probably to a certain extent indiscriminate though occurring largely in fall and winter. This suggests a wide range of possibilities for the experimental introduction of fire into the natural landscape and it is especially noted that the timing of fire in relation to vegetation development may have considerable influence on its composition and appearance. For example, light surface fires occurring in early stages of pine regeneration may result in natural thinning where the absence of fire at this stage may produce unsightly dog haired thickets. On the other hand, fire exclusion in southern pine-lands for several years followed by light burning can result in a scattered understory at dogwood trees which are attractive to wildlife and add beauty to the forest during the spring when the white flowers contrast with the green of new growth on the burn.

In brief, it can be said that the introduction of fire into the natural

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landscape can at least preserve open space, a highly desirable aesthetic ingredient of any landscape. At best it can not only preserve beauty but a diversified germplasm of naturally occurring species.

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