

# Can We Restore the Fire Process? What Awaits Us if We Don't?

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This paper's title—"Can we restore the fire process? What awaits us if we don't?"—represents an ecologist's view of the world. I submit that this view is unrealistic. The first clause uses the term "restore" which implies reestablishing the fire process of the past. The second phrase uses the absolute term "don't" which implies that we can. Both of these phrases are too determinant for me. The 1995 International Conference of the Society of Ecological Restoration slogan challenges us to "Take a Broader View." If we do that we can see the real challenge.

## Restoring the Fire Process? \_\_\_\_\_

Go Back? No! The objective of the symposium is to "examine the interaction of science and human values into sustainable human-environment relationships." I would suggest that "restoring" fire, that is to say, going back to the way it was historically, is a fool's errand because it is NOT sustainable.

It is not sustainable for three reasons: social demand, economic considerations, and the changing nature of the ecological system itself. Society will continue to demand services such as fire protection, which will preclude restoration in large areas, for instance near the ever-expanding suburban-wildland zone. Given the human values that interact with every ecosystem on earth, human demand will not allow us to return to the past. Humans will always demand that in some places, and at some times, we try our best to defeat nature and exclude fire from an ecosystem. And I predict we will be successful.

Further, we cannot afford to do all the projects necessary to restore fire everywhere it is needed. Money is not available to undertake all possible projects. Prioritization is required to make any significant progress.

The changing ecology (such as global climate change) requires that restoration efforts focus on a moving target. We cannot restore what has yet to be determined. So, the "broader view" leads us to a different task.

## What Happens if We Don't? \_\_\_\_\_

If we take a broader view of this statement, it implies that we can. Here again I think human demand for values will not allow us to restore past regimes. Further, nature may have something to say about whether we can or can't. For example, global climate change. What ecosystems will result

from global climate change? What fire regime? How can man restore a process (fire regime) that is yet to be determined?

So, let's reword the task. "How do we assure that the effects of fire (as an ecosystem process) are replicated in ecosystems in a way that is socially and environmentally successful?"

Do we need to use fire? An unequivocal YES! We don't have to use fire because fire is magic, or because some deity will punish us if we don't. (However, if you listen to some evangelists on the matter you might think that the case.) We must use fire because we have no way of effectively replicating its effects. Fire effects generally come in three forms, chemical, physical, and thermal.

- Chemical effects of fire, such as nitrogen release, can successfully be approximated by the application of fertilizers or other chemicals to a site. We generally know enough about the chemical effects of fire so as to be relatively successful at replicating them.
- Physical effects of fire, such as biomass consumption, can be successfully replicated as well. In fact, regeneration timber harvesting (such as clearcutting) generally finds its conceptual silvicultural basis in replicating a stand replacement fire. We are becoming sophisticated enough now to actually prescribe amounts of material to leave on site in an effort to more closely replicate fire effects resulting from incomplete combustion.
- However, thermal effects of fire are another story. Thermal effects are virtually impossible to replicate at any scale in any ecosystem. Not only that, but thermal effects show tremendous variation over an area. Nature, when applying fire, makes a decision at every juncture, at every plant, at every point, how much thermal effect to apply. Take a tree, for example; the thermal effect can vary across the full spectrum from no effect to death, and anywhere in-between. The randomness of the thermal effects resulting from the application of fire, either prescribed or natural, are impossible to replicate. Further, this randomness is (in all likelihood) an important element of fire effects in ecosystems.

## Can We Use Fire in an Applied Sense? \_\_\_\_\_

Yes, I think we can, but not in an effort to replicate the past. Rather, I believe that the real challenge for fire managers and fire ecologists is in designing the fire regimes of the future. We know that nature will define a fire regime for us. We also know that we will have a social demand placed on us to exclude nature's desire in many places.

So, how can we more fully understand nature's intent and integrate that with our desires? What policies do we put in

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place today that allow natural processes to be able to be unimpeded in the future? These are the critical questions. A perspective of looking into the future is more beneficial than one of replicating the past.

What if we don't? Our challenge on the planet has always been to adapt to the ecosystem. It has been very ineffective to challenge ecosystem process because nature is difficult to contend with, she has all the energy, all the knowledge, and we can't counterbalance her ability.

If we don't figure out how to adapt our practices to take small advantages of utilizing some ecosystems—either for social values such as living or as social demands such as products—then the use-opportunity will be denied by nature. Fire will always be here. The question is what will

determine what type and what effects it will have in various locations.

In the long term, ecosystems with long fire-return intervals will encounter the same problems (for example, unacceptable wildfires) now confronting short-interval, fire-adapted ecosystems.

In the very long term, it makes no difference. A thousand years from now it will all be moot. Nature will allow whatever she will allow over the next thousand years. Humans may, if we're lucky, obtain some small benefit by being wise in our use of ecosystems for our values. Where we are going is undoubtedly different than anything we conceive of today.

It is our destiny to try, however. So we will!