CONFERENCE SUMMARY AND CONCLUDING REMARKS

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INTRODUCTION

About 300 natural resource specialists, managers, policy makers, and researchers convened during May, 1996 in Boise, Idaho to: (1) share successful and unsuccessful techniques and methods used in the quest to find efficient, safe, ecologically appropriate fire management approaches; (2) engage in discussion of the unknowns and "what ifs" that impede implementation of improvements to current fire management policy; (3) discuss fire management issues, current policies, and underlying philosophies which act as disincentives, and/or can not succeed over the long haul because they are intrinsically illogical and/or ecologically indefensible; (4) relate instances where policy has facilitated good fire management practices; and (5) identify potentially conflicting laws and regulations, and suggest remedies.

As usual, the setting, facilities, speakers, posters, and entertainment all met the high standards that are a hallmark of Tall Timbers Fire Ecology Conferences (TTFEC's). Highlights included the excellent Komarek Memorial Lecture by Dr. Stephen Pyne from Arizona State University, an outstanding panel discussion of the political and philosophical issues limiting the use of prescribed fire assembled and moderated by Frank Cole (then with USDI, FWS), and the Poster Session put together by Paula Seamon (The Nature Conservancy). If you did not attend the conference, a perusal of these proceedings will illustrate the breadth and depth to which fire management issues were addressed. Of course you will not have firsthand information about those presentations that were not submitted in written form, and you missed the enthusiasm, slides, asides, and humor that embellished many of the talks. For example, The Secretary of the Interior had exceeded the time allotted him to address the Convention. The moderator who happened to be a fire ecologist with the Fish and Wildlife Service tapped the Secretary on the shoulder and began by saying, "I probably won't have a job by this time tomorrow. . ." to which the attendees (and luckily the Secretary) erupted in laughter. I think this informal atmosphere, which is also a characteristic of TTFEC's, promotes camaraderie, learning, and the forging of new friendships. I personally find it very rewarding to renew old acquaintances and chat with people at all stages of their careers, from all corners of our planet, who are involved with the full spectrum of fire management-related activities. I invariably take home knowledge (often picked up in conversation) that I can apply to my work.

The quality of the conference presentations varied as it always does. However, I was impressed with the overall merit of the subject matter contained in the papers. It was particularly gratifying to hear the success stories from the western U.S. In my job, I tend to hear more about the barriers to prescription fire. The conference organizers do not make "best paper" selections for special recognition so I will also refrain from recommending specific papers and leave you to find your own tidbits of information (but, I assure you, they are there). Suffice it to say, there were numerous excellent papers covering a wide array of fire management topics.

PUTTING THINGS IN PERSPECTIVE

The remainder of my summary will attempt to place the 20th TTFEC in perspective. This has, however, proved to be more difficult than I, at first, envisioned. When I agreed to write a conference summary, I naively assumed I could simply take a retrospective look back to the conference and make some observations regarding the impact it has had on events that have taken place since then. But now that I am actually in the process of putting words on paper, I have come to the conclusion that this undertaking is much like reporting on negotiations aimed at a peace accord. The goal everyone espouses will, if implemented, result in substantial benefits; the significance of these benefits and their ramifications to future generations will be enormous, although at the present time we can only "guesstimate" their magnitude. Numerous other meetings have preceded this one, often without visible signs of major progress, at least in part because some players appeared to have other, less altruistic agendas. Many attendees at this meeting shared an expectation that a workable solution to the problem of too much suppression and not enough prescription will finally be forthcoming. It is too early to tell. Past meetings have also generated such optimism, only to result in missed opportunities and dashed hopes. The bottom line is that I am cautiously optimistic. I think we have a window of opportunity, but a number of people have already stubbed their fingers on the sill.

Virtually all attendees agreed that the present fire management situation is untenable. In fact, I suspect most natural resource managers and a substantial majority of interested technocrats, bureaucrats, and politicians agree that many ecosystems are showing increased signs of stress, and that fire is a major reason. But is the culprit too much, not enough, or the wrong

kind of fire? The answer depends upon the community in question.

The cycle of fuel accumulation, epidemic levels of insect and disease, and catastrophic fire is untenable to many, but this cycle is exactly the way many fire-adapted ecosystems are perpetuated. Other communities require chronic, low-intensity fires. Such fires are easy to control under most conditions. These fires are neither good nor bad, they are simply nature's way of perpetuating these ecosystems. But they rarely maximize the economic return from the land and ignore human values and expectations, which are often in direct conflict with these natural processes. One obvious reason that reaching consensus on a course of action has proved so elusive is because we must integrate human desires with exceedingly complex ecosystems and the myriad natural processes initiated, stopped, or otherwise influenced by fire. An array of methodologies will be necessary as human desires and environmental conditions change both spatially and temporally (although overall approaches may be similar in many cases).

WHAT GOT US TO WHERE WE ARE TODAY?

Please bear with me while I briefly summarize my view of what got us to where we are today. As John Bethea (former Florida State Forester) used to say: "You can no more get to where you don't know where you're going than you got to where you think you are from where you don't know where you've been." In other words, if we want to reach a specific objective, we should know where we started from, how we got to the present situation, and whether it is a step in the right direction in order to avoid further exacerbating the situation.

The untenable situation many resource managers currently face is the outcome of a laudable cause: to minimize the resource damage caused by fire. This deceptively simple desire resulted in a policy of fire exclusion vigorously adhered to by virtually all local, state, and federal agencies. This policy was doomed to failure from the beginning. The individuals who formulated and implemented the fire exclusion policy fit in one or more of the following categories: (1) they were unaware of the natural history lessons embodied in those ecosystems that evolved under the influence of periodic fire, (2) they ignored the examples set by past generations of Native Americans who learned to live with this natural force and use its power to protect and facilitate their existence, (3) they were proponents of the view that humans could override nature to reach desired outcomes, (4) they intuitively knew without benefit of the thought process that wildland fire was patently bad or, (5) they focused on a short-term solution without due consideration of long-term ramifications. The reason I mention these factors is because they still encapsulate much of our thinking.

The case for fire exclusion was heatedly debated at the beginning of the 20th century, but as is often the case, science was ignored, facts were dismissed, symptoms were mistaken for the problem, perception was reality, and emotion that played on fear carried the day. Fires were destroying the natural resource and all too often the human resource as well. Something *had* to be done. In the highly unlikely event that fire exclusion turned out to be the wrong approach, the prevailing opinion was that one could change course at any time. The truth of the matter was that once this path was chosen, it became increasingly difficult and costly to change direction.

It is relatively easy to successfully reduce the occurrence and extent of fire in fire-adapted ecosystems over the short run. However, the more successful fire exclusion is in the short-term, the higher the potential for catastrophic fire over the long-term. Thus, early results were generally positive and economical which fostered the notion that "the devil's work of fire" was being defeated. When setbacks occurred, people mistakenly thought that with just a little more effort and funding, the goal would be attained, thus beginning the cycle of escalating catastrophes (both numbers and magnitude) and escalating funding to prevent them. As the number and magnitude of setbacks increased, these events simply reinforced the contention that without a fire exclusion policy, the situation would be infinitely worse. And, as momentum developed to expand fire exclusion efforts, thousands of career paths opened, a hierarchy formed, and reputations were made. Those overseeing the effort had even less incentive to change. Those researchers and landowners such as Tall Timbers who had the gumption to advocate the use of fire as a management tool were ignored if not discriminated against.

THE INEVITABILITY OF FIRE

But the fact remains that the only known way to perpetuate fire-adapted ecosystems is through the application of fire, whatever its ignition source. Ecosystems are resilient, but if they are forced beyond their limits of recovery, they will be replaced and extremely difficult to restore. Thus, in the unlikely event fire is kept out of a community over a time period that exceeds the biological age of its fire-prone residents (centuries in many cases), the original ecosystem will have long since disappeared and been replaced by another, which incidentally, will likely burn only under more severe weather conditions. In fire-adapted ecosystems, fire provides stability and balance.

The Yellowstone fires of 1988 provided proof of the ecological inevitability of fire necessary to convert many uninformed (or misinformed) people. This event served as the impetus for both policy makers and managers at the highest levels to address this nationwide deteriorating situation and take corrective action. Since then, the problem has been developing consensus on plans to return and/or maintain the use of fire in such ecosystems while protecting human health and safety. The situation is particularly difficult on those sites where long fire-free periods have allowed the accumulation of unnaturally high, combustible fuel loads.

When fire is returned to such sites, both fireline intensity (a measure of the stored energy released as heat in the flame front) and severity (the impact of this heat release on the site) are usually much higher than normal, resulting in undue damage unless extreme care is taken. Therefore, each prescription should be site-specific.

THINKING BEYOND FUEL REDUCTION

One misconception harbored by some people is that fuel reduction is an end in itself. They believe the problem can be solved by continuing to exclude fire by simply removing excess (however that is determined) fuels and utilizing them to benefit humans. What they fail to grasp is that the accumulation of fuel is simply one symptom of a lack of required fire. Nature will continue to create conditions conducive to the return of this mandatory process. Without it, ecosystem health will continue to deteriorate. Nonetheless, many pulp and paper companies are demonstrating that fire can be excluded from southern sites over the short haul. They thoroughly prepare the site, plant genetically engineered fast-growing trees, control unwanted herb and woody understory growth with herbicides, remove the overstory in 15 to 25 years, then repeat the process. Although wildfires do occur, the stand can often be salvaged, and even if not, overall, these companies are currently providing an attractive rate of return for their investors. Such plantation management practices that exclude prescribed fire have evolved for a number of reasons, including the threat of smoke-caused litigation and potential growth losses due to crown scorch. Of course, humans have no control over the amount, timing, or direction of pollutants released by wildfire. Research shows, however, that faunal and floral biodiversity both suffer under this management system, and it remains to be seen how many rotations can be sustained, even with periodic remedial actions such as the application of fertilizer. I include this example not to condemn the practice, but merely to point out that short-term fire exclusion can be successful. This forest management system is much like the row-crop system in agriculture that society has come to depend upon. Neither of these situations have much in common with natural ecosystems.

As the time fire is excluded lengthens, the probability of unwanted fire increases; however, the rate of fuel accumulation varies considerably depending upon the ecosystem in question. Vegetation that is perpetuated by short-interval fires, such as southern pines, begins accumulating unnatural fuel loads after just a few years, while those in drier climates may take several decades. Those communities maintained by stand-replacement fires usually take longer (often centuries) to develop unnatural fuel loads. Simply removing these fuels from a site will decrease the probability of catastrophic wildfire but it does not address forest health unless fire is also reinstated because fire governs a host of mandatory ecosystem processes. At least partial removal of these accumulated fuels is, on the other hand, often necessary before fire can be safely returned to an ecosystem. Many natural processes can, in fact, be applied or mimicked by humans. For example, evidence to date suggests that the combination of prescribed fire and logging can be used to sustain numerous ecosystems.

RETURNING FIRE TO THE LAND

Before fire is returned to an ecosystem, the specific objectives of such an action, how it will be implemented, and how its success will be judged should be determined. The decision to return fire to an ecosystem entails many questions, some of which do not have good answers. One of the first objectives is to decide what the ecosystem should look like at various points in the future. Using an upland southern Coastal Plain site as an example, a fire-return interval of 1, 2, 3, or 4 years will produce dramatic visual differences. Season of burn and type of fire (heading, backing, etc.) are also important, but except for some species that only produce viable seed after growing season fires, influence of these factors is generally overshadowed by differences in fire intensity and severity. Another problem is that in virtually all cases, it is impossible to exactly re-create some prior ecosystem because conditions and limiting factors are continually changing. Altered water tables, global warming, naturalized exotics, and the extinction of species are all anthropogenic reasons. One can not realistically go back to the period before European intervention and arrive at "natural" conditions. To do so ignores the influence of the extensive use of fire by Native Americans for thousands of years upon the evolution of the plants and animals comprising the ecosystem. Irrespective of the plan of action, some form of adaptive management will almost always be a necessity because of the many unknowns. The key to successful applications of adaptive management is to incorporate comparative tests of management hypotheses. Such an approach will be more useful than simple trial and error for generating knowledge.

Another problem is miscommunication. It often is the culprit when a touchy situation takes a turn for the worse. One has to look no further than the title of the 20th TTFEC for an example. The title infers that the goal of the conference is to replace the current standard operating procedure of fire suppression with prescription fire. That thought scares me, partly because I don't know exactly what is meant. Regardless of how much prescription fire is used, unwanted fires will still occur, requiring a strong, quick-response fire suppression capability to minimize resource damage and protect human health and safety. Replacing the word "suppression" with "exclusion" would clarify the goal and make it more palatable to those stakeholders who took it literally.

SOME CAUTIOUS OPTIMISM

So why am I cautiously optimistic? Because in spite of our collective inertia and personal misgivings,

numerous events have taken place or been initiated since the conference that give cause for optimism. Examples include new fire management directives for many agencies, dramatically increased prescribed fire targets for such agencies as the USDA, Forest Service, the formation of committees to address fire management issues under the auspices of the Environmental Protection Agency, workshops sponsored by both regulators and fire managers such as the Wildland Fire and Air Quality Strategic Plan Workshop held in the fall of 1997, and increased fire management budgets (including $8 million dollars earmarked by Congress in FY98) to answer unknowns regarding the role of fire on ecosystem health, and establishment of a national prescribed fire training center, to name a few. These events did not take place because of this conference. They are, however, directly attributable to the hard work and perseverance of many dedicated individuals and organizations. I submit that this Tall Timbers Conference reflects, accelerates, and encapsulates these positive changes in fire management.

But we can not stop here. We must continue the momentum. It is incumbent upon each of us to present the facts to the public. An informed public will place values on the alternatives and make informed decisions. We need to stop sending the public mixed messages. Our dilemma is perhaps exemplified by Smoky Bear; his message is flawed, but there continues to be strong resistance to change it, in spite of the fact that many of his human and animal friends have changed their messages and now embrace the judicious use of fire to promote such things as wildlife and wildflowers. Thousands of years of history and numerous defensible scientific studies have provided a knowledge base. Many questions remain unanswered, but we will never have perfect information. Ecosystems are incredibly complex. We continue to discover interactions between seemingly unrelated factors. We must recognize, and readily admit, that we cannot control ecosystems. But we can guide them, and through adaptive management, strive to ensure their health. Fire is an ecological imperative.