

PANEL PRESENTATIONS AND DISCUSSION

ARE POLITICAL AND PHILOSOPHICAL ISSUES LIMITING USE OF PRESCRIBED FIRE?

Moderator

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INTRODUCTION

Frank Cole

The final session of this conference will be a panel discussion to address the topic: "Are political and philosophical issues limiting use of prescribed fire?" Seated here with us today are Bruce Babbitt, Secretary of the Interior; Dick Bacon, Deputy Regional Forester, Northern Region, U.S. Forest Service; Mark Heathcott, National Fire Management Officer for Parks Canada; Mike Long, Chief of Forest Protection, Florida Division of Forestry; Neil Sampson, Senior Fellow, American Forests, and President of the Sampson Group, a consulting group in Alexandria, Virginia; and Maitland Sharpe, Resource Assessment and Planning, Bureau of Land Management, Washington, DC. By consensus, these gentlemen have asked that we dispense with going through their biographic sketches and related information. Trust me when I tell you that

they are academically and experientially qualified to maintain the position they're in and the perspective they bring.

PANEL PRESENTATIONS

Bruce Babbitt

I'm pleased to take part in this 20th Tall Timbers Conference, and eager to bring my voice to a 34-year conversation that has brought fire ecology from the footnotes of academia to the forefront of land management.

Since your first meeting, back in 1962, researchers have built a mountain of evidence demonstrating that our national policy of fire suppression—"put'em out by 10 a.m. the next morning"—has brought many unintended consequences in the West.

For example, in the high country, thickets of dog-hair pines are crowding the once parklike ponderosa pine stands. Aspen groves, which take root in the first successional stage after fire, are declining throughout the Rocky Mountain West. Shade-tolerant species are

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edging out stands of pine all over. And lower down, pinyon and juniper and sagebrush, unchecked by fire, are taking over vast tracts of grassland.

Many of these changes are reducing the natural diversity and vitality of our plants and wildlife and, in many cases, too many trees must compete for scarce nutrients and water, causing serious problems of forest health.

In short, your research has shown conclusively how fire suppression has created a landscape that is unnatural, unhealthy, and less productive. Your research also helps us see clearly how we can prescribe fire to help reverse these disturbing trends.

Yet despite strong evidence of its benefits to our forests and rangelands, prescribed wildland fire still has not been widely used on multiple use public lands in the West.

Consider: from 1984 to 1993, on 270 million acres of Bureau of Land Management (BLM) lands, wildland fire burned an average of 950,000 acres per year; on 191 million Forest Service acres, fire consumed an average of 842,000 acres per year. At that rate, a given acre of BLM land would burn once every 287 years; a Forest Service acre would burn once every 237 years.

By contrast, studies show the vast majority of western public lands, including rangelands, chaparral, and ponderosa forests, burned historically every 10 to 50 years. Unless we want to build up an unproductive national tinderbox, fire cycles should be brought closer to historical levels. So why haven't they?

Apart from a shortage of money—which, as I will show, is more consequence than cause of our paralysis—land managers might answer that the public just doesn't understand the sight of burning woods, or won't tolerate smoke-filled skies. Others complain it's too risky; they don't want to get blamed. Still others say there's no political support or guidance from the top.

I don't buy it.

The Yellowstone fires of 1988 catalyzed national opinion into widespread support. Initially hostile, the press and American public—after witnessing newly emergent flowers, purple fields of blooming fireweed, and slopes greening with lodgepole seedlings—drew the logical conclusion: Fire can and does renew our landscape.

In a recent poll, *American Forests* magazine confirmed this trend toward support of controlled fire. For example, in California, fifty-five percent favor controlled burning, as do two-thirds of respondents in the Inland West.

And in the South, timber companies and woodlot owners are already routinely and safely burning back the hardwood understorey to stimulate germination and growth of longleaf pines. Southern Californians now know it's a bigger risk NOT to have regular prescribed burns before the seasonal Santa Ana winds become an uncontrollable bellows.

Finally, any doubts regarding support and direction at the top are now resolved. On February 15, 1996, Secretary Glickman and I released our Federal

Wildland Fire Management Policy and Program Review, directing managers to use fire as one of the basic land management tools. Together we have established this basic policy:

“Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role.”

But merely stating this policy doesn't make it so.

In my view, even as we proclaim the merits of prescribed fire, we have failed as federal land managers to make a strong, urgent case to all stakeholders, showing them where fire can make the land more productive and, therefore, why they should support using the restorative flames. How do we do this?

First we must reexamine our success stories to learn from them, asking why these work and why we have not been able to replicate them elsewhere—particularly on multiple use lands.

The common denominator of our best results is that they often come from single purpose land units: National Parks like Rocky Mountain, Kings Canyon, and the Everglades; National Wildlife Refuges like Carolina Sandhills or Malheur in Oregon; military bases like Ft. Stewart and Eglin Air Force Base; and Native American Reservations like the San Carlos Apache in Arizona.

I believe that wildland fire is accepted and routinely and aggressively used on these lands because, in each case, the dominant stakeholders support prescribed fire as a method to increase the return on their “investment.”

Hunters invest in fire to create better habitat for deer, elk, wild turkey, and game birds—the use of fire to maintain southern quail plantations is but one example. Refuge managers use fire to combat exotic weeds, while anglers, Native American tribes, and environmentalists all endorse the restorative flame as conducive to wildlife diversity and healthy native ecosystems.

In the longleaf pine forests from Texas to Georgia, landowners and managers apply the torch to maintain habitat for the native red-cockaded woodpecker, an endangered species.

But on multiple use lands, it is much harder to forge coalitions that will endorse prescribed fire. For example, BLM and Forest Service managers, despite many individual efforts, have not been able to build widespread consensus behind their use of the drip torch. With so many stakeholders asserting their interest in multiple use lands, it is difficult to generate agreement on exactly how and when and where to prescribe wildland fire.

This lack of consensus is often manifest on both BLM and Forest Service rangelands, where the livestock industry is a key resource user. Most ranchers acknowledge the potential for prescribed fire as a tool for range improvement and, indeed, some stand at the forefront of prescribed rangeland fire advocacy. In the Flint Hills of Kansas, for example, ranchers routinely burn back the tall grass prairie each winter to promote

a vigorous new spring growth, while Arizona ranchers recently spearheaded an equally successful burn in the Malpai Borderlands. But on the whole, practical obstacles remain.

For example, ranchers need to know how long a prescribed burn will take a land unit out of production; how much flexibility there will be to take up the slack on other range units; and how increased forage production will be allocated between livestock and wildlife. Burn objectives, such as the desired mix of grasses and forbs, need to be carefully worked out. Wildlife managers, both state and federal, also need to be persuaded that short-term loss will be offset by the increased vitality and productivity of the land.

To resolve these conflicts and to form a solid consensus for investing in fire management, stakeholders must come together on the landscape, assess site-specific conflicts—and opportunities—and agree upon priorities.

The Resource Advisory Councils that have been organized within the Bureau of Land Management in each public land state are a logical forum for the stakeholders—including federal, state, and private land managers, ranchers, wildlife managers, and local elected officials—to formulate plans, set priorities, and move to execution on the ground.

As I noted earlier, lack of money remains an obvious problem but Congress simply won't provide the funds until we consolidate broad political support behind wildland fire management on the range. And we can't build that support until all stakeholders find consensus and approach their representatives—state and federal—with a unified voice.

The message that could be sent is simple: We must reinvest a larger share of the proceeds from public lands to maintain the health and productivity of those resources. And even as we develop a stronger and more focused message to Congress, the Resource Advisory Councils can consider whether a sufficient share of *existing* range improvement funds is going to support wildland fire management.

The case for restoring fire to western pine forests is equally strong. The dilemma facing forest managers, however, is how to thin forests and reduce ground fuel loads that have accumulated since the advent of fire suppression at the turn of the century. For without good fuel management, fire can burn too hot, ladder into the big trees, and threatening catastrophic destruction. The problem then, is that in many forests, we face a large, labor-intensive investment in fuel reduction as a precondition to returning to a more natural, fire-maintained forest.

The trouble with preparing and maintaining forests for prescribed wildland fire regimes is that loggers and environmentalists don't trust each other. Loggers assume environmentalists would reduce all valuable board feet into "natural" ashes. Meanwhile, environmentalists assume careful "thinning" by chainsaw would accelerate into widespread clear-cuts of old-growth trees once loggers get in the door. In the resulting stalemate we get the worst of both: overcutting and vigorous fire suppression.

In this time of contention, forging a stakeholder consensus for sustainable timber harvest on multiple use forests will not be easy. But we must begin, and the place to start is by bringing federal and state and private land managers together to develop priorities and to coordinate planning across land units. The state-wide conference held last November by Governor Romer in Colorado is a suggestive example of how states can take the initiative in bringing land managers together for a common purpose.

History often offers lessons to guide us in the process of reform, and that is true in the case of fire policy, where there is an instructive precedent. In 1911, a time when fire *suppression* efforts often failed for lack of coordination, Congress enacted the Weeks Act. That Act, and successive legislation, provided matching grants to those states willing to adopt comprehensive fire suppression plans acceptable to both the state and the Forest Service. This legislation was made possible by a coalition of the timber industry, ranchers, and others who, in the context and science of that era, believed that it would serve their respective interests.

Nine decades later—as our scientists, land managers, and the public all call for adapting to and investing in prescribed fire regimes—the process of partnership and consensus building that created the Weeks Act can be our model for building a new consensus for fire management.

Dick Bacon

As I look around the room I see a bunch of eager folks. People who really would like to head to the woods with matches! I'd like to join you, but I think that we have some pretty big tasks in front of us. I think that many of us are in the same place. We understand the problem. We know what the need is. Some of us are staggered by the size of the need for more use of prescribed fire. I look at places like the Columbia River Basin and see the alternatives they are looking at which suggest that maybe we ought to treat 4–5 million acres of vegetation during the next decade. It's a daunting task. We know we have the technology and we know we have the skills. Many of those skills are right here in this room. Now we could argue that we have a quantity problem. We're going to have to do something about it.

I think that there are probably a lot of you who are like me in that your frustration levels are pretty high. We find ourselves having to put our firefighters in hazardous situations. This is not going to change in the near future. I think you see us dealing with urban interface problems and that we are indeed chasing our tail. Our top fire management and prescribed fire specialists are in that business and not out doing what we need to do in terms of putting things on the landscape. I think the most frustration comes in terms of just looking at how daunting this task is. I need to apologize now because I'm going to probably sound a little pessimistic, but I think I need to be pessimistic in order to make a point. Generally, in my position, I can be a champion and ignore the barriers that say get out there

and just get this job done, but I think we need to be pretty frank with each other, too. I think when we look at barriers, there are three categories of barriers in the regulatory arena along with our own internal ones, as well as the barriers in terms of our public and social-cultural problems.

On the regulatory side, consider things like The Clean Air Act. They're talking about changing the standards to go from 10 microns to 2.5 and 150 parts per million to 80. That would put many of our communities in non-compliance. That's a major problem. Our fire people are having to spend much energy with the Environmental Protection Agency working on this problem. When we work on air quality standards, another surprise comes. In terms of the Clean Water Act, we've identified water quality limiting segments throughout much of the West. Today, the states are working to develop total maximum sediment levels which would make it difficult for us to generate any new sediment peaks resulting from prescribed fires. There's always something! In terms of the Threatened and Endangered Species Act, there's something new that we're learning about our environment and our problems everyday. I had a conversation yesterday where we were talking about the threats to cutthroat trout in Montana. We have 145 distinct populations. Most of those populations are on the public lands. Only 8 of those populations are not at risk. The discussion topic was where do we need to preclude our prescribed fire activities until we can really figure out what we are going to do to the cutthroat. Another reason to say, "Stop, take a look." These situations occur by the month. The list goes on and on with regulatory issues.

When we look at ourselves in terms of our organizations, we have our own internal constraints. In the Forest Service, we still have a suppression orientation. We haven't been able to make the shift to increase the role of prescribed fire to the level where it should be. And we haven't figured out how to do the trade-off analysis to look at what makes the most sense. I think the scope and complexity of these large projects is beyond where most of us have ever been, especially when we start talking about treatments in the 30–40,000 acre category. That is what will be required to treat 4 or 5 million acres of vegetation per year. The availability of resources, or lack thereof, is an obvious problem. Everybody's competing for resources, budgets are declining, training and experience is a problem, not to mention litigation. I see some of our top fire people in the Northern Region spending 5 or 6 weeks a year involved with litigation in terms of generating depositions. This is increasing by the year. It is taking the talent we need to lead us into places that are not that productive.

On the social-cultural side, I think this is really where all the action is. I think that we have to have the public's permission to increase applications of prescribed fire. And when they grant that permission, they need to do it with the recognition that they're going to have to give us resources, especially money. They're going to have to share the risks with us.

They're going to have to live with the inconveniences, and yes they're going to have to cope with some of the health risks. But we have to get that permission. We have a long way to go. I think we have taught our public well about the dangers of fire. Many of them are afraid of fire. I think the real action is in the area of education, getting people to understand the problem of the need for more prescribed fire. There has been 80 years of fire exclusion and we now have a serious problem of educating people about the other side of the fire issue.

One of our problems now is we are competing, in terms of the messages with the public. You know we hear of traffic out there today from much of the environmental community that says the forest health problem is a hoax concocted by the Forest Service in order to cut more trees. We could spend the next decade trying to agree on how to solve this problem that needs attention. That's not the place to be working, though. In my mind, the big challenge here is to get the top leaders in conservation to join with all of the stakeholders at the national level and shake some hands in terms of agreeing on mutual efforts to get after the problem of needing more prescribed fire. But where we are today is not going to get us there.

I think the other thing we need to recognize is that a lot of the folks who can help us with this problem have other priorities. The environmental community is busy trying to save this nation's environmental laws and we want them to sit down with us and look at exceptions to these laws and regulations that would allow us to have more fire. That is not a priority for them. So the help may not be there. We need to get on with working and fixing some of these serious problems in our environment.

The other thing we need to do is understand that we can get conceptual agreement with the public at the regional level, the national level, and we can get them in local communities when there is snow on the ground. But that same support is not going to be there when you have a fire at their doorstep. I think that we need to take the time to really understand the public. They are indeed threatened by fire. They may not be, but they may perceive that they are and they're going to react accordingly. They're going to call their congressional member. You had better call that member first so they are not surprised. I think the health risks are real. People move to the West for blue sky and we need to acknowledge their motivation. The private land objectives that are so different are the other barriers in the cultural side. The misunderstandings over what prescribed fire is versus what wildfire is are huge.

So, what do we do about it? We do three things. One, we work at the national level to get common agreement in terms of how serious our need is to get out there and treat these landscapes with prescribed fire. Two, people like you work at the local level to get people at the local level to advocate these treatments. All politics is local. So, if we can get support at that level, we can get going. Three, we need some successes. We use some prescribed fire treatments that have a high probability of success and we need a few

of those on a very large scale in many of the geographic areas of the country. That will open the door for all the rest of us. So don't give up. There is something we can work on. When we finish our careers in this business we need to feel like we've tried.

Mark Heathcott

Canada is a forest nation, with 4.53 million square kilometers (1.75 million square miles) covered by forest lands (Environment Canada 1991). About 90% of these lands are crown (public) land. The natural capital of these forests is crucial to the Canadian economy, as well as to Canadian identity and such basic features as air, water, and biodiversity. The success of the nation is in no small way determined by the sound management of these forests, including the management of fire within them.

In Canada, the management of forests on public land is, for the most part, the responsibility of provincial and territorial governments. Outside federal crown lands in the Yukon Territory and Northwest Territories, federal government land management is limited, with national parks accounting for the majority of federal crown land within the provinces. There are 37 national parks, covering over 200,000 square kilometers (77,200 square miles). Of these, 31 national parks are located south of the treeline and require fire management. These include parks such as the internationally renowned Banff National Park and the world's largest forested park, Wood Buffalo National Park. Any consideration for fire use, whether it be for planned or random-ignition prescribed fire, must consider elements of the fire regime, including characteristics of fire frequency and intensity (Heinselman 1981).

The location of national parks, in relation to the forest regions of Canada and associated fire regimes, pose certain management challenges. The Boreal Forest Region is the dominant feature, spanning the nation in a wide swath from the Yukon in the Northwest to Newfoundland in the East (Rowe 1972). In the boreal forest, large, high-intensity, stand-replacing crown fires have occurred on a moderately frequent basis (50–150 years). Similar fire regime traits are shared with the Subalpine and Columbia Forest Regions of western Canada and the Great Lakes-St. Lawrence and Acadian Forest Regions of eastern Canada. Frequent, low-intensity surface fire regimes are restricted to portions of the Montane and Deciduous Forest Regions, as well as to portions of the Canadian Prairies.

In a geopolitical sense, national parks are islands with distinct and often conflicting policies regarding the management of forests and fire when compared to neighboring lands. National parks' policy states that lands are to be managed with minimal interference to ecological processes such as fire (Parks Canada 1994). Active management is warranted, however, when public safety, park facilities, or neighboring lands are threatened, as well as when monitoring shows the structure or function of a park ecosystem has been seriously impaired. Management actions are required to duplicate ecological processes as closely as possible,

with the effect of the process of primary importance, and the mechanism secondary (Lopoukhine 1983). In contrast, management of non-park lands in Canada is often directed at modifying or controlling landscapes and processes, producing crops, and extracting natural resources. As a result, trans-boundary issues are perhaps the greatest constraint to fire use within the national parks of Canada.

Many national parks have become isolated in tracts of commercial forests or agricultural lands, and may be subject to encroaching recreational development and urbanization. In these commercial lands, fire is traditionally viewed as a competitor for the "fiber resource" or for fodder, with resultant pressure to contain fire on "non-productive" lands, such as national parks. Wildfires crossing jurisdictional boundaries are considered a threat and there is pressure to suppress all park fires. This attitude is enhanced by limited funding for presuppression activities, such as fuel modification through planned-ignition prescribed fire, but seemingly unlimited funding for "emergency" suppression. This tendency for full suppression of park fires has occurred even in areas where the values-at-risk from fire are perhaps more a matter of perception than reality, such as in remote boreal forest parks.

There is a concern that parks must be good neighbors, which is often interpreted as acting as neighbors, who often follow a policy of full suppression. For example, the response to lightning fire in the very large and remote Wood Buffalo National Park (area 45,000 square kilometers, 17,375 square miles) has, until recently, been aggressive suppression modeled after the response of neighboring jurisdictions. However, recent efforts at communication, consultation, cooperation, and joint management planning have begun to replace the capitulation of park fire policy. Increasingly, random-ignition prescribed fire is becoming a recognized tool used to meet ecological objectives in this remote northern boreal forest park. However, the use of random-ignition prescribed fire is not acceptable in all areas of the park when higher risks are considered, just as it is unacceptable in areas of many southern parks. Planned-ignition prescribed fire offers a means to mitigate the risk of trans-boundary fire spread in high value areas and is often viewed more favorably by concerned downwind neighbors. Furthermore, if carefully applied, planned-ignition prescribed fire need not compromise the duplication of ecological processes. However, implementing the full complement of fire management strategies, including the use of both random and planned-ignition prescribed fire, requires solutions to an on-going ecosystem management debate prevalent in national parks on both sides of the 49th parallel.

The debate centers on the role of humans in North American ecosystems and may be referred to as the "natural regulation versus active management" debate of protected areas, including national parks (Wagner and Kay 1993, Kay and White 1995). Should "nature" be allowed to take its course without human intervention or is active management required, based on pre-defined goals for ecological integrity, identified through monitoring structural and functional ecosystem com-

ponents or stressors (Woodley 1993)? The source of fire, whether from lightning alone or through the application of planned human ignition, is often the target of such debate, even though fire's effect is independent of its mode of origin (Van Wagner 1983). The dilemma is well illustrated in montane areas of Banff National Park and Jasper National Park where fires of lightning origin are infrequent, and yet detailed fire histories indicate relatively short fire cycles (Tande 1979, White 1985). The role of aboriginal ignition is not entirely clear, but appears to have been significant, especially at lower elevations. The historical territory of the Blackfoot confederacy or Sik Sika included what are now park lands (Jenness 1932). Interestingly, these people named themselves after their soot-covered leggings and moccasins. Were thousands of years of ignitions by aboriginals "natural?" The answer to questions such as this requires understanding of historical ecology, although such science alone may not provide the silver bullet for modern ecosystem management. In fact, conflicting scientific opinion often adds to the dilemma and may paralyze an organization.

Banff National Park offers an appropriate case study for the confusion the science debate brings to policy. The public, many managers, resource specialists, and scientists often fail to understand the fundamental dynamic nature of ecosystems. The revision of Parks Canada policy in the late 1970's, concurrent with management innovations in the United States, stimulated philosophical questioning by Parks Canada as to which fire management strategies were most appropriate (Van Wagner and Methven 1980). Concurrent with this exercise, fire managers in Banff National Park began developing modern fire management plans, with a requirement for planned-ignition prescribed fire (BNP 1984). The first prescribed fire was conducted in September 1983, and by September 1994, more than 20 prescribed fire operations had been conducted, burning over 8,000 hectares (20,000 acres) as high-intensity surface fire and stand-replacing crown fire (White and Pengelly 1992, PC fire reports). All operations were safely conducted with minor "slopovers" occurring on only a few of these high-intensity prescribed fires. Objectives for these planned-ignition prescribed fires included restoration of historical stand age distributions, fuel reduction in high-risk areas, and to gather empirical data for fire behavior prediction. However, fire use in Banff National Park was not without its detractors, including those from within the scientific community. Certain fundamentals of fire management were challenged. For instance, scientific evidence was presented suggesting the past 100 years of fire protection has had little effect in reducing area burned in the southern Canadian Rockies, along with evidence for a constant hazard of burning with stand age (Weir et al. 1995). Further, fire in this region appears to burn regardless of topography (Johnson and Larsen 1991). Apparently, two sides of the fire behavior triangle all fireline personnel have been schooled in and respond to is wrong, with weather alone controlling fire behavior! What's more, the ability to affect fire frequency through the suppression of small, initiating fires has been chal-

lenged, throwing into question the usefulness of widely accepted tactics such as early detection and rapid initial attack.

Conflicting scientific evidence such as this confounds management, with an impetus for increasingly higher resolution, and refined and specialized research, which could be compared to the quest for the Holy Grail. When coupled with inexperience, misunderstanding, dissent from special interest groups, and rapid organizational change, many managers may be reluctant to make decisions about ecosystem management, especially where risk is readily apparent. No planned-ignition prescribed fires were conducted in Banff National Park in 1995 and further prescribed fire within the park is under review at this time, pending completion of an on-going futures study. Fire management initiatives in a number of other national parks are pending, with their outcome likely to be affected by the direction chosen for Canada's first national park.

Risk is inherent to ecosystem management as there is always a chance of an event or situation leading to an uncertain outcome. However, management through common sense, knowledge, and foresight may minimize risk through appropriate action, especially active management. In the field of fire management, active management starts with policy concerning presuppression versus suppression, fire use versus fire exclusion, and adaptive management versus passive management. Policy is politics, and in fact, *en Canadien français*, both words are one; *politique*. In democratic nations, adherents of policy carry out the will of its citizens, often when faced with incomplete or conflicting knowledge, substantial pressure to do otherwise by special interest groups, limited funding, uncertain organizational futures, and sometimes, the lack of internal organizational support. Fire management has always been done by the risk takers, who are often few in the culture of large organizations such as government. To institutionalize the use of prescribed fire, risk takers must be rewarded and made to feel welcome and essential within fire management organizations. The consequence of doing otherwise is enormous. To eliminate fire from our parks and forests is as fundamental an ecological insult as fouling our waters or eliminating species.

Mike Long

As I reflected on the title of this panel and attempted to develop, organize, and logically lay out my thoughts I decided to look up the definitions of "political" and "philosophical." After much thought and deliberation, I have concluded that the answer is both yes and no. Simply put, in some population segments of the nation these limiting influences are positive and in others these limiting influences are negative depending on your views of prescribed fire.

Conflicts in philosophical issues lead to the formation of political issues which routinely end in some type of policy or regulatory action by government. This nation has a wide range of landownership pat-

terns, great diversity of ecosystems, tremendous variation in demographics, and an extreme number of political and philosophical issues related to prescribed fire. There is not a one size fits all approach to prescribed burning. Governments from federal to city level must react to the political issues presented by the populations they serve. This can often lead to conflicting attempts to resolve the prescribed burning issues.

As the administrator of Florida's Total Fire Management Program I have the opportunity to deal on a daily basis with the perspectives from both sides of the prescribed burning issue. While many of us with a resource management background know and understand prescribed fire as having a positive impact on the ecosystem there is just as large, or maybe an even larger group, that is opposed because of degradation of the air quality and health risks associated with prescribed fire. Many of those who make up this group are scientists in other fields, individuals from groups representing health issues, and some individuals who don't understand. There are many who feel their efforts to conduct prescribed burns are limited beyond reason, while the other segment would argue that we are too liberal in allowing prescribed burns.

In the Southeast, where prescribed fire for silvicultural and wildlife purposes has a long standing history and acceptance, the pressures for government to further regulate and cease burning are ever increasing due to impacts of population. We must make use of prescribed fire a part of our total fire management program in order to keep this resource management tool. Our program in Florida is based on a strong fire prevention program, an excellent fire suppression program, and an aggressive prescribed burning program. All of these must be tied together if we are to keep some type of balance in rules and regulations that impact prescribed burning. It is really a matter of showing the knowledge, skill, and professionalism to make the right choices when approaching fire-related issues. What was the right decision today may change to be wrong tomorrow. This makes it necessary for us to constantly plan, evaluate, monitor, and act. You can not really have an automatic decision-making process. In the total fire management scenario we are constantly promoting responsible prescribed burning. While on the other hand, we aggressively take enforcement action against irresponsible prescribed burners.

Let me give you a real set of statistics and ask you to put on two different hats as you listen to how they are presented. During the first three months of 1996 less than one-half of one percent of the burning authorizations issued in Florida escaped. Okay, now try this one. During the first three months of 1996 two-hundred fifty-five authorized fires escaped. This is about 40 percent of the escaped debris burning fires in the state. From a public safety standpoint were we limiting enough? From a resource management standpoint were we too limiting?

One of our major problems is that resource managers want to go to a selected state of plant succession rapidly. It took the resource and wildland fire community forty years of not having a total fire manage-

ment program to produce the ecosystems we have today. If we try to correct that in a short time frame utilizing only fire we will undoubtedly suffer what are perceived to be catastrophic fire after catastrophic fire. Before prescribed fire can be successfully reintroduced, we must determine an acceptable means and time frame to reach the management objectives of the given area.

The future of prescribed fire is dependent upon how well the fire management programs of today address the philosophical issues related to the use of fire. Our failure to understand all the philosophical issues and political ramifications will lead to a solution by the government that may not be the best for both people and the environment.

Neil Sampson

The panel's subject today is "Are Political and Philosophical Issues Limiting Use of Prescribed Fire?" The short answer is "Yes," but that's not particularly helpful in terms of understanding how we might address the situation. More useful, perhaps, is a look at some of the underlying factors to see which we might most constructively address at either the policy or educational level.

From movies like *Bambi* to last week's news coverage of the Arizona wildfires, the public is given the unconditional message that fire is bad. Fire is depicted as a destructive force; something that good land managers try to avoid. Last week everybody from the camp cook to the Secretary of the Interior was out there battling the horrible menace. This is war.

Then somebody comes along and proposes that land managers need to use fire to restore essential ecosystem integrity and the public says, "What? This sounds more like work. How dare you people interfere with this marvelous natural area." We have, in many ways, created our own monster here, and continue to do so.

The public has no difficulty in sorting out the difference between beneficial and damaging weather—between rainfall and hurricane or between irrigation flows and destructive floods. Those all involve water, but we can talk about the differences in intensity and effect, and people understand.

But we can't do that about fire today. We tried to find words that suggested a difference between normal fires and destructive ones in the National Commission on Wildfire Disasters study. Other groups have also struggled with that issue. The best anyone has come up with is "prescribed fire." You people understand what that term means, and that is about as far as it goes. You get two blocks from this meeting room, and you'll be lucky if 5 percent of the people can get it right. That is not a sign of successful communication.

So how are we going to bridge that gap? How are we going to explain that a wildland fire that is burning in underbrush, litter, and reproduction thickets, but staying cool enough to be tolerated by most of the overstory trees or perennial native species and doing

no soil damage is a normal, ecologically positive event?

Maybe one way to explain the difference is in temperatures. There is an enormous difference between short-duration temperatures of 100 degrees C at the soil surface and a sustained heat of 500 to 700 degrees. In both situations, you have fire and heat, but the energy releases and environmental impacts are enormously different. It is like the difference between watering your pansy bed with a sprinkler can and watering it with a fire hose. The energy release and environmental impact are dramatically different. Nobody has a hard time understanding that. Why can't we explain fire the same way? The difference between fires that benignly recycle carbon and nutrients and regulate species balance in most terrestrial ecosystems, and fires that destructively kill all vegetation and alter soils significantly and permanently, is the amount and duration of the heat involved. Low heats are relatively benign, particularly in short-duration events; high heats are usually destructive, particularly in long-duration burns.

And the major variable in determining the heat generated and the duration involved is the type, amount, and arrangement of fuels available in the ecosystem. All we heard on the news last week about the Arizona fire was that it was a terrible, destructive event. I'm sure there are places where that is true, and outstanding ponderosa pine stands were lost that will take centuries to regain. But I suspect there was also a lot of brushland and pinyon-juniper involved in 61,000 acres down there, and that this event, while it may have been excessively fueled and hard to manage, may not have been so far out of range for those sites.

Now, unless I've grossly oversimplified something or misinterpreted the information I've been given, we're not talking rocket science here. First, we're talking news reporting. If there were a good base map of ecosystem types in that area, and a quick aerial or satellite reading of the fire event, couldn't we be a lot more informative, in terms of the type of ecosystems that burned, and the percentage of low-, moderate-, and high-intensity burns? If we were able to do that, would a 61,000 acre disaster turn into a 50,000 acre prescribed fire with 11,000 acres of destructive intensity? I don't know, of course, and those numbers could be way off the mark. I just think we need to begin helping people understand the real effect of these fire events, and the fact that not all fires, in all places, are the worst thing that could happen there.

Secondly, we're talking fuels, and fuel management. We need people to understand that these systems produce a lot of wood and other biomass that has nowhere to go, given the climatic conditions involved. It either burns in a fire on the land, or it burns somewhere else. Our attempts to keep it on the land—neither burning it there or removing it to be used and eventually burned elsewhere—have been unsuccessful. We have done wonderful things with modern science, but we haven't repealed the basic laws of the carbon cycle.

So we need to tell people clearly that we have a

fuels crisis on much of America's western wildland. We've been so effective in suppressing fires that we have large areas with too much fuel, and those areas create very high risks of exceptional wildfire events. Make the parallel to the home full of oily rags and papers strewn around the fireplace. Too many wildlands are full of oily rags and papers. If an ignition occurs, they will burn unusually hot, with great danger to people and the environment.

And we can reasonably suggest some of the results likely to occur. A ponderosa pine-Douglas-fir system with stem counts in the hundreds per acre, fuel loads approaching 100 tons per acre, and contiguous areas of these conditions running into the thousands of acres, will ignite and burn at some future time. If the trees are large enough so that they are moisture- or nutrient-stressed in normal climate cycles, the odds go way up. If the crown base is below 8–10 feet on over 10 percent of the trees, the odds are good that any ignition will result in a crown fire. If the crown density is fairly high, any fire that crowns out will stay in the crowns and build more intense, lethal behavior.

And if the fire crowns out and achieves high-intensity levels, most, if not all, of the vegetation will be killed. If the soil gets really hot because of the high temperatures and ground fuels, the chances of soil damage from organic matter destruction, nutrient losses, clay transformations, and hydrophobic conditions goes up. Where soils are damaged most severely, and cover is lost, a subsequent rain or snowmelt event will cause further soil and watershed damages.

Here, to me, lies much of the long-term risk. Having the vegetation killed may be a problem, particularly where you have trees 100 to 200 years old that could form the basis of a long-term overstory structure in a functioning forest ecosystem. Lose those trees, and it takes you two centuries to get back to where you were yesterday. And you better manage well in those two centuries, or that won't happen, so you've left a real challenge for your grandchildren. That's usually not the kind of thing we put on the list of "good steward" indicators.

But lose the vegetation, and significantly deplete the soils, and you have left a legacy of bad stewardship for millennia—dozens of generations. That, to me, is really serious.

My current sense is that the scientific community is still too timid about predicting ecological consequences. We all know we open ourselves up for error when we suggest the directions that an ecosystem will take in the future. We're all aware of how little we know, and how dependent future events are on random combinations of conditions or events. But we understand the range of possibilities in a way that the general public may not realize, and we are remiss if we don't explain those possibilities. We have wildlands, and communities today, at great risk.

We'll never prove these risks in field experiments—we may only get one event to observe in that situation under those conditions, and that's not enough to build reliable proof. But we better figure out how to say something relevant, because people's lives and

futures are at stake, as well as the integrity of many of those ecosystems. If we let the “naysayers” object successfully to every suggestion for intelligent treatment, we assure that these systems will blow. Many of them, given the current condition, will burn within the next decade or two. Saying things like that may be more speculative than many scientists are willing to risk, but if the people who study these lands don't say what they know, how are people to intelligently participate in the democratic process that federal land management is becoming?

We need better decision-making tools about strategic treatment. Dr. Leon Neuenschwander of the University of Idaho and myself have been looking at the Boise National Forest's hazard and risk model. This model is, by the way, one of the better ones I've seen in terms of helping people see what and where the major risks are, and where strategic treatment might be most usefully aimed.

We built a supplementary model that tested the idea of strategic treatment. Our assumption here was that you would treat every acre you could so that it was tolerant of a burn appropriate to that particular ecosystem, and that the amount of work you could do was limited by budget, people, and weather conditions. Now, the question was: where do you treat, and does it make a difference? Our answer was, you treat the high-risk areas first, and the landscape diversifying areas second, and it makes a significant difference. You break up large contiguous fuel areas. You pay attention to high-ignition zones, whether they are lightning zones or human-impact zones. You catch the slopes that connect a high-ignition area to a large high-risk fuel area. You break up the big patches where they neck down, or go through a critical zone.

To do this, you need information. You need a good data system, arrayed in a GIS that tells you what is where. You need to be able to identify not just the conditions on the land, but the relationship of one area and its conditions to the landscape around it. You need periodic updates to tell what is changing. But nobody has endless time or money to get that information. That means we have to limit ourselves to a few layers of data, and find ways to get that data regularly and reasonably. And we have to know what it means. It is one thing to have an estimate of fuel conditions, or slopes, or soil types, or air currents. But you need to go a step further. When are certain conditions reasonably risk-free, and when do they become hazardous? In other words, how do we index and display the data so that people can recognize where and why the most high-risk areas exist, and how strategic treatment might be most effective? That will be the subject of a workshop we are planning for later this summer in Colorado. We'll try to develop a model, using expert systems to agree on indexes, that can help on that score.

I hope you can tell from this brief overview that my personal opinion is that people would understand the need to expand prescribed fire, if only we would explain the facts and risks to them. It may be comfortable for people in the land management world to

blame the media and the public for this lack of understanding, but the more I look at the situation, the more I turn the responsibility right back upon our own professionals. Until we learn to tell the story straight, we're not going to get support. And in many wonderful places in the West, we have less than a decade or two before the question is moot.

Maitland Sharpe

I am here to offer a BLM perspective on the implementation of the Wildland Fire Policy. BLM welcomes the new fire policy. We are committed to putting it in place on the ground and making it work. The basic principles of the policy reflect lessons that BLM employees have learned in the field: return fire to its role as a disturbance agent in the ecosystem; reduce fuel loadings; integrate fire and resource management; manage across fence lines; work through partnerships; protect resource values as well as property; and build the program on the best available science. To a gratifying degree, the new fire policy tells us to go where we were headed.

There is no question that we cannot go on trying to put out all fires by 10:00 A.M., whatever the cost. We need to apply fire to maintain or restore fire-dependent forests and rangelands and reduce fuel accumulations. But, scientific understanding, a new appreciation of fire's role, and a freshly minted policy will not restore fire to the landscape. To meet our goals, or even approach them, individual land managers will have to make the decision to give fire a place—after 10 A.M. They will have to plan for vegetation objectives, for the fire regimes to attain those objectives, and for prescriptions that will sustain those fires. They will have to find the courage to light the torch or call off the initial-attack team. They will make those decisions in the context of their own careers; their understanding of fire and ecosystem dynamics; the funding, personnel, and skills available; their own calculus of risk and reward; the climate of local attitudes about fire; and their sense of the agency's commitment to the fire policy.

In my view, it is those factors that will prove most important in determining whether we succeed in implementing the new fire policy. The primary impediments to restoring fire's role do not lie within science, nor with our understanding of natural systems, but with our social and institutional arrangements: our funding; our cultures; our skills; our visions of what our jobs are; our expectations of ourselves and our peers; and the stories we tell each other.

Implementing the wildland fire policy will require no less than changing the culture of BLM. It will mean overcoming inadequate funding, insufficient skills, public skepticism and fear, and an unfavorable pattern of incentives. These will be the barriers to putting science and policy into effect on the ground.

Funding

Lack of funds hampers our use of fire across-the-board. We expect to have enough money to fight wild-

land fires, but not enough to apply fire on anything like the scale the policy envisions. Funds are needed for fire planning, fire training, burn teams, fuel treatments, public education, community liaison, and research—as well as for fire suppression. But we must work with the money we have. Existing funds could be extended by pooling resources across programs, across resource areas, across districts, even across agency lines to carry out the projects that have the highest priority in terms of ecosystem objectives. A better balance between the funding for prevention and suppression would help us address forest and rangeland health and fuel accumulation, rather than waiting for an uncontrolled wildfire to bring funding in its wake.

Personnel

Over the past year and a half, BLM has reduced its staff by about 10 percent, losing many of our most experienced managers and specialists, including many of those with fire experience. The cohort with fire skills is shrinking. The new managers often have little if any fire experience and many feel like strangers in the culture of fire management. Fire is a top priority for our remaining employees, but so are the developing forest plans, riparian issues, invasive weeds, and managing grazing. One solution may be to cross train—to make fire a part of everyone's duties and skills—because we can not count on replacing retiring fire specialists. Pooling human resources across program, agency, and geographic lines will also help extend scarce skills.

Science

In general, we see science as a strong link in the fire chain. But in BLM, we find a need for greater knowledge of fire regimes and effects in such non-forested landscapes as rangelands, pinyon-juniper woodlands, and grasslands shifting to woody species after decades of fire exclusion. In these less-studied systems, we would like to have a better fix on the effects of fire on ecosystem maintenance and rehabilitation and on the effects of fire exclusion. We also need, almost everywhere, more site-specific information on natural fire regimes and frequencies.

Risks and Rewards

Land managers cannot be expected to use fire aggressively if fire seems to pose high risks and low rewards, either to the resources they manage or to their own careers. Too often, fire has been feared as a career breaker. There has been no offsetting sense that skillful use of fire will be rewarded by career advancement. The incentives are all on one side of the equation—favoring fire suppression and exclusion.

The risk-reward ratio of the land manager and society are reversed; ironically, what is good for society (and for the resource) is bad for the manager (or she fears it will be). For society, over the long run, the risks of fire exclusion are high, as are the rewards of

applying prescribed fire where it is needed to meet resource goals. For the manager, however, the risks of fire suppression and exclusion have been exceedingly low. The risks of applying fire have been seen as high. Thus, for the manager, with his shorter time horizon, it has seemed rational and inviting to exclude fire, adopting a strategy of “not-on-my-watch.”

To successfully implement the fire policy, we will have to change the array of incentives and disincentives facing the land manager. We will need to *demonstrate* that managers who accept the risk, act prudently, but have a fire get away will be supported unconditionally up through the organization—not hung out to dry. We will need to accept that, as we use more fire, we will lose more fires—and plan to buffer the impact on managers and adjacent landowners alike. For landowners, the policy rightly calls for legislation to permit prompt repayment for damages, without the aggravation of bringing suit. For managers, we might consider an “Over-the-Hill Award”—a tongue-in-cheek way to show BLM's understanding and support. Equally important is positive recognition for managers who use fire skillfully and appropriately—through awards, bonuses, career advancement, and visibility and respect.

Our goal should be to change the culture of BLM, so that using fire is an inseparable part of being a land manager and experience in applying fire is an expected condition for advancing up the career ladder as a resource manager. At the same time, we will need to equip the manager with better techniques for predicting the results of fire in a given system and assessing the objective risks of fire to the resource and to property. We are asking our people to accept a new role as risk managers, not risk minimizers. We need to provide them with the analytical tools to reduce uncertainty and realistically weigh the risks of introducing fire into a system against the risks of suppression or other actions.

Public Opinion

The simple fact is that we will not be able to use fire if the public will not let us. Land managers, fire operations personnel, fire scientists, and agency leaders all bear a responsibility to share with the public our growing understanding of fire and to include the public in fire-related decisions. A passive openness to public comment will not be adequate to the task. We will have to make the effort to reach out and work with county commissioners, adjacent landowners, recreation groups, editors, and citizens' organizations. We will have to make the same effort to include the public health community, air quality regulators, and other units of state government. There is no shortcut. If we do not include the public in our planning, if they do not understand what we are doing and why, we will have little chance of carrying out the wildland fire policy.

Legal and Institutional Constraints

Inflexible regulations, statutory constraints, bud-

getting practices, personnel rules, and simple entrenched habit all hamper us in doing what needs to be done to implement the policy:

- Hiring rules hamper us from making greater use of temporary employees for fire work;
- Some of BLM's land use plans prevent us from using fire as a tool for vegetative management; many others fail to address fire at all, providing no basis for fire use;
- Congressional budget restrictions prevent us from using fire suppression funds for any prescribed fires or using fire preparedness funds for prescribed burns to achieve broad ecosystem purposes;
- Habits of competition for funding may keep resource managers from using resource program money to fund fire activity, because that is seen as a competing program;
- Grazing regulations and grazing politics have made it difficult to interrupt grazing operations for several years while rangelands are rested for fuel accumulation, burned, and reestablished.

Planning

BLM faces two distinct issues in planning for fire. First, we must make sure that our 154 land use plans conform to the new fire policy. It may not be necessary to do formal plan amendments on all of those plans. Some may accommodate the policy already, while others may at least be silent on the subject of fire. But many plans will have to be amended, and that will be a large and slow task. We are currently looking into ways to bundle needed plan amendments by state or eco-region to speed the process and cut the cost. But for now, the outcome is uncertain.

Second, BLM needs a way to better integrate fire planning with the rest of resource planning and management. In the spirit of ecosystem management, we are currently recasting our planning process to integrate our many discrete activity plans into a single, comprehensive land use plan, breaking down the old barriers between the various disciplines and programs. Fire must be part of that integration. Fire must be at the table throughout the goals setting and planning process. It must be part of the conversation. But, the fire policy calls for independent fire plans, which may tend to leave fire considerations and the fire community talking to itself at its own table. We will have to work around that problem, perhaps by absorbing the fire plan into the land use plan. It is essential that fire plans be developed with active participation of resource managers and specialists if we are going to implement the new policy and achieve the promise of ecosystem management.

Leaving barriers behind, I have two concerns about the policy itself. First, because the policy is focused on furthering interagency coordination and consistency, it invites us to shift our attention away from what we can do within the scope of our individual agencies. To meet the challenge of the policy, and of fire-dependent natural systems, we need to get moving, on the ground, in every BLM district and resource

area. We need to start applying fire where it is needed; learn to use it; gain experience and confidence; begin to accept fire's risks; and let the culture start to change from within. We can not afford to wait for other agencies to change first, nor for the whole interagency system of fire management to change all at once. The major barriers to our implementing the fire policy lie within BLM. We do not want the focus on interagency issues to become an excuse for inaction on the ground. We need to send a clear message that it's time to get going in the field, at the same time we are putting the interagency infrastructure in place.

Second, I have a somewhat similar concern about the policy's emphasis on using fire on the landscape level. There is no doubt that fire has no respect for fence lines, or that problems of forest health and fuel accumulation are large-scale problems and may call for large-scale treatments. But, at the same time, there is much that can be done on a smaller scale, within the fence lines. We can begin to do those things without waiting for large-scale mechanisms of coordination or for the confidence and courage to accept landscape-scale risks. Again, my concern is that an overemphasis on the landscape scale may invite delay, leaving the difficult business of fire to someone else. We do not want to make the ideal the enemy of the good and discourage land managers from doing what is needed now, at a feasible scale.

In closing, I should acknowledge that natural systems are complex. Broad similarities disguise important differences. We can not afford to apply blanket prescriptions. Fire is not simply good or bad, even in a fire-dependent system. Cool-burning, early-season fire might suit our purposes; hot, late-season fire might not. A system that depended on fire 100 years ago may be so altered by new species that it is now intolerant of fire. The risks of using fire are not confined to having it go over the hill. We face the risk of applying the wrong fire, or at the wrong time, or too frequently, and damaging the system we set out to restore to health. Fire is not a panacea. But most of the ecosystems we manage evolved with fire. And most of them are damaged when we exclude it. When applying wildland fire, we need to get it right. But we need to get on with it.

Frank Cole

Some excellent points have been made during these presentations. For example, you would not take your car to a mechanic who refused to use all the tools in his tool box. You would be suspect if he tried to fix everything with a crescent wrench, for example. Prescribed fire has a place in the context of total fire management.

This is now the time when the audience has an opportunity to question the panelists. I ask that you stand, be recognized, and direct your question to one or more of the panelists. I will ask that the panelist reiterate your question so that we can transcribe the discussion for the proceedings.

Audience member

After hearing conference presentations for the past two days, I can not believe the huge differences that exist between how prescribed fire is applied over large areas in the southeastern U.S., and how relatively limited applications of prescribed fire are in the West. It seems like there should be some opportunity for managers in these two regions to interact and share ideas, technology, and approaches to developing fire prescriptions.

Bruce Babbitt

I think you may have just qualified yourself for a mandatory transfer!

Frank Cole

Well, for sure Ricky Ingram and his crew do a lot of burning in the Southeast and in the Carolina Sandhills Refuge. I think you may also have heard presentations from other fire practitioners in the Southeast earlier.

Bruce Babbitt

I would like to make a short, serious comment. I agree with everything the audience member said. I think what we must do at this point is actually move toward setting priorities. I thought Neil Sampson was on some interesting turf when he said that we have to find some way to use objective data, whether by modeling or otherwise, to find those priority targets. Last November in Colorado, Governor Romer put together a statewide conference of land managers. I think this started the process of saying, on a statewide basis, we have to find consensus about where we start. We have to identify the stakeholders, find the right place on the map by some kind of cross-agency process, get the stakeholders together in a room, lock the doors, and say, "Okay folks, let's get started."

Audience member

What about seeking advice and directions from social scientists in order to understand how the public and society relate to prescribed fire issues?

Frank Cole

Perhaps that was directed to Dick Bacon. Dick would you like to answer?

Dick Bacon

The fact is we need to learn how to understand our public and their wants and needs. It is part of what Neil Sampson discussed. We must learn how to communicate. Because we have not been able to figure out a solution to the suppression versus prescription issue, I think we have to bring in some other disciplines and skills.

Audience member

I do quite a bit of prescribed burning on grasslands and rangelands. My question is this: I am concerned about risks and liability, very concerned, as a matter of fact. Usually the risk falls on the fire boss. To what degree can the federal government, as well as the state government, protect people who take risks when applying prescribed fire?

Frank Cole

Mike Long, you might speak in context of your certified burners program in Florida.

Mike Long

After the 1985 fire season, our legislature came to us and asked: "What can we do to prevent another disastrous fire season?" We proposed that we needed to be able to reduce liability on burners so that we could get more burning done. I will be glad to send you a copy of the legislation we passed in Florida. It says you will not be held liable unless you are negligent. I think in the long run, after talking with a bunch of attorneys, legislation like we have in Florida will help reduce your liability.

Frank Cole

I'll further direct this question to Neil Sampson. He has some comments.

Neil Sampson

That was one of the issues that we bumped into immediately in the National Commission. I think you will see it in the federal wildlands policy that Secretary Babbitt mentioned. We bumped into two aspects of the issue with regard to federal liability. One is that if a prescribed fire gets away and causes over \$25,000.00 damage, then a lawsuit is the only way to do recovery. (Audience member interjects a comment that it is actually less than \$25K) It's \$5,000? Well, in either case, the limits are way too low. They are unrealistically low, and that is going to impose court costs and a lawsuit on both the federal government and the damaged person. We recommended that we find a way to raise that limit so that negotiated damages could be higher. It may not necessarily be career-threatening to let a fire get out of control, but when a lawyer gets out of control on your boss, things may indeed become career-threatening! Another issue was the notion that if a field manager feels like they are right, then are they protected and covered by their agency? That is in fact probably a policy position, and it also means, as Maitland says, that the agency has to "walk the walk." But let me follow with one point. We are all sitting in here talking about natural resource policy. Now we have suddenly slipped over into the domain of legal policy. When this happens, you become involved with the Department of Justice, and different committees in Congress. You get involved with a legal reform bill in Congress and none of us knows how to deal with it.

The point I am making is we have been trying to make these changes, but it goes beyond natural resource law, and involves liability law, which makes it a heck of a lot tougher to navigate the policy map.

Dick Bacon

In the federal sector, an individual is protected from a lawsuit if they are operating within the scope of their position and their qualifications. As it relates to prescribed fire, as long as they are within the prescription, the agency is there to take care of them.

Frank Cole

Earlier in the week we heard from Jim Murphy when he was talking about the litigious society in which we live and some techniques that can be employed as a professional fire practitioner. Without being a lawyer, I will assure you that if you are exercising the highest state-of-the-art in the skill, there is no one who can provide testimony to the contrary. If you plan thoroughly, be objective about what you are doing, and be professional, then certainly people will not be able to shoot holes in what you are doing.

Audience member

I work in a situation where existing suppression policies, and lack of resources for applying prescribed fire, are generating a huge backlog of work and failure to meet annual accomplishment goals, especially as they relate to yearly targets for burning aspen stands. Yet, at the same time, we are being given a new mandate via ecosystem management, and other directives, to increase our use of fire. How can an agency manager reconcile such an impossible situation?

Maitland Sharpe

I think that this situation may be one of the many places that shows we are going to have to go back and reconsider existing policy, regulation, and manual language, in the light of the new wildland fire policy. We have an awful big backlog, and a short time in which to get that job done.

Audience member

It seems like there is a disconnection between science and management. Each are subject to "analysis paralysis" from endless calls for more research. The on-the-ground manager can not wait for science to catch up with, much less get out in front of, the need for good information. Yet the value of research is critical for providing sound information as a basis for good management decisions.

Bruce Babbitt

You explain the solution to this problem and I will take it to Congress! A couple of thoughts: The research office is terribly important, but we must remember the phrase adaptive management. This is surely

appropriate here because we can research certain subjects to death. Remember, we are not going to burn the entire public domain in one year or in ten or in a hundred. What we need to do is think about monitoring, be thoughtful about our burn objectives, and recognize that there will be a steep learning curve as we move toward a new approach to fire management. Obviously, this does not address the question of where we get the money. My feeling is that we must go to Congress, and that we need new legislation. I think we have an interesting precedent, which is the coalition that brought about the passage of the Weeks Act in 1911. Our current suppression juggernaut really began with the Weeks Act which was started from a coalition of stakeholders plus the Forest Service. The reason it all came about is because the Forest Service put a coalition together that included the timber industry, wildlife managers, along with numerous other stakeholders, and turned it loose on Congress to set up a statutory formula. I think we now have to find some way to bring together state wildlife managers, the land management agencies, and the other stakeholders to take a message to Congress which says that we must have an earmarked percentage of public land resource receipts dedicated to investment, to maintenance, to science, and for the resources to keep the land productive.

Audience member

One of the values of prescribed fire is that it provides fire managers with training that enables them to respond appropriately, rather than simply react, in a knee-jerk manner, to suppression situations.

Bruce Babbitt

One of the pernicious things that is going around is the whipsaw effect. If you have looked at fire incident data, you will see that approximately every other year we have experienced a fairly large lump of wildfires in the eleven western states. We are at about 3 times the annual average number of fires from where we were in the 1950's and 1960's. We are currently seeing about a million and a half acres burned yearly, or about 15 million acres a decade, is the course we have been on for the eleven western states. In 1994, everybody was on the firelines, nobody was anywhere else. In 1995, everybody was agonizing over what to do with recovery work on the 1994 burns. They just get ready to think about that problem and then a fierce, early 1996 fire season is in their face in the Southwest. We all hope that August and September of this year will not look like 1992 or like 1994, but we do not have any guarantee. I am seeing the agencies whipsawed to the point where each year has elements of recovery, but in the long-term things are moving backward, not forward. Once you get so far behind the curve, which is where we are now, and you have an emergency in your face all the time, how do you get enough surplus energy to get ahead of things? I think this is a real quandry and I am not sure it is cash soluble. The fire fighting effort in 1994 peaked out in

this region because it ran out of airplanes, people, and resources to do things. It did not run out of acres of fire, or dollars for suppression. It ran out of airplanes, heavy helicopters, and people.

Audience member

My question is directed to Secretary Babbitt. During the last couple of weeks, I have noticed some biopolitical issues come across the news that I think are significant. The Sierra Club drew a line in the sand, by voting, to change their policy and recommend more timber cutting in the national forests. One could extend this opinion to say no more management should be allowed in the national forests. Then a contrasting opinion came, for example, from a senator from Alaska who said perhaps we do not need a national forest system anymore. Members of the Idaho congressional delegation are also making the same kinds of remarks. I am not taking sides, but I am looking at both opposing views, and thinking of what Dick Bacon said about getting together at the national level and shaking hands. I am beginning to wonder what the future of public land management is, which is a subset of this conference. I would appreciate your insights into what you think the future of public land management is in this democracy.

Bruce Babbitt

I think your question is an incredibly important one, because I shake my head as I see the antagonisms widening and the center of public opinion just fading away. The dispute you mention about timber policy has been developing during the last decade. I think one can draw two conclusions. One conclusion is fatalistic in that there simply is no rational center and that it is fruitless to seek that center. Obviously, I do not accept this conclusion. It seems to me the important message is that those of us who care about resource management, and the use of science as a basis for good management, must simply redouble our efforts to re-create the rational center. Interestingly, the provisions of the endangered species act provide us an objective tool with which to create a multiple-use sustained yield center of opinion and policy which says we can manage timber lands for harvest and for production. I have one last thought about this issue. Ironically, the place we are having success doing this is in the South. It is really ironic that as we fall apart in this incredible bloodletting in the West and Northwest, a combination of new management techniques, of beginning to understand biodiversity, and how the two relate, is moving forest management ahead in the South. I believe that the seeds of a new rational center are there, but I confess I would be hard-pressed to prove it to you in the light of what has been happening in the last few months.

Maitland Sharpe

My instinct, based on more than a quarter century in Washington working on public policy and natural

resource issues, is that this is not the place where we should put the bulk of our efforts. The current timber debate is not a leveraged opportunity. It is a highly polarized debate, conducted in a highly polarized climate. There are many divergent agendas in operation. I think that we have a much more fertile field for our time and our efforts, limited as they are. At the local level, I think that the rational center is brought into being by confronting particular realities and opportunities on specific tracts of land where people who live in the area can look at a landscape together with experts, and come to realize in a shared fashion that opportunities and options are limited, are definable, are predictable, and finally, that they have shared goals and shared interests. I have seen that happen over and over again at the local level. In BLM we are seeing it happen even at the state or sub-state regional level right now through the new resource advisory councils currently focusing on grazing policy, a similarly vexing set of issues. I think that is where we should put our efforts. I think we have to win this one from the bottom up.

Neil Sampson

As one who has spent just about the same amount of time, often at Maitland's elbow, working on conservation issues, I agree with what you are saying. I clearly do not think we can solve these problems in Washington. All we talk about in those hallowed halls is religious points of view, and you know how futile it is to argue religion. When your world views are as vastly different as the ones many of these organizations have painted themselves into, it just is not there. My organization, American Forests, is the oldest citizen's conservation organization in the country. We have almost totally abandoned the Washington policy scene to begin work with bio-regional groups that are springing up all over the country. Our purpose is to begin to start to help them do something which they now cannot do. They can in fact sit down with managers of public lands and private organizations and reach accommodation. They cannot change that aspen burning policy mentioned earlier. Only you can do that. Local agreement still does not change. Remember the presentation that showed us the iceberg. On the top was the little bitty set of events and underneath was all the structure that was holding the iceberg down. Most of the problem was under the water. Well, that is what is going on. These people look under the water, they look at real problems, as you point out, they come to real solutions, and not a thing they do changes a single federal policy or a single federal budget. If that is the hang-up then they feel frustrated and disempowered because they have solved the real problem but they cannot move in with the solution. So, somehow we are going to have to not only work with them but we're going to have to find a way that those decisions that emerge can actually solve problems, and do not have artificial roadblocks in their way.

Audience member

How do we get accurate information about the value of prescribed fire into the school system or to the youth? It is just as important to get the message to them as it is to the adults.

Mike Long

We recognized this problem about three years ago and undertook a project to develop a package that will go through our environmental education system at the 8th grade level and above. It deals with the use of fire and the role of fire in the Southeast. However, I do not think you could reach consensus with the people in this room about the role, value, and appropriate applications of prescribed fire. Reaching such a consensus about why everyone wants to burn, and what their goals and objectives are, is a huge undertaking. So before you can get it into the classroom, we have got to get some consensus ourselves. We did that in Florida, for Florida, but on a national level our package probably would not be very good in the West, for example. I am afraid that one of the things we try to do is make everything uniform on a national level. This is one of the problems for the federal agencies. I am sorry, but this is my opinion. So, before you can educate the kids, we have to reach a consensus ourselves and I think that may have to be done on a local level.

Frank Cole

Mark, does Parks Canada have an environmental education outreach program that has a component dealing with prescribed fire?

Mark Heathcott

Yes, we do. Education and interpretation have always been a part of Parks Canada, although it has been taking a hit in recent years. We are in the process of building an educational and communications package for fire management. Communications are hopefully one of the things we have done best, but it seems that internal communications are probably where we are falling apart.

Dick Bacon

When we look at education, we look at it in a very traditional way. We must completely rethink the role of education. I think we must have a different kind of relationship with our public and adjacent landowners. We need to ask folks to join us in the management of our resources, so they have a legitimate reason to work with us in reaching shared agreement on the problem and shared agreement on the solution. I think that if we can get to such a point, then they will have an appetite to acquire greater knowledge. I think we are having some successes at the local level and more and more we are hearing the term of place-based planning. We clearly need to do this to teach ourselves and the public.

Neil Sampson

I hope it was not lost on this audience when Chad Oliver showed you the *New York Times* clipping today, which showed the Ecological Society of America underwent a sea change in its thinking about how ecosystems work and noted the date was 1990. Virtually every teacher in America was educated by a paradigm of how the world works which says that stability is the nature of things and fire is an unwelcome visitor. There are a lot of professionals in this room, me included, who were educated that way and have had to be kicked into reality. I think that you have to recognize what an enormous change this is. It's like when Einstein tipped all of physics on its head with his relativity theory. We have a lot of people whose world view of ecology is based on equilibrium theory and whose teachings are based in it. It is more than communicating and sending out a few environmental education packages. It is a huge job that starts with the kids and with the teachers, both.

Maitland Sharpe

One of our early speakers talked about the need to initiate the conversation. I think that carries a powerful message to us as part of this question. I think that there is no need, there is no place, to try to craft a single, national one-size-fits-all message concerning fire ecology or prescribed fire. I do not think we have time to do such a thing and I do not think it will work. I think that each of us should accept responsibility to help initiate and foster useful conversation as far as our powers may reach. Secretary Babbitt has a very broad reach, many of us have a much more local reach, but we all have some reach. In doing this, I think we should recognize the power of what we might call place-based education. Again, we can tie these points to a particular environment, a particular landscape, and/or a particular set of choices, that the people in our audience are going to identify with and understand. I think, in the end, that kind of approach is going to have much more power than trying to craft a Washington-approved national message.

Audience member

When we were talking about educating the public it is critical that the public understand the elements of uncertainty which emerge as part of any scientific investigation that involves natural resource issues, especially fire. For example, the recent downstream release of water from the Glen Canyon Dam had all kinds of impacts, especially positive ones, that were not predicted.

Bruce Babbitt

Well, I would be happy to claim credit for everything that happened recently at Glen Canyon! It was obviously a tremendous success. It did not start out that way. It started out some years ago as another knockdown-drag-out fight between the management of the National Park Service and the Bureau of Recla-

mation. The Park Service was the advocate for the conservation constituency, the Bureau of Reclamation was the advocate for cheap hydropower at all costs. What happened was interesting. We responded by saying: "Let us get the scientists involved and see if we can broaden the debate." The use of science became the platform for bringing in all of the warring constituency groups together. First we involved the local cities, then the power users, then the Native American tribes, and then at some point, even Los Angeles showed up. But, we found that we had to broaden the debate and that science became a very effective platform. By the time the experiment was ready to begin, we actually had a consensus. Now, one last word about what I think this is all about, because it goes back to the education issues. Maitland and Neil, and the others, all of them have talked about the need for involvement and the need for finding local consensus and moving away from Washington. This is an important point. But we must understand that there is some real tension behind the idea to string up Bruce Babbitt from the nearest cottonwood tree, abolish the feds, and let us do our thing at the local level. I must tell you that from the standpoint of where I live. If these issues had been turned over to the residents of Arizona 30 years ago, we would have lynched the Forest Service, cut down every single tree, and said, "We want it all right now!" The wager that Maitland, and the rest of us, are now making is that we live on a western landscape which is now very different. There are in fact multiple stakeholders, there are resource users, environmentalists, birdwatchers, public officials, and people who like clean air. We now have on the western landscape a microcosm of all of the national interests. It is not possible to come home to the local landscape as it was 30–50 years ago. It is possible now, however, that we say to the local community, "We will indulge a real sort of preference for your alternative provided you find consensus." What this amounts to is saying that if the stakeholders can find consensus, we probably cannot improve upon that consensus in Washington. But this must always be done in the context of some degree of tension and against a backdrop of national standards, because there is a national interest. I really believe such an approach has the makings of a genuine, it you will excuse the phrase, paradigm shift. It may be the only possibility for kind of breaking this paralysis that we seem to be stuck in.

Neil Sampson

If I could, I would like to follow the Secretary and agree with what he said, and suggest not only are the constituencies perhaps more diverse but perhaps the long-term objective has shifted from development to sustainability. We need to begin to talk from the standpoint of sustainability and ecological integrity as a substitute for the long-term well being. Especially in contrast to the dominant philosophy when you and I were kids. It was develop at all speed, faster is better, and bigger is always better.

Frank Cole

What an interesting way to close this conference. Obviously, there is still a lot of discussion needed. There is still lot of work to be done. Early in this conference we heard Stephen Pyne and Jim Murphy sort out the chronology and history of fire and its application, both in Europe and also from here in America. For a period of time, prescribed fire, controlled burns, burning the landscape by management, if you will, was looked upon with disfavor. Then scientific credibility came along. H. H. Chapman, Herbert L. Stoddard, and others strongly influenced the formation of Tall Timbers Research Station and, in turn, many of the agencies that sponsored this conference. Scientific credibility has been obtained. Professional land managers, foresters, and biologists who began to exercise their responsibilities of stewardship, used fire as one method in their box of tools. Prescribed fire is an ecological imperative. Many wildlands beg to be burned. But we have to understand how and when to burn. Also, we have to understand our public, the people whom we serve as stewards. We have to understand how to communicate with them, and that is why the last questions and comments are so important. We have discussed the issue of outreach, utilization of core groups, educational media, and processes. We must be responsible to the citizenry. We represent them and manage their lands. I thank each of you, both audience and panelists, for your participation.

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