## Forest Health and Fire in the National Parks: Workshop Summary

## Norman L. Christensen

MUCH OF THE DIALOGUE AND DEBATE SURROUNDING FOREST HEALTH and the implementation of the Healthy Forests Restoration Act has focused on national forests, but the implications for our national parks are considerable. The parks' mandates for conservation and public access create particular challenges for forest health restoration, as well as the restoration of natural fire regimes. The goal of this workshop [which was convened by the author at the 2005 George Wright Society conference—ed.] was to explore those challenges.

James Agee (University of Washington, College of Natural Resources) provided an overview of factors affecting variability in fire regimes and an evaluation of the effects of past, current, and likely future management on wildland ecosystems. He emphasized the importance of recognizing the variability among forest fire regimes. High-severity fire regimes prevail in moist-to-mesic forest types where fire return intervals are long (hundreds of years) and post-fire succession extends over œnturies. Fires are often associated with extreme events such as extended drought or other catastrophes. Because fire return intervals are long relative to the period of active fire suppression (the past century), there is no forest health problem in these forest types.

Mixed-severity fire regimes, as the name implies, are characterized by spatially and temporally heterogeneous fire behavior with patches of severe fire separated by unburned or low-severity burned areas. This pattern produces spatial heterogeneity that is important to the diversity of these landscapes. Fire suppression in these systems has produced homogeneous fuels that are now supporting intense and homogeneous fires with the loss of landscape-level diversity. Restoration activities in these forests should focus on restoration of diverse landscape patterns.

It is the low-severity fire regime forests that have been most affected by fire suppression activities. Fire regimes in these forests were historically typified by low-intensity surface fires at relatively short return intervals (often less than 10 years). In the absence of fire, herbaceous surface fuels have been replaced by dense understory tree and shrub in-growth and the development of fuel ladders that facilitate crown-killing fire. In some areas, prescribed fire can be used to restore healthy conditions, but in many areas the threat of catastrophic fire is too great. Here, mechanical treatments are necessary. Such treatments should, in priority order, reduce surface and ladder fuels, and thin crown density. It is important that big trees be retained. These trees are fire resistant and important to maintaining conditions under which prescribed fire can then be used to maintain healthy forest conditions.

Agee argued that a national fire policy

Volume 22 • Number 4 (2005)

45

was needed that extended beyond fire suppression, fuels management, and protection of the wildland-urban interface. A meaningful national policy would recognize the variability among forest types and regions, and the variability in current and desired future conditions. It would focus on the use of appropriate management tools in the context of a changing world. Such a policy would recognize the variability in management goals and options among different categories of public and private lands. Based on these differences, such tools as prescribed fire, prescribed natural fire, and mechanical thinning need to be selected to fit the specific situation found on site. Such a policy would recognize the reality of natural and human-caused variation in climate and the importance of forests to the global carbon cycle.

Bruce Kilgore (National Park Service, retired) suggested that, while many forests have too much fuel, healthy forest legislation and actions lack clear objectives. Current approaches assume a simplicity that does not exist-just cutting logs, piling brush, and burning will not restore forest health. Decision-makers must clarify which forests are in need of treatment, set priorities for protecting human life and property, and articulate clear guidelines for restoration activities. Such managers need to establish desired outcomes and trajectories of change, and ensure that sufficient funding is available to accomplish goals. The original goal for fire management in the national parks of restoring natural processes may still be a useful guide, but is probably not sufficient given variability in conditions and uncertainties regarding future change.

Kilgore warned that, thus far, projects undertaken under the rubric of healthy forest restoration have focused too much on shortterm outcomes and number of acres treated rather than on the quality of outcomes or long-term maintenance strategies. Healthy forest legislation is more focused on limiting the public appeals process under the National Environmental Policy Act than on facilitating the sort of adaptive management needed in the context of variability and uncertainty. Agreeing with the undersecretary of agriculture that "it all boils down to a matter of public trust," he saw little in the current process to engender that trust.

Nathan Stephenson (U.S. Geological Survey, Sequoia-Kings Canyon National Park) outlined three issues that are critical for fire management in the national parks. First, what are the consequences of not being able to restore fire at landscape scales? Data indicate that current prescribed fire programs fall far short of the total area in need of restoration. Furthermore, air quality constraints, weather, difficult burn conditions, and limited financial resources will likely perpetuate this situation into the future. We should acknowledge this reality and be sure that we maintain pre-settlement fire regimes in those areas where we can. We should also focus on other strategically placed prescribed fire and restoration projects (e.g., SPLATS), and burn remaining areas when possible, so long as benefits outweigh risks. Monitoring is critical in all areas.

Second, what are the consequences of rushing maintenance burns (i.e., fires intended to mimic the natural fire regime)? Given excessive fuel accumulation and in-growth in many areas, prescribed fire or thinning aimed at restoration may be necessary to avoid risks of unnatural severe fire.

Finally, what are the consequences of using the past as a model for healthy forest restoration? Stephenson warned that, in an era of unprecedented change in climate, human development, and landscape struc-

## The George Wright Forum

ture, "natural" conditions defined by historical norms may no longer be resistant to or resilient from otherwise natural fire events. This may require creation of innovative ("unnatural") forest structures that provide such resistance and resilience.

Concerns regarding the constraints placed on park management by change and development outside park boundaries were echoed by 7an van Wagtendonk (U.S. Geological Survey, Yosemite National Park). Urban and industrial growth in areas often far removed from parks have created air quality challenges within the parks themselves. These may have direct effects on both visitors and ecosystems, but they also directly limit the flexibility of fire managers to prescribe and manage fires. Development near park boundaries creates potential liability that further limits that flexibility. Successful execution of Park Service fire management programs depends on increased collaboration and communication among the Park Service, regulatory agencies such as the Environmental Protection Agency, and the land planning community.

To meet the challenges of managing fuels and wildland fire, Carol Miller (U.S. Forest Service, Aldo Leopold Wilderness Research Institute, Missoula, Montana) argued that we need a process-based understanding of the ecological dynamics involving fire and the consequences of management actions. Wilderness and parks are critical for providing that understanding because they contain the best approximations of natural functioning ecosystems. That said, the challenges of managing fuels and fire are not merely ecological in nature; arguably, they are largely social issues. In addition to altering ecosystem structure and function, fire suppression has helped to distort human perceptions of natural systems. The orientations toward wilderness fire management that are held by the public and

Volume 22 • Number 4 (2005)

government agencies need to shift away from fire suppression as the dominant fire management strategy and toward a stewardship of the process of fire that includes natural, i.e., wildland fire use (WFU), and prescribed fire. To support this shift, we need to understand the individual, social, and organizational factors that support and maintain the existing orientation toward suppression. These include:

- Incentives/disincentives. Currently, the only reason or incentive for a manager to allow fire to visit the landscape is his/her personally held belief that "it's the right thing to do." Incentives for fire use must replace the existing disincentives. For example, managers need to have confidence that they and their careers will be protected when they make a well-reasoned, but risky decision (Figure 1).
- Organizational culture. In a few regions and units, there exists an orientation toward fire use, and the default decision is not necessarily suppression. These places usually have a history of relatively successful WFU programs. We need to better understand the factors responsible for differences among organizational cultures and use this information to foster cultures that are more accepting of fire use.
- Language. Our current vocabulary tends to reinforce the orientation that fire is undesirable. For example, we often talk in terms of managing risks from fire, but much less often in terms of creating opportunities for its benefits. We use the word "severity" to describe fire's effects, and that word inherently carries a negative connotation (have you ever heard of "severe" wealth or "severe" happiness?). We should be very careful and selective when we use a
  - 47



Figure 1. Currently, the only incentive for a manager to allow fire to visit the landscape is his/her belief that "it's the right thing to do." Incentives for fire use must replace existing disincentives. Managers need confidence that their careers will be protected when they make a well-reasoned, but risky decision about fire use. NPS photo from Everglades National Park.

phrase like "catastrophic fire." What do we really mean, and is it necessary to use the term in the first place?

• Internal education. There is a pervasive disconnect between land/resource management planning processes, and fire management planning processes. Improved communication within the organization will require that resource managers understand something about fire behavior and fire operations and that fire managers understand something about fire effects on particular resource values.

• *Procedures*. Recent changes in the wildland fire implementation procedures (USDI/USDA 2005) will facilitate use of fire in wilderness and parks. The initial decision-time window has been extended from two to eight hours, and the documentation now requires a justification for a suppression decision.

## Reference

USDI/USDA [U.S. Department of the Interior/U.S. Department of Agriculture]. 2005. Wildland Fire Use: Implementation Procedures Reference Guide. Washington, D.C.: USDI/USDA. On-line at www.fs.fed.us/fire/fireuse/wildland\_fire\_use/Wildland\_Fire\_Use\_2005-0608.pdf.

Norman L. Christensen, Nicholas School of the Environment and Earth Sciences, Duke University, Durham, North Carolina 27708; normc@duke.edu

The George Wright Forum