



# Scenario Planning for Climate Change in the National Parks



The National Center for Landscape Fire Analysis

## Project details

In November, 2007, the NCLFA coordinated a workshop for park managers, in partnership with the National Park Service (NPS), using scenario planning to make management decisions about the potential impacts of climate change, such as increased occurrence and severity of wildland fire. Scenario planning is a tool that allows organizations and managers to explore possible alternative futures so that they can prepare for a variety of potential outcomes in those futures. The workshop trained NPS natural resource and cultural resource managers and superintendents in how to use scenario planning and the participants actually developed several plausible scenarios about the future landscape of two national parks.

## Project development

Climate change likely poses the most significant threat to global ecosystems and landscapes in modern human history. Effects of climate change are far-reaching and profound, and in-

clude species extinction; altered distributions of species; community shifts; increased disturbance from wildfires, droughts, pathogen infestations, and invasive species; changes in growing season length and timing and duration of phenological events; increase in extreme weather events such as thunderstorms, hurricanes, and windstorms; increased ocean temperatures and acidification; and rising sea levels. Natural and cultural resources in the National Park system are similarly at risk from the effects of climate change – America's parks may experience severely altered landscapes and habitats; loss of key species; species invasions; increased severity, frequency and size of wildfires; damage to infrastructure and resources; and inundation by sea water. Although evidence for climate change is unequivocal, in many cases the timing and magnitude of events and their effects on complex ecosystems cannot be precisely predicted. Therefore, parks cannot forecast exactly how climate changes will alter park resources and may struggle to develop appropriate management

responses. Alternatively, park planners can explore possible effects of climate change and begin to plan for a variety of outcomes. The development of multiple future scenarios allows for more adaptive, flexible, effective and far-reaching management responses than current one-dimensional plans.

The NCLFA

and the NPS used the scenario planning

approach to demonstrate how national parks might cope with the uncertainties in land management and planning created by climate changes.

- Scenario planning offers a tool for developing a science-based decision-making framework in the face of an uncertain future.
- Scenario planning highlights action steps and policy changes that can address a range of possible future outcomes (single decisions that can have multiple results)
- Scenario planning creates prepared awareness by pointing out potential future surprises
- Scenario planning incorporates alternative perspectives into conservation planning
- Managers can build into the scenarios monitorable indicators to assess the validity of the scenarios over time and to adjust plans according to the actual levels of change
- Scenario planning improves capacity for adaptive management

## Project application

The NCLFA is continuing to work with the NPS and the Cooperative Ecosystem Study Units at the University of Montana and the University of Colorado, as well as other agency partners, to explore how this decision support tool will further benefit natural resource managers. Additionally, the NCLFA is creating a practical guide for other national parks and natural resource managers to use the scenario planning method.

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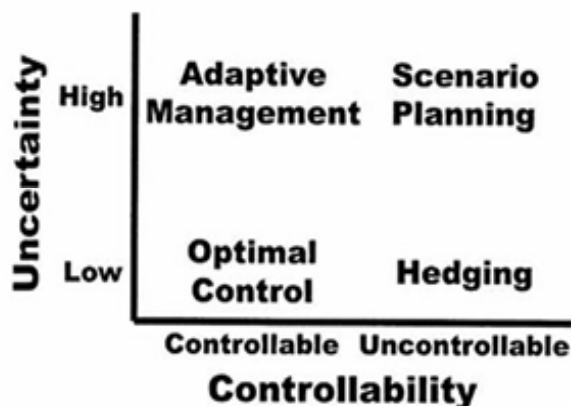


Diagram taken from Peterson, G.D., G.S. Cumming, and S.R. Carpenter. 2003. Scenario planning: a tool for conservation in an uncertain world. *Conservation Biology* 17, no. 2 (2003): 358-366.