

CRAFTING FUTURE FORESTS

by Zoë Hoyle



Successful restoration of longleaf pine forests requires frequent prescribed burning. (photo by USDA Forest Service)

Managing our national forests has always involved responding to disturbance—from weather, diseases and insects, wildfire, and now, the impacts of climate change. Since the National Environmental Policy Act (NEPA) passed in 1970, managing national forests has also involved taking into account what the public thinks about proposed plans and actions. In the past, conflicts among competing points of view during the NEPA process have often resulted in long delays and sometimes in the abandonment of proposed actions.

These days, there are even more plans and proposed actions for national forests in the offing, many

of them orchestrated around the **Forest Service National Roadmap for Responding to Climate Change**, a framework developed by the agency for long-term planning. To prepare for climate change impacts, the roadmap supports restoring forests to a healthy functioning condition, an aim that might seem to invite public applause rather than controversy, but on the ground, the actions intended to restore forests may not always be acceptable to everyone.

Take for example, longleaf pine restoration.

Before European settlement, longleaf pine forests covered over 90 million acres in the South. Today, barely 3

million acres remain. There's strong interest in restoring longleaf pine forests and their unique ecosystems, which are more resilient to insect attacks and hurricane winds than the loblolly forests that have largely replaced them. This resilience moves longleaf pine restoration from a good idea to an attractive strategy to address the impacts of climate change.

So what's the problem?

The South is a place of unabated population growth, where more and more people are building their homes near once remote forests. Bringing back longleaf pine into areas now forested with mixed pines and hardwoods requires frequent prescribed burning, which generates smoke that people who live nearby may not be willing to tolerate. Burning less frequently or only when smoke conflicts are unlikely means less fire, which will eventually defeat the restoration. In this case, uncertainty and the anticipation of conflict could lead managers to back off plans for longleaf pine restoration in certain areas as just too much trouble. If long-range planning could actually predict where such conflicts would or would not arise, our landscapes on the whole could be better managed.

Fortunately, SRS scientists have developed a new resource, the **Comparative Risk Assessment Framework and Tools (CRAFT)**, to help natural resource managers and stakeholders work through land management decisions and find common ground, sometimes by coming up with unexpected solutions.

Virtual Common Ground

Headquartered at SRS, the **Eastern Forest Environmental Threat Assessment Center** (EFETAC) was formed in 2005 to develop new technology and tools to anticipate and respond to emerging eastern forest threats, and to deliver these tools to other scientists, managers, and stakeholders involved in natural resource planning and decisionmaking.

In fall 2009, EFETAC launched CRAFT as a user-friendly Web-based system designed to support natural resource managers in addressing the uncertainties inherent in land management decisions. Building on the NEPA framework, CRAFT offers a simple and comprehensive approach that teams of managers and stakeholders can use to look at the risks and tradeoffs associated with different management scenarios.

“It’s all about tradeoffs,” says **Steve Norman**, EFETAC research ecologist who helped develop CRAFT. “Before NEPA, land managers made decisions by focusing on individual threats or values. Today, even with NEPA in place, the broader effects that those decisions could have on other values are still difficult to predict. CRAFT is a way to tease out those broader values and infer likely consequences.”

CRAFT was designed to capture this broader view of what’s likely to happen in a given situation and to ensure that the values that are most likely to be affected are adequately considered. As its name indicates, CRAFT is about comparative risk assessment, allowing users to weigh the likely impacts to values—what they care about—based on the chance that the action will be successful. This approach provides ways to work

through tradeoffs while formally taking uncertainty into consideration.

The process starts when a diverse group of stakeholders or a management team sits down at the table to examine values and address how they are affected by the problem at hand and possible solutions. Through the process, team members explore the probable and possible outcomes of different actions—including the decision not to act—while broadening their own understanding of conflicts, tradeoffs, and the uncertainties and unintended effects that follow from decision alternatives.

“When we developed CRAFT, we borrowed the best ideas we could find from the emerging fields of decision science and risk assessment,” says Norman. “This included ways to organize values, vet cause and effect relationships, and formally model uncertainty and decision options.”

To develop CRAFT, EFETAC partnered with the University of North Carolina Asheville’s **National Environmental Modeling and Analysis Center** (NEMAC), which created a unique array of Web-based resources, including the CRAFTiPedia—a “wiki” style reference database and glossary. The CRAFT online tool can store and share the diagrams, text, tables, data, and models created during each decisionmaking project. NEMAC also provides assistance and training on using CRAFT.

Although designed to follow NEPA requirements, CRAFT can be used by a much broader range of audiences and for regional and even national-level issues. For example, in 2009, the first CRAFT workshop included people from the Forest Service, the

National Oceanic and Atmospheric Administration’s National Climatic Data Center, the City of Asheville, the Southern Group of State Foresters, and The Nature Conservancy, in an introductory exercise aimed at addressing climate change impacts on the Southern Appalachians.

The latest application of CRAFT involves the **Cohesive Wildland Fire Strategy**, a new multiagency wildfire strategy that aligns with the Forest Service roadmap for responding to the climate change that is projected to increase the frequency and extent of forest fires across the United States. Led by EFETAC’s director **Danny Lee**, who helped develop CRAFT, the all-lands approach of the fire strategy has three main goals: using ecosystem restoration to build fire-adapted communities, building fire-adapted human communities by sharing knowledge and technical resources, and responding appropriately to wildfire.

“Applying CRAFT to address wildfire issues in the Southeast is exciting,” says Norman. “Fire is necessary for the resilience of many southern ecosystems, and prescribed fire use can conflict with trends in urban development.” CRAFT provides the framework to get at these issues and more—and just maybe some solutions no one’s thought of yet. 🌲

CRAFT Web site:

CRAFT.forestthreats.org.

For more information:

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Recommended reading:

Hicks, J.; Pierce, T. 2009. **CRAFTing better decisions: creating a link between belief networks and GIS**. ArcUser. Fall: 20–23.