Science for Wildland Fire Management

The National Science and Analysis Team

The National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) is a multi-year collaborative effort involving federal and state agencies, tribes, and interested stakeholders throughout the nation. The intent of the Cohesive Strategy is to develop information and processes that can improve coordination across jurisdictions and help guide wildland fire management. The Cohesive Strategy recognizes fire as a natural process necessary for the maintenance of many ecosystems, and strives to reduce conflicts between fire-prone landscapes and people. It takes a holistic approach to the future of wildland fire management by simultaneously considering the role of fire in the landscape, the ability of humans to plan for and adapt to living with fire, and the need to be prepared to respond to wildfires when they occur.

Science is an essential component of the Cohesive Strategy's holistic approach. In order to better integrate scientific understanding and rigor into the Cohesive Strategy, the National Science and Analysis Team (NSAT) was formed to support development and implementation of the Cohesive Strategy. Since 2010, more than sixty people representing numerous agencies and organizations have contributed to the NSAT's efforts. A smaller core group is responsible for the more data-intensive tasks and provides direct support to various other planning teams.

Wildland fire management decisions can be complicated by competing values and risks when human development occurs in fire-prone landscapes. The Cohesive Strategy takes a holistic approach to wildland fire management. Photo by US Fish & Wildlife Service.

In order to address the Cohesive Strategy's primary goals related to resilient landscapes, fire-adapted communities, and wildland fire response, the NSAT's central tasks are to:

- Assemble credible scientific information, data, and models that can be used by the NSAT and others working on the Cohesive Strategy.

- Assist with the application of a structured decision analysis process to help national and regional planning committees clarify objectives and identify and evaluate potential actions to efficiently achieve desired outcomes.

- Synthesize and analyze a broad spectrum of information and data to explore national challenges and opportunities, identify a range of management options, and help set national priorities for addressing key issues.

The work of the NSAT has proceeded in phases parallel to the work of the national and regional planning committees.

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Scan to learn more about the National Science and Analysis Team's work.

Banner photo by Lisa Gump, courtesy of InciWeb

## Developing the Scientific Basis for Modeling Wildland Fire Management

In Phase I, the NSAT introduced the concept of risk using comparative risk assessment as a framework for clarifying objectives and identifying and comparing options for reducing overall risk. The NSAT also identified four major investment options for reducing risk, including 1) prevention of unwanted ignitions, 2) managing vegetation and fuels, 3) protecting values at risk, and 4) improved response capacity. The NSAT's Phase I report used readily available data to illustrate how data and models might be used to examine these issues in subsequent analyses using more accurate and extensive information.

In Phase II, the NSAT's work expanded to examine eight topics relevant to wildland fire, including landscape resilience, wildfire ignitions and prevention, fuels management, wildfire response, fire adapted human communities, firefighter safety, smoke management, and policy effectiveness. Various teams were formed to examine the factors that influence these topics as well as how management actions, policies, and activities affect interacting social, ecological, and physical processes. For each topic, teams developed conceptual models to illustrate the relationships between and among these factors and processes. Collectively, these conceptual models reveal the extensiveness, complexity, and interconnectedness of wildland fire and provide a strong foundation for more rigorous analysis of alternative strategies for reducing risk to ecological and social values. The teams also identified existing data or models relevant to each topic.
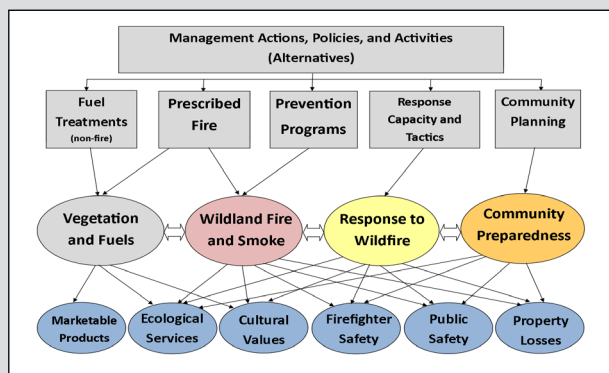
Conceptual models reveal interactions among wildland fire issues.

The Phase III work of the NSAT consists of two parts. The first part involves direct analytical support to the three regional strategy committees, representing the Western, Southeastern, and Northeastern regions. The NSAT summarized and analyzed data from a broad range of sources and disciplines and provided these analyses to each region to help them characterize risks unique to or shared across regions.
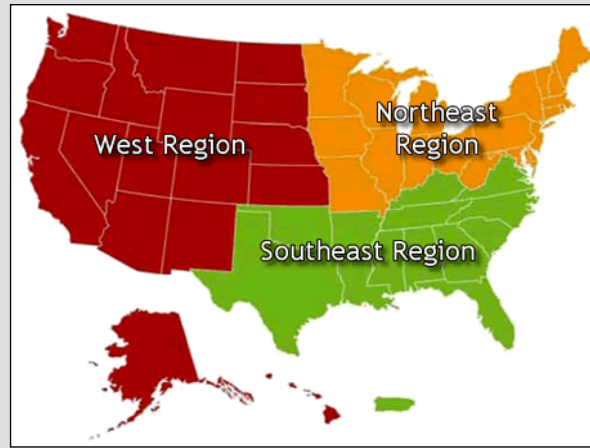
Regional strategy committees represent three US regions.

The second part of the NSAT effort in Phase III involves a national analysis of key issues, risks, and opportunities related to wildland fire. In this analysis, the NSAT characterized each county in the conterminous United States based on a combination of landscape and community features relevant to wildland fire and grouped counties based on their similarities and differences. This objective-driven and data-informed classification system allows a national discussion of wildland fire that recognizes both important differences and commonalities among counties. The NSAT analysis supports tailoring management direction to best fit local conditions while maintaining a national perspective. NSAT findings were incorporated into a national report for Congressional review that culminates the planning phases of the Cohesive Strategy.

Next Steps for the NSAT

The NSAT is refining the national analysis based on stakeholder comments and peer review and will publish its findings in 2014 in a report entitled, *Wildland Fire in America: The Scientific Basis of the National Cohesive Wildland Fire Management Strategy*. The NSAT is also providing additional analytical support and technology transfer to regions and their member agencies and groups as they move forward with implementation. In addition, the NSAT is investigating methods for using enhanced data-capture technologies to help monitor changes in landscape resiliency and community adaptation to wildland fire.

For More Information:

Visit www.cohesivefire.nemac.org to learn more about the NSAT's work and www.forestsandrangelands.gov to explore the National Cohesive Wildland Fire Management Strategy.