

Develop a Landscape Scale Framework For Interagency Wildland Fuels Management Planning

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Executive Summary and Recommendations

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Due to worsening hazardous fuels conditions in many areas and increasing urban encroachment into former wildlands, optimizing selection of critical areas most in need of fuels treatment has become increasingly important. Generally, managers have inadequate spatial information and analysis tools to effectively plan and implement wildland fuels treatments across agency boundaries using an ecosystem approach.

Starting in 1999, southern Sierra Nevada fire and technical staffs from federal and local agencies began systematically designing and developing an interagency collaborative framework for identifying and treating fuels across landscapes. The project area included six major watersheds and an astonishing diversity of vegetation and fuel types covering an area of about 4.8 million acres in the southern Sierra Nevada Range of California. Funded through the Joint Fire Sciences Program, this initiative focused on the long-term goals of improving firefighter and public safety, reducing fiscal costs to both government agencies and the public, and achieving both ecological and hazard reduction goals across jurisdictional boundaries.

Project Results

After three years of diligent efforts by interdisciplinary multi-agency staffs, most of the original project goals were met and much was learned about building and maintaining successful interagency collaborative relationships. Some specific project accomplishments include the following.

- Seamless geospatial datasets were developed across the entire project area with fully compliant metadata.
- Continuous 24/7 access to data and analyses are now available via the internet using a web-based mapping delivery system (ssgic.cr.usgs.gov).
- Collaborative analytical procedures and methods were developed to define and assess risk, hazard and values across the project's entire 4.8 million acres.
- A Geographic Information Systems software tool called Asset Analyzer was developed to efficiently compare, analyze, and prioritize fuels needing treatment.
- Highest priority areas needing fuels treatment were collaboratively identified across the entire project area using best available science and technology.

- Written protocols and guidelines were completed to facilitate replication by other areas of the technical and analytical processes.

Project Challenges

The principal investigators concluded that widespread organizational, cultural, and technical issues have created significant obstacles to interagency fuels planning and treatments. These obstacles continue to hinder effective interagency cooperation and collaboration and will adversely impact many ongoing and new fire initiatives such as the Fire Program Analysis System. This project's participants experienced many of these obstacles and were frustrated by issues that were impractical to resolve at the local level. Further, it appears that these obstacles are common throughout the wildland fire community.

A basic project assumption was that integration of high quality spatial data, and development of a *seamless* geospatial information framework would bridge many of the barriers hampering collaborative fuels management and fire use planning. A *seamless* geospatial information framework is an information system that delivers data and analyses to users across agency boundaries regardless of jurisdictions. This project successfully developed a *seamless local* geospatial information delivery system that delivers data and analyses through a web interface in both data and mapped forms (ssgic.cr.usgs.gov). However, the cost of developing and maintaining this spatial information framework was high. This endeavor would be more effective if coordinated at a national scale with widespread benefits throughout the nation. Other areas could then "plug into" and use this standardized geospatial information framework to meet their local fire planning and management needs.

Methods for collecting, managing, and analyzing geospatial fire and fuels data continue to be inconsistent across agencies. Each agency has established their own data practices including proprietary data standards. This presents challenges and barriers that hamper interagency data integration efforts. This often results in integrated, but "lowest common denominator" data that has reduced overall data quality. Lower quality data results in less reliable analysis and reduced value to fire personnel. A Southern Sierra Nevada fire and fuels data workshop in 2002 concluded that the business practices for developing and managing fire data could be, and should be, the same for most, if not all wildland fire agencies.

Southern Sierra Nevada fire managers found that trying to use existing personnel by adding new collateral duties for interagency planning added significant and excessive new workload and stresses. While the contributions of existing personnel are essential to the success of any interagency initiative, the added workload for coordinating interagency fuels planning and treatments will require additional fiscal and personnel resources.

Increasing interagency fuels planning and treatment requires more funding, but funding alone will not guarantee effective and efficient cross boundary fuels treatments. The technical, management, and political complexities of interagency collaborative fuels

planning and treatments are one of the most difficult tasks facing fire managers, yet there is no clear and specific guidance or set expectations on how agency personnel should collaborate or even how their performance should be measured.

Much of the data and analyses produced through this initiative may be considered sensitive information and should be considered within the larger context of U.S. Homeland Security. Much of the fire analyses information and results could be used by malicious individuals or hostile countries to wreak havoc by igniting fires in areas that have highest potential for causing catastrophic loss. There is no guidance or policies relating to distribution and availability of potentially sensitive fire and fuels information.

Project Recommendations

The principal investigators believe that there is a need for increased national leadership on important issues presented in this report. The National Fire and Aviation Executive Board (NFAEB) should consider spearheading radical change to many existing fire and fuels information business practices. These recommendations spotlight the immediate need for developing a national strategy for developing, managing, and delivering fire and fuels-related geospatial information. Section 4 of the accompanying report presents important findings and recommendations and is based on three years of focused interagency fuels planning, geospatial data development, and deployment of a web-based mapping and data delivery system. Some of these recommendations include the following.

- The NFAEB should direct the development and implementation of a comprehensive national strategy and framework for developing, managing, and delivering fire and fuels data and analyses. The development and implementation of a comprehensive national strategy will promote significant benefits including: comprehensive data standards, rational data security policies and practices, standardized business practices for conducting geospatial analyses, and many other benefits. This national strategy would benefit most wildland fire agencies through long-term reduction in costs and provide contemporary best available information. An example of a potential national fire and fuels data framework strategy is presented in Section 4.1.6.
- The NFAEB should develop clear guidance and metrics for measuring interagency fuels treatment accomplishments outside of traditional intra-agency fuels planning and treatments. These new metrics should foster and reward cooperation between agencies over competition between them.
- To effectively and efficiently collaborate, local, regional, and national agency personnel should be educated on the mechanics of collaboration as well as how to foster a work environment and culture where collaborative fuels treatment planning and treatment becomes a standard business practice, rather than the exception.
- Interagency fire and fuels planning in complex multi-agency landscapes will require full-time dedicated positions. The NFAEB should consider new personnel and

organizational strategies for implementing interagency fuel treatment practices across increasingly complex and hazardous fuel landscapes. An example organizational configuration for the Southern Sierra Nevada is presented in Section 4.1.1.

- The principal investigators recommend that a full-time, dedicated interagency federal wildland fire Geographic Information Systems (GIS) Coordinator position be established to coordinate interagency federal, state, and local geospatial fire activities.
- The NFAEB should consider directing the development of standardized geospatial planning analyses including technical software tools with standard data input requirements and well-defined protocols and business workflows. These analyses should focus on measuring and ordinating risk, hazard, and values across landscapes, rather than agency-centric traditional approaches.
- The NFAEB should provide direction in establishing policies governing the identification, publication and distribution of sensitive fire and fuels data and analyses.
- The NFAEB should direct the development of a common set of terminology and language to define the terms “risk”, “hazard”, “values” and other appropriate terminology in concert with the state and local wildland fire community.
- The NFAEB should re-define the mission, authority, and responsibilities of the National Wildfire Coordinating Group's Geospatial Task Group (GTG). It is recommended that the group expand its scope to include non-spatial data coordination, and re-name the GTG to better reflect a revised mission. The GTG membership should have equal representation from both fire management and the GIS community. Further, the GTG should have membership and input that includes local and state fire communities.

A few final words

In 2003, there has been a noted increase in cooperative fire activities between agencies in the Southern Sierra. This includes cooperatively managing lightning caused fires (> 5,000 acres) managed as Fire Use fires by the US Forest Service and National Park Service. Historically, such fires would have been suppressed or not allowed to cross agency boundaries. This Joint Fire Science Funded project has served as a catalyst for this improved cooperation, and has resulted in strengthened personal relationships and trust, fostering a stronger ecosystem approach to treating fuels.

We thank the Joint Fire Sciences Program for their support on this project and hope this project will help other areas transition toward landscape-level interagency treatment of fuels.