Topic & Title of Project

Use of LANDFIRE data in fuels program prioritization and planning: Signal Peak Assessment

Date of Project

September 2006

Background

The Signal Peak Assessment Area in southwest New Mexico serves as an example of the use of LANDFIRE data in fuels program prioritization and planning. This area is located just north of Silver City, and the assessment involved interagency participation from the Gila NF and Las Cruces BLM in addition to state and private collaboration. LANDFIRE data for Mapping Zone 15 was available when the assessment began, and LANDFIRE data provided the only continuous, consistent map of multiple related data products (including vegetation, fuels, and environmental information) that covered all lands within the assessment area.

Key Points

Fire planning This assessment was initiated because an earlier assessment of southwest New Mexico had identified potentially hazardous fuels and fire behavior and non-sustainable fire-adapted ecosystems of a magnitude extending beyond any expected future budgets for fuels and vegetation restoration. Signal Peak was given top priority in the geographic area for refined assessment to help identify priority projects. In the earlier assessment, the fire behavior rating was subjective and qualitative because there were no inputs for fire behavior modeling (FlamMap and FARSITE), and the mapping of fire regime condition class was very coarse due to a lack of biophysical setting and succession class data. Without LANDFIRE, substantial additional local mapping and sampling would have been required to develop these model inputs, which would have taken one or more years and cost a substantial amount. If LANDFIRE data were not available, the assessment would have been mainly qualitative with some quantification where data existed (usually forest vegetation data on Forest Service lands). However, LANDFIRE data products are quantified and science-based, thus allowing for strategic spatial analysis that can be conducted within a few months.

►Data evaluation LANDFIRE fuels, vegetation, and environmental data were used as inputs to the fire behavior (FlamMap and FARSITE) and fire regime condition class (FRCC Mapping Tool) models. LANDFIRE data products proved invaluable as a starting point, and data were edited to group the existing vegetation types into broader groups that could be more easily assessed. Fuels data were updated to reflect less grass resulting from drought, grazing, and lower canopy base heights for some combinations of conditions. In addition, biophysical setting and succession class data were edited to reflect local knowledge of the historical vegetation and geographic range.

►Modeling & analysis Following editing, the data were modeled and analyzed to classify lands into 1) low, moderate, and high potential fire behavior hazard based on flame lengths greater than four feet and crown fire activity and 2) low, moderate, and high hazard to fire-adapted ecosystems (fire regime condition classes 2 and 3). Local fire occurrence data were used to map fire occurrence probability, which, when combined with the hazard measures, produced a risk rating. The existing condition ratings and post management ratings were then inspected to assure that the management changes resulted in reduced fire behavior and improved condition. Combinations of scenarios were then evaluated to determine if a plausible management treatment (such as thinning or prescribed fire) would reduce hazardous fire behavior, improve condition class, or both. Spatial comparisons were conducted to identify locations where treatments were most effective and assess options near the wildland-urban interface, Mexican spotted owl habitat, and other key resource concerns. However, the combined potential treatment area – even having been prioritized – was too large for the near-future (5-year) plan of work. The initial prioritized list of wildland-urban interface and owl habitat areas were then further prioritized using the Multi-scale Resource Integration Tool (MRIT).

Management decision support LANDFIRE fuels, vegetation, & environmental data were used for a collaborative assessment, which could not have been accomplished without the data for a quantitative assessment of the fire and fuel conditions and the

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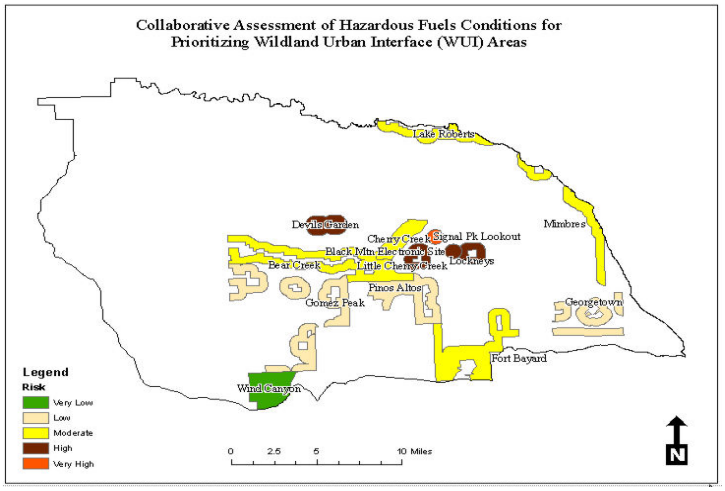
Key Points, continued...

potential hazardous fire behavior. The priorities indicated a need to focus on wildland urban interface and owl habitat regions through the central portion of the assessment area. A management strategy would be to focus aggressive restoration on most of the area within the wildland buffers around these areas and then add additional zones of restoration adjacent but outside the buffers, where opportunity permits, to reduce fire hazard and improve conditions. Considerably more could be done to reduce fire behavior hazard across the total area, but this amount was deemed to be adequate to address the objectives for the landscape assessment.

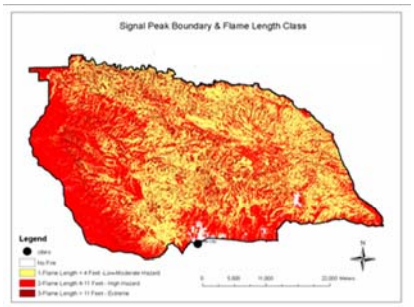
Results / summary The Signal Peak assessment identified over 100,000 acres for potential treatment in a half-million-acre assessment area that would reduce hazardous fire behavior and fuels and improve the condition of fire-adapted ecosystems. These treatment areas were prioritized so that money could be allocated towards the most effective projects. Results indicated that areas adjacent to urban interface regions and within and adjacent to Mexican spotted owl habitats needed to be prioritized for the first-round of project treatments. LANDFIRE vegetation and fuels data, when combined with local fire weather, fire occurrence, resource information and fire and ecological condition modeling, were deemed critical for developing management strategies and prioritizing potential projects.

Recommendations

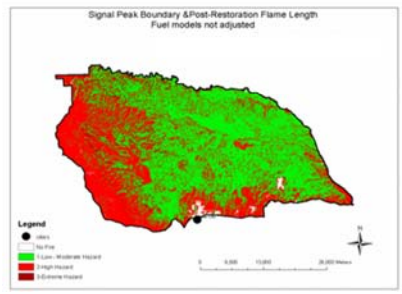
Training & skills To be successful, an analysis as complex as this Signal Peak Assessment requires that the individuals conducting the assessment have an adequate level of training. The following specific training elements are recommended: 1) The National Interagency Fuels Coordination Groups (NIFCG) course "Fuel Assessment Techniques Using LANDFIRE Data" and course prerequisites, including 2) the FlamMap tutorial, 3) the National Interagency Fuels Technology Team's (NIFTT) online course "LANDFIRE Data, Concepts, and Methods," and 4) training in fire regime condition class and fire behavior fuel model review. In addition, training in geographic information systems is necessary to conduct complex GIS data integration and handle associated modeling issues, such as editing data for large acreages (100,000+ acres) for the various management options. Ensuring that individuals have the recommended training will greatly reduce the amount of time needed to perform this type of analysis. Depending on skill levels, a dedicated team can conduct a large-area assessment such as Signal Peak in a three to four week period.



Assessment areas and associated priority ratings for the wildland-urban interface areas of Signal Peak. Priorities are based on composition of flame length classes 2 and 3 (those greater than 4 feet) and fire regime condition classes 2 and 3.



Pre-restoration map displaying the spatial distribution of flame length classes 1 through 3. In the analysis, flame length class inputs were given twice the importance of fire regime condition class (FRCC) classes.



Post-restoration flame length class map showing the spatial distribution of flame length classes 1 through 3 and a reduction of high hazard to low-moderate hazard.