



Wildland Fuels Management: evaluating risks *and* benefits

Frequently Asked Questions...

4. How can I identify opportunities to burn?

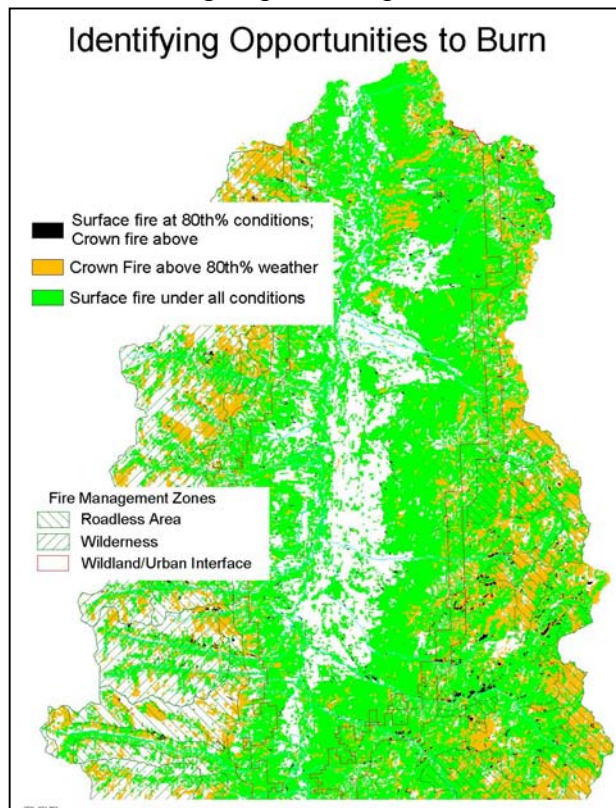
Overview...

To answer this question you will first need to define ‘opportunity’. In this example, we defined ‘opportunity’ to mean areas and conditions in which the predicted effects of fire are ‘characteristic’ - within the natural range of variability for that stand structure, composition, and site condition. Our target condition in this example is restoration of fire to fire-adapted ecosystems; thus, a ‘beneficial’ effect, defined as movement into or towards a desired condition, is synonymous with ‘characteristic’. By corollary, ‘risk’ in this example is synonymous with ‘uncharacteristic’.

The resulting maps indicate areas and conditions for beneficial effects. This provides useful information for defining appropriate management responses, codifying these in Land/Resource Management Plans and in Fire Management Plans.

Required inputs...

To identify opportunities to burn, you will need 3 types of inputs: 1) fire behavior maps for a suite of weather conditions (generated previously in the protocol); 2) a crosswalk that remaps fire behavior in terms of ‘opportunities’ or ‘risks’ effects on your species or process of interest; and 3) a map of locations of the target species or process.



General process...

To find where fire will most likely always be of benefit to the resource of interest, query through all appropriate fire behavior maps (low, moderate, high, very high, extreme). Most probably, you will be most concerned about realistic WFU or Rx conditions (such as under moderate to high conditions). For either case, apply the crosswalk to the fire behavior maps then query for the polygons or grid cells that are coded as ‘characteristic’.

In this illustration, we identified and mapped three conditions:

- where surface fire is predicted under any weather condition,
- where crown fire is predicted above moderate conditions (80th% ERC), and
- where surface fire occurs at and below moderate, but crown fire is predicted above 80th% ERC.

We superimposed the WUI and roadless/wilderness Fire Management Zones to facilitate identification of appropriate treatments. Opportunities for Wildland Fire Use may be appropriate in Wilderness areas under all conditions (in line with the existing Forest Management Plan). This analysis indicates that WFU may also be appropriate in areas where surface fire dominates all fire weather/behavior (Green). Prescribed fire may be appropriate in areas that transition from surface to crown fires under moderate conditions (Black). Areas of crown fire under high fire weather behavior outside roadless and Wilderness areas may be candidates for mechanical treatments prior to burning (Orange).

Project overview...

We have developed a process that allows managers to systematically determine where and under what conditions fire may create benefits or pose threats to identified ecological conditions or management targets. An important feature of this protocol is that fire effects are expressed in terms meaningful to both fire and resource staff. The process is spatially explicit (ArcView and/or ArcMap); uses existing, local datasets; incorporates the latest fire and vegetation research; provides model defaults to facilitate adaptation to local conditions; and generates information for a variety of planning scales from long-range to site-specific.

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And visit our website: <http://leopold.wilderness.net/research/fprojects/F001.htm> where we post examples and demonstrations.

Fire Research at the Aldo Leopold Wilderness Research Institute

The Aldo Leopold Wilderness Research Institute is helping managers devise effective strategies for managing fire and fuels across the full spectrum of lands extending from wilderness outward to the wildland urban interface. Our research encompasses the ecological and social sciences and is focused on three areas: 1) understanding natural fire regimes and their alteration by management, 2) developing information and tools to improve fire and fuel management planning, and 3) anticipating consequences of management alternatives.

For a complete list of fire-related research activities at the Leopold Institute, visit <http://leopold.wilderness.net/research/fire.htm>, or contact Carol Miller, 406-542-4198, cmiller04@fs.fed.us.

The Aldo Leopold Wilderness Research Institute is the only Federal research group in the United States dedicated to the development and dissemination of knowledge needed to improve management of wilderness, parks, and similarly protected areas. We provide a national center for scientists from different disciplines and backgrounds to address the wilderness research needs of land management agencies and organizations. The Leopold Institute was formally established in 1993 by the U.S. Forest Service and is administered by the Rocky Mountain Research Station. We operate under an agreement with the U.S. Forest Service, U.S. Geological Survey, Bureau of Land Management, U.S. Fish and Wildlife Service, and the National Park Service. Support for our fire research program includes funding from the National Fire Plan, Joint Fire Sciences Program, and the Bitterroot Ecosystem Management Research Program.

