

Wildland Fuels Management: evaluating risks and benefits



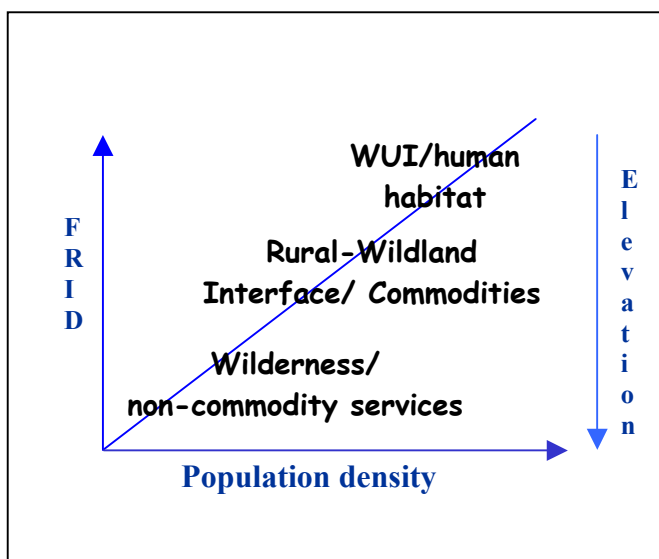
Frequently Asked Questions...

8. Where is fire a realistic management tool for meeting National Fire Plan and federal fire policy goals?

Three hundred ninety-seven million acres of land in the US have been identified as in need of treatment to reduce hazardous fuel loads. Key methods include mechanical treatments and/or fire (prescribed or Wildland Fire Use, respectively management- or naturally-ignited). Mechanical treatments are generally more expensive than fire treatments, but will be the only acceptable treatment in a number of areas. Understanding where fire may be the most effective and efficient treatment can help managers and the public develop a financially sound and ecologically sustainable fuels plan. Fire is a social as well as a biophysical process. In order to understand where fire may be a realistic management tool one must consider the complex relationships, and restraints imposed by those relationships, between current land uses, fire regimes and fire protection goals. The following suite of graphics illustrates one such characterization of these relationships and the resulting conditions and general areas under which fire is realistic.

For this thought experiment, we made the simplifying observations that 1) fire frequency generally decreases with elevation (fire return intervals increase); and 2) fire suppression - as a function of ignitions, access, priority and effort - has had greatest success at lower elevations as well. Departures from the natural fire return interval (FRID), then, are generally highest at lower elevations. Urban areas and agricultural lands are not discussed because they are longer subject to a fire regime characterized by a particular frequency and playing a predicable and significant role in ecosystem structure and function.

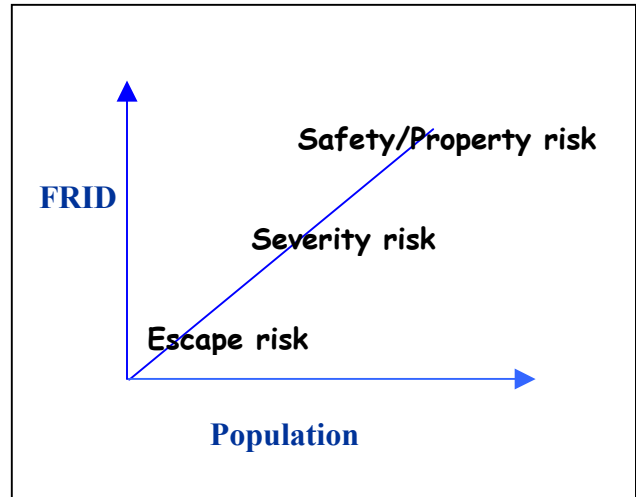
How are humans and land uses arrayed on the landscape?



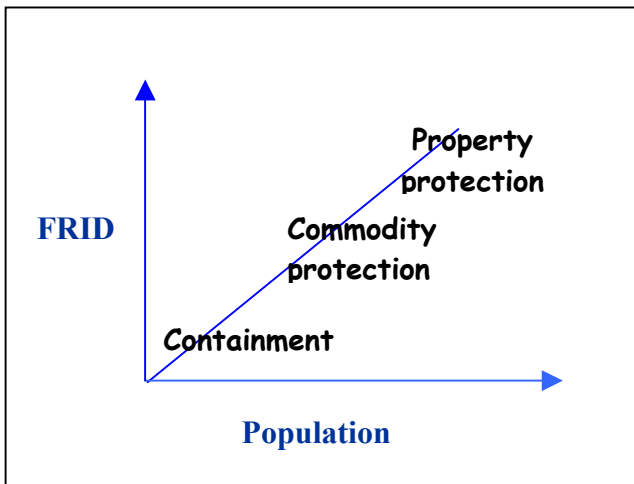
When you array human land uses along the FRID/Elevation axis you notice a stratification along population density spectrum as well. Population density is generally highest in the Wildland-Urban Interface as urban areas expand into adjacent forests, farm and rangelands. The primary use of these lands is as human habitat. Rural areas, with less population density, are characterized by commodity production – timber, forage, cattle, etc. Wilderness areas, where residential human development is prohibited, produce non-commodity resources such as water and recreation. FRID tends to be highest where human density is greatest.

How are fire risks arrayed on the landscape?

Risk from fire differs along a similar trajectory: Property and lives are at risk in the most densely populated areas and where FRID is greatest. The connection to FRID is due to increased fuel loads which can thwart fire control efforts, while producing much more severe effects. Where departures from natural fire regimes are less and where there are fewer people, the main risk are from damage to resources due to fire severity. In Wilderness and other remote areas, there is little risk to property and lives, and since fire regimes may well still be within the natural cycle, the main risks are of the fire escaping onto other lands.



How are fire management goals arrayed on the landscape?

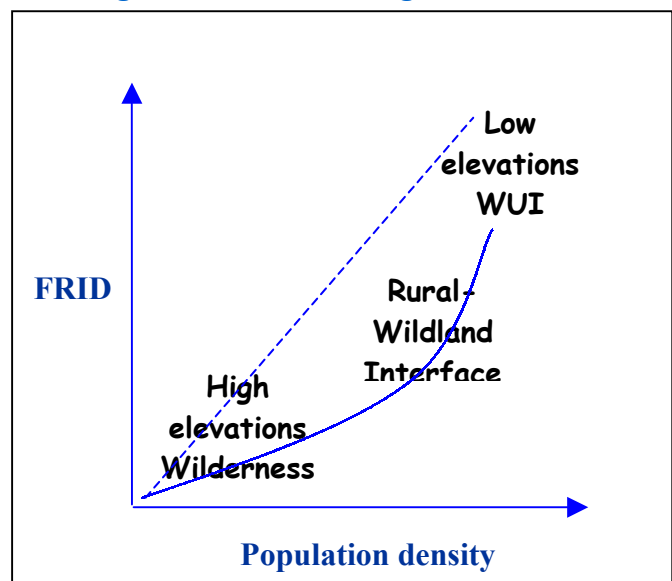


Goals for fire management follow closely on landuses and risks: protection of lives and property in the WUI, protection of commodities and future capacity in the RWI, and containment of fire within areas with few people or commodities of value.

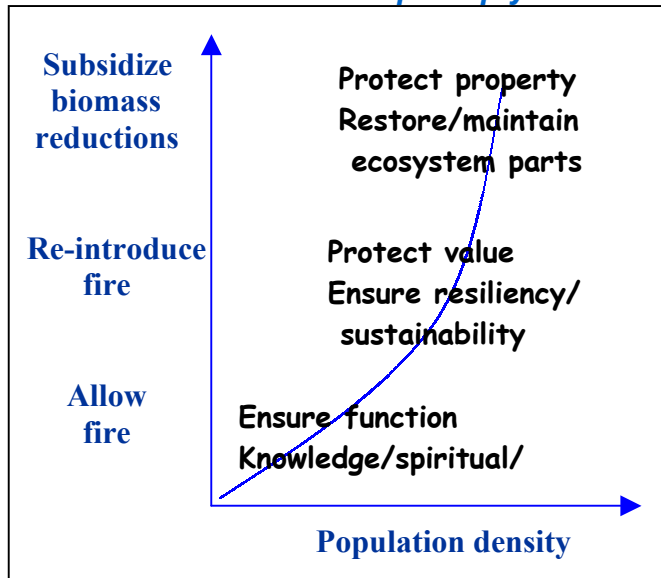
Where are the most realistic opportunities for using fire to meet NFP goals?

Given these constraints, where might the use of fire - the least expensive way to treat fuels accumulations over large areas – be most appropriately used to meet national policy goals?

There is an intuitive conversion of social, economic, and ecologic factors in the rural-wildland interface, particularly where existing fuel loads do not place the economic and ecologic systems at risk. This area has a relatively low population density but a generally a significant access infrastructure. Holdings are often large making coordination easier.



What do these relationships imply for fuels and fire management?



Accepting such a conclusion leads to several implications about the priority and type of fire management strategy.

Where population densities are high, where risks to life and property occur, or fuel loads are unnaturally high, fire management must subsidize fuels and biomass reductions.

Where fuel loads are within reach of natural variability and where risks from severe fire may be mitigated, new fire management priorities should focus on re-introducing fire and re-establishing a natural fire regime.

Where fuels are within the range of natural variation and the risks to life are low, pursue policies that allow fire to play its natural role, ensuring sustainable ecosystem function and the

suite of human values and services these areas provide.

For more information contact: Anne Black, 406-329.2126, aebblack@fs.fed.us

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 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.

FEATURED PROJECTS

Leopold Institute

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