North Cascades Resource Brief

National Park Service
U.S. Department of the Interior

North Cascades
National Park Complex

TOP: Controlled understory burn to reduce fuel loading

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Fuels Management

Managing forest fuel loadings in forested lands as diverse as North Cascades National Park Complex (NOCA) presents an interesting and exciting challenge as we continue to learn from the past and look toward the future. In a park complex with approximately 94% wilderness (over 600,000 acres) the most important tool for managing forest fuel loads is to allow fire caused by lightning to play its natural role whenever possible. This is how the majority of fuel loads in NOCA are reduced. In areas of the park complex near values at risk (e.g., homes, roads, campgrounds, or international boundaries), other tools can be used to prevent and reduce fuel loading such as thinning and understory burning with the intent of mimicking natural conditions and fire cycles to promote forest health while decreasing the potential for high intensity fires in the future.

Status and Trends

Fire managers and crews at NOCA engage in both proactive and responsive approaches regarding fire. Proactive approaches include the study of current forest conditions, evaluating and promoting defensible space around resources that may be at risk from fire in the future, and educating other staff and the public of pertinent findings and fire management goals. Managers use fire effects and forest inventory data to understand past and current fuel conditions and predict future fuel conditions through modeling. This information helps managers to do long-range planning and move toward optimal forest conditions while providing for the protection of resources in areas where wildlands and urban development interface, such as in the community of Stehekin.

Near values at risk fire managers at NOCA actively seek to restore fire to forests that in general, have missed more than one fire cycle due to fire suppression. Using a combination of thinning and prescribed burning, natural processes can be approximated by reducing the numbers of trees, pruning up live branches, and selecting more fire resistant tree species. These actions reduce the potential intensity of fires from high intensity torching or crown fire activity to low intensity surface fire. Thinning plays a key role in this management strategy and burning is used when it will clearly be the most effective tool in combination with thinning.

Knowledge of fire and vegetative history of a site, disease factors, and stand density are used to guide decisions on the most effective prescription for any given site. This kind of fuel reduction totals about 1500 acres and includes cooperation with public and private partners. These projects include defensible space around private residences, Forest Fuel Reduction Areas (also known as FFRAs) which are strategically placed, and fuel reduction near campgrounds or adjacent to access roads.

Responsive approaches to fire come into play when a wildfire occurs. Predictive modeling and extrapolation are still key

TOP: July 29, 2010 view of Rainbow Bridge Fire, a fire ignited by lightening which naturally reduced fuel loading near the Stehekin Community

tools and the data collected on forest health and fire history influence planning decisions, but many factors make wildfires unpredictable and necessitate flexibility in response strategies.

In 2010, like many recent years, the complex had a large (3,700 acre) fire near the community of Stehekin. Objectives for managing the Rainbow Bridge Fire were two fold: protect the nearby community and infrastructure and reduce overall forest fuel load.

Managing any fire is a team effort at NOCA and components include; evaluating the potential of the fire to reach areas of concern before the end of the fire season, periodic monitoring and validation of modeling and decisions, measuring fire effects, and mitigating potential impacts to resources. Fire events provide a unique opportunity to record fire effects in areas with higher fuel loads and higher fire intensity than is possible in a more controlled environment. If suppression is required to protect values at risk, strategic planning leads to a rapid response in operations, firefighting, and results in greater logistical needs.

Discussion

The Forest Inventory and Monitoring Program has recorded an increase in insect mortality in North Cascades National Park Complex. This is thought to be in part from maturing forests and in part to the increased numbers of insect broods per year as a result of fewer days below freezing. These increases in mortality to lodgepole pine, Douglas-fir, ponderosa pine and other tree species mean an increased fuel load in both standing fuel load as trees die, and downed fuel load as needles drop and trees limbs and trunks fracture and fall. Monitoring current and evolving fuel conditions and fire effects will continue to provide an important basis for decision making. The increase in fuel loads and resulting fire intensity levels will continue to challenge fire and fuels managers and crews into the future.