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STRATEGIES FOR ADDRESSING MOUNTAIN PINE BEETLE OUTBREAKS ON NATIONAL FORESTS

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Elevated outbreaks of mountain pine beetle (*Dendroctonus ponderosae*) have occurred on national forests across the western U.S. over the past two decades. Resulting widespread tree mortality has affected forest health, tourism and recreation, the timber industry, public safety, and other values. There is an ongoing need to better understand federal land management approaches to mountain pine beetle (MPB) and other disturbances on public lands, as well as the variables that support or inhibit effective responses. This National Science Foundation-funded research investigated MPB response through case studies on national forestlands in five states, focusing on feedbacks between social and ecological systems during outbreaks.[1]

Key components of MPB response

Federal land management responses to mountain pine beetle (MPB) have been contingent on local and regional policy contexts; and the scale, scope, and public visibility of the outbreaks. Although agency resources and capacity challenges varied across national forests and regions, the unprecedented rapid pace and scale of MPB outbreaks broadly limited the U.S. Forest Service's ability to respond. Many efforts were therefore more focused on addressing MPB impacts, rather than proactive prevention. Across cases, we found the following components important for enabling response to the impacts of MPB outbreaks:

Collaboration and social support: Multi-stakeholder collaboration helped managers design responses that were socially supported. Case study forests with existing collaborative venues or new venues created for MPB response were able to articulate concerns, plan treatments on national forest land, and develop cross-boundary coordination and communications with partners. Dialogue and collaborative planning in these settings built or grew the working relationships and trust necessary for an agreed-upon course of action, and in some cases, allowed the Forest Service to pursue more aggressive and innovative approaches to accomplishing the work. However, collaboration was not able to eliminate all conflict, and in some cases individuals and organizations continued to oppose certain types of forest management projects, including some MPB-related treatments.

Funding for response: National forests and their collaborators sought new or additional funding to help support responses to MPB, including from federal, state, county, NGO, and private sources. These sources included, for example, new federal funding directed toward certain forests or regions, reallocation of funding within regions to redirect funds to forests experiencing severe MPB impacts, state funds for insect and disease response on adjoining lands, water utility funds to address risks in critical watersheds, and foundation and nonprofit contributions. In many cases, partners, stakeholders, and collaborative group members were crucial for identifying and finding new funding sources to support MPB response by amplifying awareness and concerns. Forests with stronger political connections at the national scale also tended to have more directed federal funding and political support.

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Capacity for response: National forests also worked to increase capacity in response to MPB, including new uses of partners, contractors, and Forest Service staff at regional and national offices. Innovative approaches to environmental analysis allowed planning and preparation of large landscapes for treatment, which sped up responses and preventative actions to MPB. The Black Hills National Forest created an analysis and National Environmental Policy Act (NEPA) decision for a large landscape area, while the Colville National Forest piloted a new approach wherein NEPA requirements for a stewardship contract were completed by a third-party contractor. Three MPB-affected forests in Colorado shared an incident management team that helped communicate about safety risks and closed recreation sites to increase public awareness of MPB outbreaks and effects. The regional Western Bark Beetle Strategy prioritized actions for MPB response focused on human safety and resource values, which informed decision-making in some forests. Forest health monitoring that tracked the extent and spread of MPB was also key for decision support.

Innovative use of programs, tools, and authorities: The scope, scale, and pace of MPB outbreaks necessitated innovation. These innovations allowed agency managers to address forest health issues by 1) planning more rapidly, 2) working at larger spatial scales, and 3) implementing projects across ownerships with partners who could contribute capacity to address cross-boundary concerns. Individual forests used the Good Neighbor Authority, 2014 Farm Bill forest health emergency designations, and other new authorities as part of larger strategies for responding to outbreaks. In some cases, the use of categorical exclusions allowed targeted treatments in locations with high public use and safety risks such as roads, powerline corridors, recreation sites, and areas proximate to communities. Authorities such as stewardship contracting allowed treatments where material removed was of limited or no commercial value, which was particularly important in areas that lacked processing infrastructure. Three case study forests were able to use the Collaborative Forest Landscape Restoration Program (CFLRP) or the Joint Chiefs' Landscape Restoration Partnership to help fund landscape-scale restoration projects in MPB-affected areas. The use of innovative tools and authorities was strongly associated with the strength of local collaborative processes.

Implications for policy and practice

Our research suggests that to increase resiliency to mountain pine beetle and similar fast-moving disturbances, federal land managers need a broad and flexible set of enabling programs, tools, and authorities. Strategies that are adaptable to local social-ecological contexts are essential for working across boundaries and addressing shifting forest health needs. The continued availability of key authorities such as stewardship contracting and Good Neighbor Authority will be crucial.

In addition to having a diverse set of tools available, agency managers need staff and financial capacity to accomplish environmental analysis and implement work on the ground. Stable appropriated funding can provide the foundational capacity important in response and mobilization. Programs such as the CFLRP and Joint Chiefs' Partnership can bring additional resources that are often necessary to respond to large-scale disturbance by funding costs of implementation.

Finally, place-based collaboration and social support remain pivotal in shaping the options that managers and partners have for responding to disturbance in their local areas. Programs and resources that directly fund collaborative and partnership capacity, including facilitation and coordination of groups and collaborative processes, are needed to develop place-based strategies and coordinated responses.

For more information:
http://ewp.uoregon.edu/MPB

[1] *Case study locations were the Black Hills (South Dakota / Wyoming), northern Colorado, northeastern Washington, and western Montana. Other project elements in addition to the case studies included an analysis of the relationships between MPB outbreaks and wildfire occurrence and construction of an agent-based model representing the complex dynamics of national forests as coupled human-natural systems.*

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