

**Colorado Bark Beetle Cooperative Hazards Narrative**  
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Natural disturbances like fire and insect outbreaks are an inevitable part of the life of a healthy forest. However, forest disturbances can result in negative consequences to social and economic values if left unmitigated. The mission of the CBBC is to inform stakeholders and the public-at-large on strategies to manage the effects of forest disturbances on community resilience. By resilience, we mean the capacity of the community to absorb and recover from disturbances. We submit that the effects of forest disturbances and the values exposed to those disturbances can be managed with timely planning and allocation of resources. We can't prevent natural events from occurring, but we can reduce the vulnerability of communities to natural hazards through proactive interventions.

We focus on three primary hazards resulting from forest disturbances:

- Increased wildfire hazards
- Falling trees
- Post-fire flooding and sedimentation

We array those hazards against values exposed to those hazards, the potential for severe consequences, potential interventions that have been shown to be effective, and limitations to those interventions. The purpose of this narrative to assist communities and government agencies to identify geographic areas of concern and to plan effective interventions to reduce hazards and vulnerabilities in those areas. We also wish to ensure that expectations are appropriately defined so that the public understands that hazards can't be completely eliminated, but can be anticipated and managed to reduce vulnerabilities and speed recovery.

Hazards	Community Values exposed to hazards	Potential Severe Consequences	Interventions	Limitations to Interventions
Increased wildfire hazard	<ul style="list-style-type: none"> <li>• Life</li> <li>• Structures</li> <li>• Utility lines</li> <li>• Transportation</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of firefighter life</li> <li>• Loss of civilian life</li> <li>• Grid failure, disruption of power supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce the rate of heavy fuels accumulation</li> <li>• Create fuel reduction fire lay-down defensible</li> </ul>	<ul style="list-style-type: none"> <li>• Excess and unmanaged slash</li> <li>• One-time fuel reduction is</li> </ul>

	<p>infrastructure</p> <ul style="list-style-type: none"> <li>• Private properties within wildland-urban interface</li> <li>• Recreational, forest product-related, and other service-related businesses</li> <li>• Domestic, agricultural, and industrial water supplies</li> <li>• Communications facilities and networks (radio &amp; microwave sites, fiber optic cable and hard wire cable lines)</li> <li>• Roads, railways and air transportation facilities</li> <li>• Other community infrastructure including emergency response networks</li> <li>• Recreation access and facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Disruption or destruction of water supplies (e.g., intake and storage facilities, streams)</li> <li>• Loss of property</li> <li>• Loss of personal and household income</li> <li>• Business interruption or loss</li> <li>• Loss of community economic activity</li> <li>• Loss of livestock herds, forage, shelter, and grazing infrastructure (e.g., fencing, water systems, corrals, loading facilities, and hay)</li> <li>• Invasions of non-native plant species, weeds</li> <li>• Smoke-induced health problems</li> <li>•</li> </ul>	<p>space zones to provide safe areas for fire suppression adjacent to communities and values-at-risk</p> <ul style="list-style-type: none"> <li>• Create fire lay down areas in the forested landscapes containing uncharacteristic fuels accumulations to prevent uncharacteristically severe fires.</li> <li>• County codes requiring homeowner responsibility for ignition resistant structures and adequate defensible space. Code must not be restricted to new structures and remodels but must have a mechanism to capture existing structures. There must also be a maintenance plan component.</li> <li>• Construct adequate water capacity for firefighting</li> </ul>	<p>insufficient – long-term maintenance is needed</p> <ul style="list-style-type: none"> <li>• Fuel reduction on individual properties adjacent to untreated properties may not withstand fires. Community-wide fuel reduction is needed.</li> <li>• Lack of enforceable mandates for community-wide fuel reduction.</li> <li>• Fuel reduction can reduce fire intensity but may not affect rate of spread. May actually increase fire spread due to wind exposure.</li> <li>• Fuel reduction alone without firefighter intervention may not guarantee</li> </ul>
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			<ul style="list-style-type: none"> <li>• Increase the application of prescribed fire to reduce slash piles and maintain low surface fuel loads where appropriate.</li> <li>• Coordination of fuel reduction projects across property ownerships has been shown to have the greatest effect in reducing hazard exposure.</li> </ul>	<p>improved home survivability. Adequate firefighting resources and road access is key to making fuel reduction effective for home survivability.</p> <ul style="list-style-type: none"> <li>• Embers spreading from untreated and treated vegetation can cause home loss.</li> <li>• High costs of fuel reduction treatments, especially with limited forest products utilization infrastructure</li> <li>• Fuel reduction projects may have the least cost benefit when compared with changes in building materials, future</li> </ul>
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				development locations, and homeowner modifications
Falling trees	<ul style="list-style-type: none"> <li>• Life</li> <li>• Homes</li> <li>• Power lines</li> <li>• Transportation infrastructure</li> <li>• Recreation infrastructure</li> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of life</li> <li>• Property destruction</li> <li>• Power lines become a source of wildfire ignition</li> <li>• Impeded access for emergency services</li> <li>• Impeded access for businesses and utilities</li> <li>• Business interruption or loss</li> <li>• Interruption or loss of power supplies</li> <li>• Regional grid failure</li> <li>• Reduced or impeded access to popular recreation areas</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Hazard tree removal</li> <li>• Treating slash from hazard tree removal to reduce hazardous fire potential</li> <li>• Signage, public communications and announcements</li> <li>• Recreation facilities restrictions or closures</li> </ul>	<ul style="list-style-type: none"> <li>• Limited financial resources to reduce falling tree hazards, especially backcountry recreation trails and areas.</li> <li>• Public misunderstandings and acceptance of wide swaths of tree removal along roads and trails.</li> <li>• Lack of capacity to deal with product of hazard tree removal</li> </ul>
Post-fire flooding and sedimentation originating on forest lands	<ul style="list-style-type: none"> <li>• Life</li> <li>• Homes</li> <li>• Private and public properties</li> <li>• Businesses</li> <li>• Roads and bridges</li> <li>• Domestic, agricultural,</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of life</li> <li>• Property destruction</li> <li>• Loss of roads and bridges</li> <li>• Damage to and loss of water supply</li> <li>• High long-term costs for</li> </ul>	<ul style="list-style-type: none"> <li>• Sedimentation and flood risk mapping to identify areas of highest vulnerability in event of high-severity wildfire</li> <li>• Pre-disaster mitigation and preparedness</li> </ul>	<ul style="list-style-type: none"> <li>• Funding</li> </ul>

	and industrial water supplies <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	governments, businesses, and property owners for ongoing repair and replacement	planning among local, state, and federal government agencies and non-governmental organizations	
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Potential use of this information:

- Identify areas that are at immediate risk of loss from these hazards
- Identify areas that are at long-term risk of loss from these hazards
- Identify and prioritize most cost-effective strategies
- Prioritize areas for immediate action
- Prioritize areas for progressive action over time