



MONTANA FOREST ACTION PLAN

BY

THE MONTANA FOREST ACTION ADVISORY COUNCIL

convened by the Montana Department of Natural Resources and Conservation

DECEMBER, 2020

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LAND ACKNOWLEDGMENT



Photo courtesy of Visit MT, Blackfeet Nation

The Montana Forest Action Advisory Council acknowledges and honors that what we now refer to as the State of Montana is the traditional homeland of many Indigenous peoples, both past and present (Figure 1). In order to better understand Montana’s forests, we must understand how the presence of Indigenous people has shaped and continues to shape the landscape we have the privilege to manage today.

Montana is home to eight federally recognized tribal nations, including the Confederated Salish and Kootenai Tribes of the Flathead Reservation, the Blackfeet Nation, the Chippewa Cree Tribe of Rocky Boy’s Indian Reservation, the Assiniboine & Gros Ventre Tribes

of Fort Belknap Indian Community, Fort Peck Assiniboine & Sioux Tribes, the Crow Nation, the Northern Cheyenne Tribe, and the Little Shell Tribe of Chippewa Indians.

In addition to these nations, many tribes beyond the borders of Montana have claims to hunting, fishing, and cultural sites within the state. The Montana Forest Action Advisory Council recognizes this heritage and understands that we exist within a long history of cultural and Indigenous stewardship practices. For more information on the history of these practices, please see **Indigenous Peoples & Forests** in the *Statewide Assessment of Forest Conditions*.

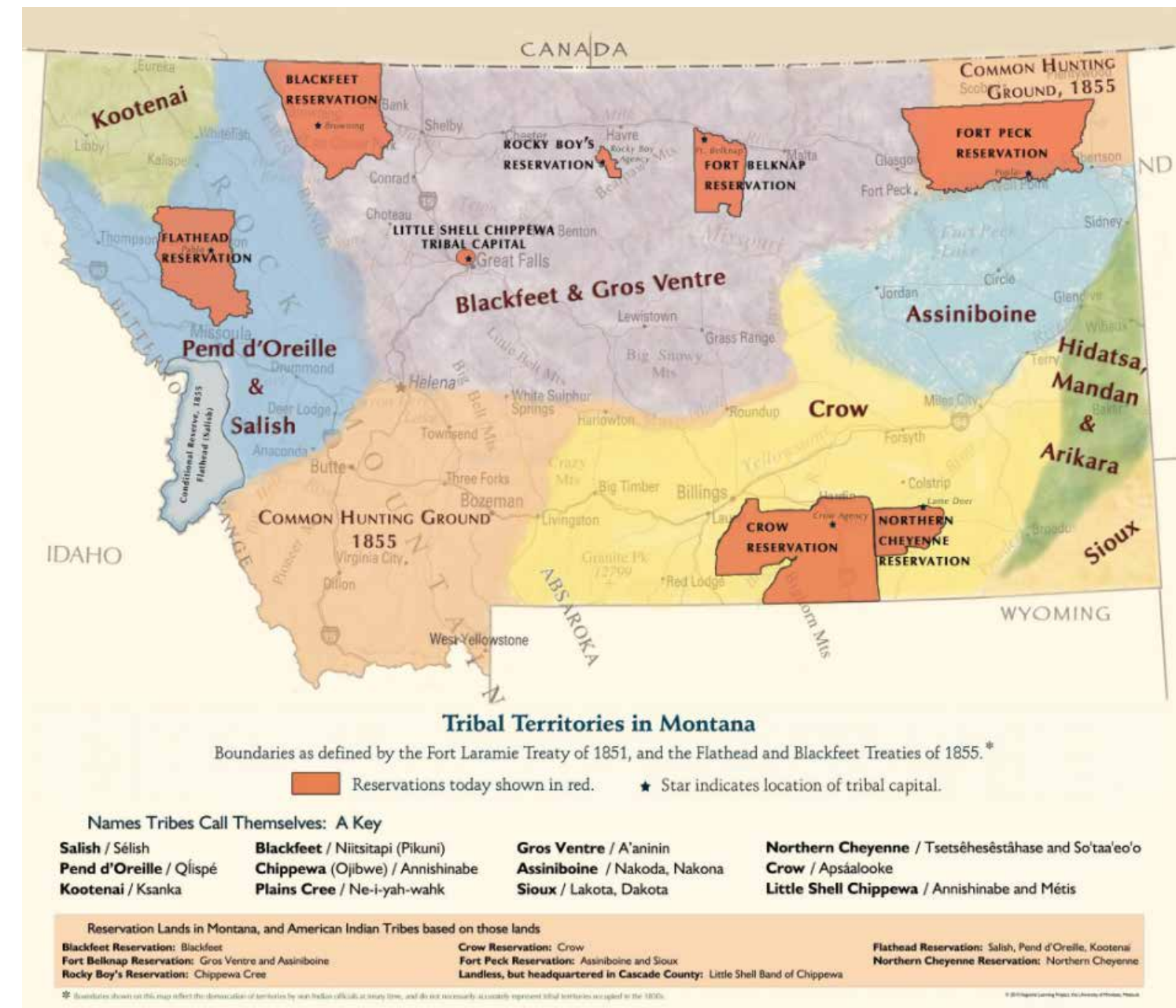


Figure 1. The Tribal territories, as defined by the Fort Laramie Treaty of 1851 (Original data from University of Montana, replicated by DNRC, 2020).



MONTANA FOREST ACTION PLAN

*Insects, disease, and fire
don't stop at the fence lines.
Neither should our management.*



Photo courtesy of USFS, Lolo National Forest

Fellow Montanans,

Forests are one of the most prominent natural resources in Montana. By providing the raw material for our industries and local economies or a place for Montanans to develop the deeply held traditions and values connected to our state's landscapes, forests are rooted in the very identity of our state.

Our forests currently face significant forest health issues and wildfire risk. Whether it's the excessive smoke in our skies during the summer, the increase in insects and disease outbreaks, or the overstocked stands, all Montanans feel the impacts of a lack of coordinated management across ownership boundaries. That's why the 2020 revision of the Montana Forest Action Plan is focused on building and supporting cross-boundary, collaborative forest management and restoration efforts.

Following the principles and vision of Shared Stewardship: Across Landscapes and Forests in Focus 2.0, the Montana Forest Action Plan brought together agencies, tribal nations, and diverse partners from across the state to develop actionable strategies and information for land managers and owners to use to increase capacity for landscape-scale planning and coordination across ownership boundaries. The completion of this plan reflects the collective work and ideas of the Montana Forest Action Advisory Council. Together, we've developed three main products: the Statewide Assessment of Forest Conditions, the Priority Areas for Focused Attention, and a set of recommended goals and strategies to help improve forest health and reduce wildfire risk. Each of these tools provides necessary and useful recommendations to help build greater cooperation at the federal, statewide, and local level to increase the resiliency and sustainability of Montana's forests.

The Montana Forest Action Plan is a resource for all Montanans. The stage is now set for cross-boundary, landscape scale forest restoration and management to take place across the state. Moving forward, it will be up to Montanans to use this plan and the existing resources available to continue the legacy of working together across ownerships to keep our forests healthy and resilient for generations to come.

Sincerely,

Sonya Germann

State Forester, Montana department of Natural Resources and Conservation

Leanne Marten

Regional Forester, USDA Forest Service, Region 1

GUIDE TO THE MONTANA FOREST ACTION PLAN

COMPONENTS OF MONTANA'S 2020 FOREST ACTION PLAN

The Montana Forest Action Plan is a stepwise approach to forest management. First, it was needed to understand the status of Montana's forests and the biggest threats they are facing. Second, it was necessary to use the knowledge of the forests and their conditions in order to prioritize where work to improve forest conditions would occur. Lastly, it was essential to create a framework that would bring all forest managers together to collaborate and combine efforts that will create lasting change in our forests.

THE MONTANA FOREST ACTION PLAN IS COMPRISED OF THREE COMPONENTS:

1

ASSESSMENT OF FOREST CONDITIONS

The purpose of the statewide *Assessment of Forest Conditions* is to identify conditions and trends concerning state forest resources and highlight threats to forest lands and resources consistent with national priorities.

2

PRIORITY AREAS FOR FOCUSED ATTENTION

The *Priority Areas for Focused Attention* were developed using a data-informed geospatial model to identify priority landscapes in need of forest restoration and management. Such areas were designated using current landscape attributes, in order to draw attention to the urgency with which action should be considered and help identify resources that should be allocated to protect Montana's communities and infrastructure and improve forest health conditions.

3

GOALS AND STRATEGIES

Drawing from the information in the *Assessment* and the data derived from the *Priority Areas for Focused Attention*, the Montana Forest Action Advisory Council identified a set of recommended goals and strategies for each of the major topic areas listed. These goals and strategies are intended to facilitate cooperation and coordination amongst land managers, agencies, forest owners, organizations, collaboratives, and other partners to improve forest health, reduce wildfire risk, support biodiversity and habitat conservation, improve human and community health, and promote the many benefits of urban and community forestry.

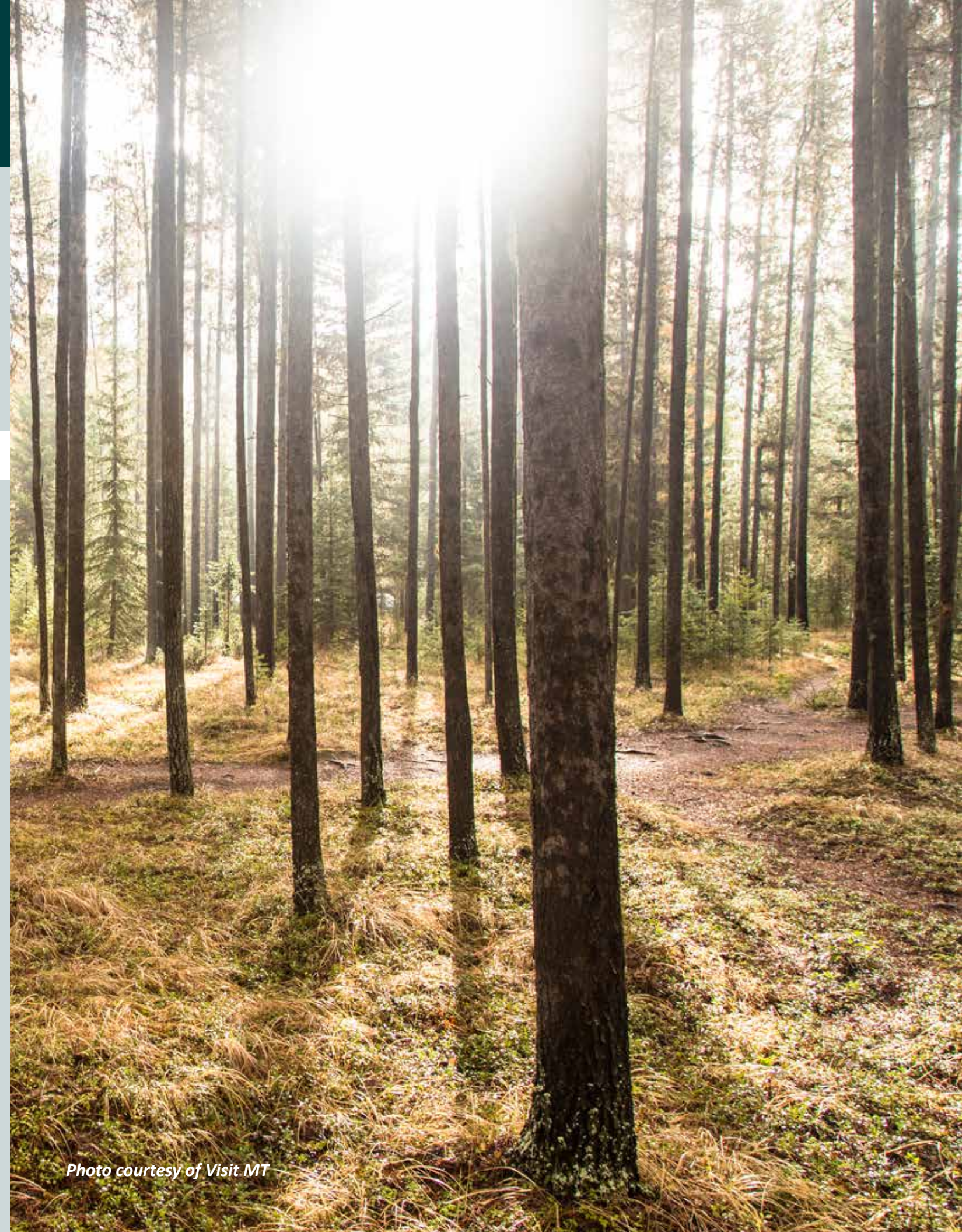


Photo courtesy of Visit MT

INTRODUCTION



Photo courtesy of USFS, Upper North Fork, Flathead River

From the mixed conifer forests of the west and the ponderosa pine and riparian cottonwood stands of the east, Montana's forested environments create extensive and diverse landscapes that have always benefitted the state's citizens and communities. All Montanans, from our diversity of cultures and ethnicities, have formed deep personal and cultural connections to the forests. We use trees and forest plants for subsistence needs and cultural purposes such as traditional foods and medicines; for outdoor recreation and solitude, and enjoying our wild spaces and biodiversity; for a wide array of wood products and services vital to a strong forest products economy; and for the clean air and water that forests provide. For all these reasons, we also share a concern for the current health of our forests and a desire to restore our forests to a healthier and more resilient state. In doing so, we must take stock of the history that has led us to the problems we are now called on to address.

For many thousands of years, the forests of what is now Montana have been part of the homelands of Indigenous peoples and have provided crucial resources to tribal ways of life and cultures. Indigenous peoples managed the region's forests—particularly the lower-elevation forests dominated by ponderosa pine and western larch— with the deliberate, frequent, and highly knowledgeable use of fire. Fire was used to nurture certain plants of value for food or medicine, provide more forage for deer and elk, make travel easier, and many other reasons (Confederated Salish and Kootenai Tribes, 2006). The use of fire was an important component of tribal ways of life and essential for maintaining the cultural ecologies that long sustained Indigenous peoples and their environments.

Over the past two centuries, western settlers established a very different way of life here and different ways of using the forests. With non-Indigenous settlement came rapid industrial development and the growth of the agriculture, mining, and timber industries. Indigenous economies and land management practices were marginalized as settlers increasingly treated forests as valuable commodities and regarded fire as an economic threat. Accordingly, government officials began repressing tribal use of fire and aggressively suppressing naturally ignited fires while also forcing Indigenous peoples to relinquish most of their traditional territories and homelands. Over time these changes and the decades of wildland fire suppression policies, historic harvest practices, and lack of landscape scale forest management changed the species composition, density, structure, and patch characteristics of Montana's forests. By the turn of the century, many formerly open, park-like forests had become overcrowded with fine and woody fuels.

Today, across many acres in certain forest types, forests have become densely crowded, contain excessive fuel loads, and are populated by tree species that are less tolerant of fire, more susceptible to insect and disease outbreaks, and climate change impacts (Keane et al., 2002, Halofsky et al., 2018). In the 2010s, nearly half of Montana's forests were impacted by insect and disease outbreaks, and the current pace and magnitude of climate change is expected to further impact forests across the state (Whitlock et al., 2017). These changes are compounding to increase risk of extreme wildfire, further exacerbated by the longer and more severe wildfire seasons and the increased development within or adjacent to fire-prone ecosystems (Calkin et al., 2013).

The Montana Forest Action Plan presents an opportunity to address these common issues collaboratively. It will serve as a road map for collective action – bringing together a diversity of voices, perspectives, and partners from across the state in service of our shared desire to promote the health and wellbeing of our forests and communities.

MOVING FORWARD AND TAKING ACTION

The current conditions of Montana's forests require a strategic approach to identify opportunities to improve forest health, reduce wildfire risk to communities, prioritize actions to conserve wildlife, protect watersheds, build community resilience, and maintain a strong and diverse recreation, wood products, and tourist economy.

Knowing this, Governor Bullock issued a call to action to collaboratively address Montana's most pressing concerns of forest health and wildfire risk. In 2018, he released his initiative, *Forests in Focus 2.0: A Cross-Boundary Collaborative Approach* (FiF 2.0). The initiative emphasized better planning, a well-organized statewide collaborative effort, scaling partnerships down to the local level, replicating those partnerships on a community by community basis, and targeting investments that bring capacity where it is most needed to get work done.

As a part of *FiF 2.0*, Governor Bullock initiated the revision of the state's Forest Action Plan. First completed in 2010, the *Montana Forest Action Plan* is the state's roadmap for addressing forest health and wildfire risk issues across all forested lands. The timing of the 2020 revision of *Montana Forest Action Plan* presents a unique opportunity for Montana to align with other coordinated calls to action, such as:

- The *National Cohesive Wildland Fire Management Strategy*;
- The USDA Forest Service's *Toward Shared Stewardship: Across Landscapes* strategy;
- USDA Natural Resource Conservation Service's *Montana Focused Conservation*; and
- Locally-driven collaboratives across Montana, many of whom are already engaged in cross-boundary work.

There are additional opportunities to use existing authorities and tools, such as Good Neighbor Authority (GNA), and to move ahead with climate adaptation strategies for forest management that were identified in the recently completed *Montana Climate Solutions Plan*.

In order to help update and develop the Montana Forest Action Plan, Governor Bullock created the Montana Forest Action Advisory Council (MFAAC). MFAAC is a group of forest management experts and seasoned collaborators brought together to address long-term efforts towards cross-boundary, landscape-scale forest restoration and management. With the Montana Department of Natural Resources and Conservation (DNRC) as the principal convener, MFAAC's objectives to revise the *Montana Forest Action Plan* included:

1. Create a shared understanding of the conditions of all forested lands in the state of Montana;
2. Identify priority areas to address forest health and wildfire risk based on those conditions; and
3. Recommend strategies to create an efficient, effective, and comprehensive response to those conditions primarily, but not exclusively, within those priority areas.

More importantly, MFAAC was tasked with rethinking how to work together across real and perceived boundaries while amplifying collaboration; using the best available science, data, and information; and sustaining cross-boundary efforts into the future.

Forest conditions and their impacts affect all Montanans, regardless of land ownership. By working to align the efforts of diverse partners across the state, Montana can advance a common mission of strengthening the shared stewardship of the state's forests. The *Montana Forest Action Plan* reflects the way in which a diverse array of Montanans have come together in the spirit of mutual respect to learn the lessons of history and use those lessons to make Montana's forests healthier, more sustainable, and safer for generations to come.



WHAT ARE STATE FOREST ACTION PLANS?

Forest Action Plans originated with the passage of the 2008 Farm Bill, which required states and territories to develop an assessment of their state forest conditions every ten years—regardless of ownership—and address issues through strategies that ensure alignment with the USDA Forest Service State and Private Forestry Program’s national priorities, which are:

- » Conserve working forest landscapes;
- » Protect forests from harm; and
- » Enhance public benefit from trees and forests.

States must complete these plans to maintain eligibility for State and Private Forestry Program funding. Forest Action Plans offer states and territories an opportunity to communicate the conditions of their forested lands and develop solutions for investing federal, state, local, and private resources in order to help achieve national goals.

When the first *Montana Forest Action Plan* was created in 2010, Montana received nearly \$50 million (2010-2020) from the State and Private Forestry Program. These funds were used to help conserve working landscapes, better protect forests from insects and disease, empower private landowners to manage their land, and ensure the health and vibrancy of the state’s forests and urban forest ecosystems.

The *Montana Forest Action Plan* seeks to expand beyond the original purpose and emphasis of state Forest Action Plans. The 2020 revision will provide a framework to build more coordination and cooperation at the statewide and local level while also amplifying the on-going collaborative work. By doing so, the *Montana Forest Action Plan* can help accelerate the pace and scale of forest restoration and management in Montana to help ensure healthy, wildfire resilient forests across the state.

The strategies and recommendations included in the *Montana Forest Action Plan* are meant to inform project level decisions, but they do not supplant federal or state land management laws, plans, or regulations.

Annual funding provided by the USDA Forest Service’s State and Private Forestry Program is critical to maintaining DNRC’s capacity to offer services to the people of Montana. Without these funds, many of the programs would not be possible. As such, the *Montana Forest Action Plan* was written with the intent of maintaining and strengthening Montana’s eligibility for such funding opportunities.

In 1908, recognizing the critical connection and necessary cooperation between federal, state and private forests, Gifford Pinchot formed the State and Private Forestry (S&PF) branch as the second deputy area of the USFS. Since this time S&PF has worked side by side with States to strengthen partnerships and cooperation to best serve the public good. Congress has supported this work with numerous actions over the years. Most notably with the Cooperative Forestry Assistance Act of 1978.

S&PF is the federal leader in providing technical and financial assistance to landowners and resource managers to help sustain the nation’s forests and grasslands, protect communities from wildland fire and restore fire-adapted ecosystems. Through financial support, federal funding leverages the capacity of state agencies and partners to manage state and private lands and produce ecological, social and economic benefits for the American people. S&PF programs help to ensure the USFS, in partnership with states, tribes, communities and landowners, meet the agency’s mission of conserving and protecting the Nation’s Forests, across ownership lines. The MT DNRC and USFS Northern Region have a long history of working together to support the delivery of S&PF programs to Montana’s citizens.

A brief description of some of the State and Private Forestry programs that benefit from this funding are below. Additional information on each program is available in the statewide *Assessment of Forest Conditions*.*

Urban and Community Forestry (UCF) — The Urban and Community Forestry (UCF) Program brings awareness and focus to the many human health and environmental benefits of trees within Montana’s Communities. The UCF Program reaches over half of Montana’s population every year with services to approximately 75 communities in the form of grants for planting and maintenance, technical expertise and education.

Forest Stewardship — The Stewardship Program supports private and community forest owners to actively and sustainably managing their forests. Through technical assistance, outreach and education, landowners receive the support and resources they need to make informed management decisions for their forest. When eligible, landowners may receive financial assistance for wildfire risk reduction and forest restoration projects. Nearly 1,000 landowners receive technical and financial assistance each year.

Forest Pest Management — The Forest Pest Management Program provides assistance to non-federal landowners and resource managers in the prevention, identification and management of forest insects and diseases. The program offers training for a diversity of audiences, financial assistance for forest treatments, and annual summaries of forest insect and disease conditions across the state.

Forest Products and Biomass — The Forest Products and Biomass Program provides financial assistance for wood energy projects and technical assistance to support forest product businesses, including market development and innovation. The program supported the development of an advanced wood construction curriculum, which included the engineering and design of large-scale wood energy projects in the state, and recently launched a statewide branding campaign for Montana wood products.

National Fire Capacity (NFC) — Formerly known as State Fire Assistance, the NFC grant program helps support DNRC’s statewide Fire Protection Program by increasing the capability and preparedness of Montana’s wildland fire suppression forces. It also promotes resilient landscapes, fire adapted communities, and a safe and effective wildfire response. This funding improves firefighter training and cultivates fire prevention and community wildfire adaptation programs. Funding from this program can also be used to modernize and upgrade mobile fire equipment to maintain Montana’s state and local government equipment cache and fleet of fire engines, water tenders, and support vehicles. A portion of this funding is released regionally through a competitive grant program to increase education and reduce hazardous fuel conditions in the Wildland Urban Interface (WUI).

Rural Fire Capacity (RFC) — Formerly known as Volunteer Firefighter Assistance, the RFC grant program provides cost-share financial assistance to rural volunteer fire departments in communities of 10,000 or less for organizing, training, and equipping local firefighters. DNRC administers and awards these grants through a competitive process focusing on areas of greatest impact and need. DNRC awards annual grants to 65 rural fire departments on average, in amounts ranging from \$1,000 to \$13,000 each. These grants improve the effectiveness of fire protection in rural areas and complement other State-County Cooperative Fire Protection Programs across the state.

Federal Excess Personal Property (FEPP) — Through the FEPP program, DNRC is able to acquire vehicles and equipment on loan to state and county cooperators for the purpose of wildland and rural firefighting. Since 1967, the program has helped DNRC offset costs (over \$50 million) in supporting the department’s fire program. These acquisitions have decreased in recent years with the increased use of the Department of Defense Fire Fighter Program, but FEPP is still a vital part of DNRC aviation operations and will continue to be used by the State.

Fire Fighter Program (FFP) — The Department of Defense FFP enables DNRC to re-purpose Department of Defense equipment for use in fire and emergency services. The program allows state, county, and emergency fire service organizations to acquire vehicles and equipment at a minimal cost. Of Montana’s 56 counties, 54 have acquired vehicles or equipment, with an acquisition value of more than \$96 million since Montana began participating in the program in 2006.

Montana Forest Legacy Program — The Montana Forest Legacy program has been in operation since 2000. The program is administered by the USDA Forest Service and managed by Montana Fish, Wildlife and Parks. The purpose of the program is to conserve high priority privately-owned forests with a focus on wildlife and aquatic habitats, sustainable timber production, drinking water, public recreation, and other values. Funding for Montana’s program is provided through national competitive grants. Since the program’s inception, nearly 261,000 acres of Montana forests have been conserved. This program includes a separate planning document, the *Montana Forest Legacy Assessment of Need*, which is included as an appendix to the *Montana Forest Action Plan*.

*This list represents a subset of funding used on forested lands across Montana. We recognize that numerous programs and funding sources have not been mentioned.

MONTANA FOREST ACTION ADVISORY COUNCIL

Through Executive Order 07-2019, Governor Bullock appointed 23 collaborators to the MFAAC from across the state, representing a diversity of expertise, interests, and perspectives. Membership includes representatives from federal, state, local, and tribal governments; industry partners; conservation organizations; collaborative and watershed groups; recreation and tourism entities; and other relevant partners who are actively involved in forestry issues. MFAAC worked collaboratively to develop consensus-driven solutions that are intended to help amplify on-going work in the state and find more ways of working together across ownership boundaries and jurisdictions.

MFAAC addressed the following objectives set forth by Governor Bullock:

CREATE A SHARED UNDERSTANDING OF THE CONDITIONS OF ALL FORESTED LANDS IN THE STATE OF MONTANA.

- The *Statewide Assessment of Forest Conditions (Assessment)* provides an updated analysis of forest conditions, trends, threats, and opportunities across Montana's forested landscapes. Additionally, the *Assessment* helps Montanans to understand the conditions on all forested lands by utilizing the best available statewide data and science and serves as the state's authoritative source of information on statewide forest conditions.
- The *Assessment* covers six main topics: Forest Health; Wildfire Risk; Working Forests and Economies; Biodiversity and Habitat Conservation; Human and Community Health; and Urban and Community Forestry. Data and information from the *Assessment* provide the foundation for the identification of *Priority Areas for Focused Attention*. Conditions, trends, threats, and opportunities from the *Assessment* are summarized in this document in the *Major Findings and Recommendations*.
- Additionally, the *Assessment* includes other important sections that do not fall within the six major topics. These include climate change as it relates to Montana's forests, a history of Indigenous Peoples and forests, a breakdown of Montana forest ownership, and a short background on forest-based collaboration and collaborative capacity.



Photo courtesy of DNRC, Seeley Swan

- The *Assessment* represents the work of numerous interagency contributors. To read the full *Assessment*, please see the stand-alone companion document, the *Statewide Assessment of Forest Conditions*, located on the *Montana Forest Action Plan* website.

IDENTIFY PRIORITY AREAS TO ADDRESS FOREST HEALTH AND WILDFIRE RISK BASED ON THOSE CONDITIONS.

- The *Priority Areas for Focused Attention* highlight places across Montana with significant forest health issues and elevated wildfire risk to communities and infrastructure. These areas were identified using geospatial methodology and by incorporating data sets approved by MFAAC. The identified areas depict potential opportunities for cross-boundary and landscape-scale projects involving multiple partners and objectives. The *Priority Areas for Focused Attention* and associated data layers are available as a decision support tool on the *Montana Forest Action Plan* website.
- For more information on how *Priority Areas for Focused Attention* were identified, please refer to the section below. To read the full methodology, please see the *Statewide Assessment of Forest Conditions* and explore the online *Priority Areas for Focused Attention* Interactive Dashboard.

RECOMMEND STRATEGIES TO CREATE AN EFFICIENT, EFFECTIVE, AND COMPREHENSIVE RESPONSE TO THOSE CONDITIONS PRIMARILY, BUT NOT EXCLUSIVELY, WITHIN THOSE PRIORITY AREAS.

- The *Montana Forest Action Plan* summarizes major findings from the *Assessment* and uses *Priority Areas for Focused Attention* to offer recommendations for improving forest health and reducing wildfire risk across all forested lands in Montana. For more information on goals, objectives, and strategies associated with those recommendations, please refer to the *Major Findings and Recommendations* sections.

To focus conversations and produce usable outputs, MFAAC remained anchored to the duties outlined in the Executive Order. Three of the most notable duties were:

- Prioritize and amplify collaborative efforts that bring together stakeholders representing diverse perspectives;
- Ensure the Montana Forest Action Plan does not counter or conflict with existing land management plans; and
- Assist in identifying priority landscapes for forest restoration and management action that lead to successful, coordinated projects that are shared across jurisdictions and constituencies.

For a comprehensive list of MFAAC duties, please see the *Montana Forest Action Advisory Council Executive Order*.

Throughout the process, MFAAC members brought different values and viewpoints to the table, but their work always centered upon the common goals of keeping Montana’s forests healthy and reducing wildfire risk to communities. The result is the *Montana Forest Action Plan*, which aims to amplify local, collaborative work in the *Priority Areas for Focused Attention*, while finding more ways of working across ownership boundaries and jurisdictions. Additionally, the Montana Forest Action Plan is intended to be an iterative document. It will be updated as new information and data become available, and progress will be reported on an annual basis by the DNRC and the Forest Action Plan Implementation Committee. By committing to a recurring update, the Montana Forest Action Plan will continue to be relevant and helpful to agencies and land managers alike.



Photo courtesy of DNRC, Missoula, Montana Forest Action Advisory Council meeting



Photo courtesy of DNRC, Red Lodge, Montana Forest Action Advisory Council meeting

DEFINING FOREST HEALTH

In order to facilitate clear communication regarding Montana’s forested lands, MFAAC collectively agreed upon the following working description of forest health:

Montana has over 23 million acres of forested land—spanning most of the state, both within and outside of communities—which are critical to maintaining excellent air quality; drinking water supply and other beneficial water uses; important wildlife and fisheries habitat for a diverse range of species; long-term storage of carbon and climate regulation; soil health and conservation; outstanding recreational and tourism opportunities; cultural heritage values; and a wide array of wood products and services vital to a strong forest products economy.

Over the past few decades, Montanans have increasingly engaged in debate over use, management, and protection of forest lands. These debates reflect the different values that individuals and groups place on forests and natural resources. Accordingly, we also have different perspectives on forest health that are influenced by individual and cultural viewpoints, land management objectives, and spatial and temporal scales. There is no single measure or correct set of metrics to evaluate the condition of our forests because every forest ecosystem type is characterized by different conditions. Any meaningful definition of forest health must incorporate the concept of resiliency: the capacity of an ecosystem to withstand and recover from disturbances imposed by natural environmental dynamics or human influence. It is with this in mind that the Montana Forest Action Advisory Council sets forth the following components of Forest Health rather than a single definition.

The MFAAC identifies the components of forest health at a landscape-scale as follows:

Growth, structure, composition, and function representative of historical and natural ranges of variability, disturbance regimes, and forest dynamics considering forest type under conditions of projected future climate change;

Resilience to disturbance from fire, windthrow, insects and diseases, invasive species, drought, management, and impacts of climate change;

Diversity of tree species and age classes that support a diverse array of plants, animals, and microbes; and

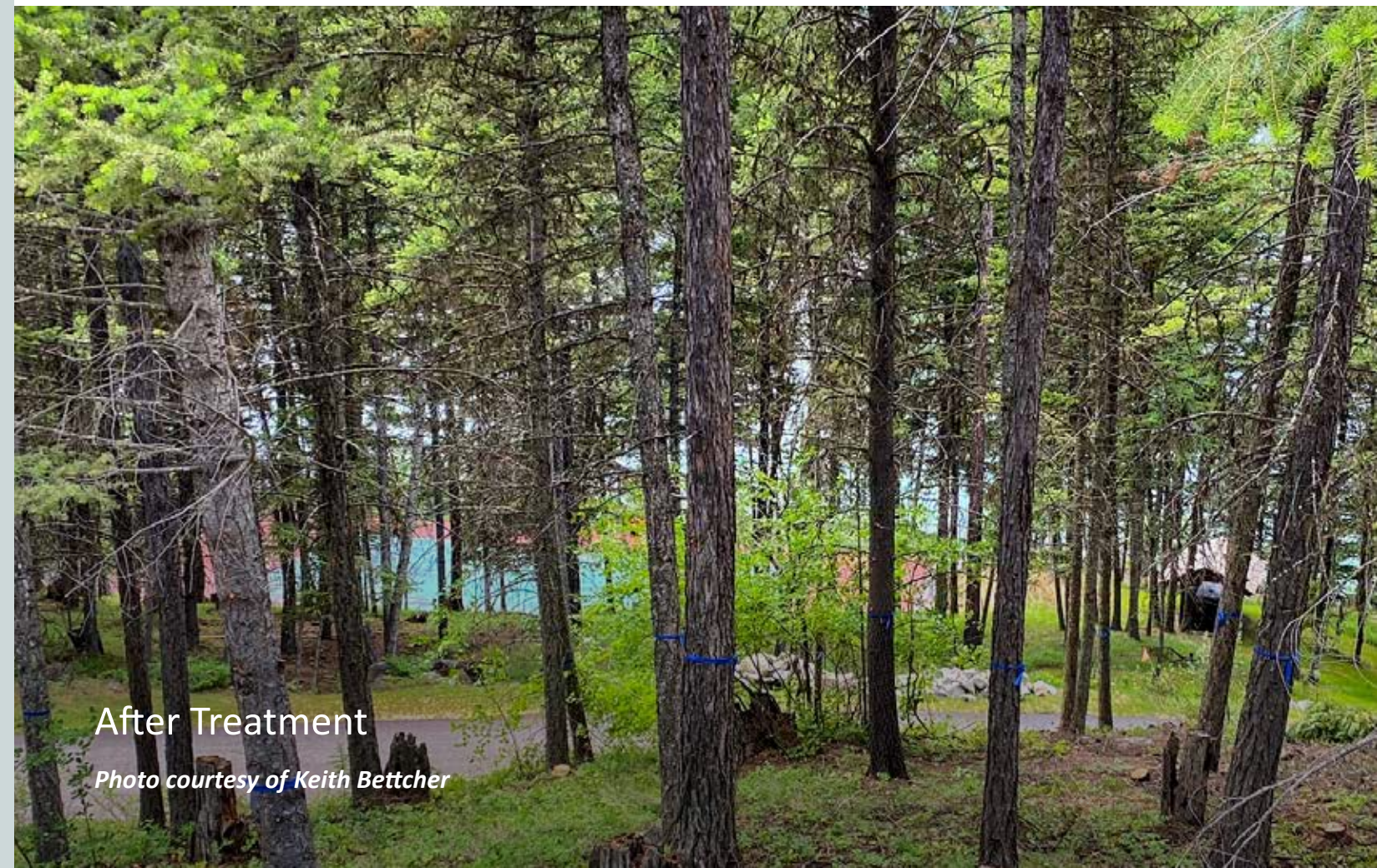
Sustainable capacity to indefinitely and concurrently provide clean air and water, biodiversity, critical essential habitat, cultural values, long-term storage of carbon and climate regulation, recreation opportunities, aesthetics, and forest products.

Rather than defining forest health, MFAAC elected to identify the components of forest health and for the remainder of the Forest Action Plan, when forest health is referenced, it is anchored in and embodied by this collectively agreed upon language drafted by MFAAC.



Before Treatment

Photo courtesy of Keith Bettcher



After Treatment

Photo courtesy of Keith Bettcher

PRIORITY AREAS FOR FOCUSED ATTENTION



Photo courtesy of USFS, Flathead National Forest

Governor Bullock tasked MFAAC with identifying “priority areas in need of active forest restoration with a particular focus on forest health and fire adaptation, community protection, industry retention and economic development, recreation and tourism, wildlife and aquatic habitat, watershed restoration and other areas as identified by the Council” (Executive Order No. 7-2019).

MFAAC used their expertise and knowledge, the information from the *Assessment*, and a data-informed geospatial model to determine the *Priority Areas for Focused Attention*. Prioritizing acres for active forest management represents a critical step towards implementing landscape-scale, cross-boundary forest restoration and management and focusing resources in areas with the greatest need.

To initiate the process of identifying *Priority Areas for Focused Attention*, MFAAC first determined which forested acres would be considered in the analysis and what factors were most important to accurately describe the conditions of Montana’s forests, especially focusing on forest health and wildfire risk.

MFAAC excluded approximately 7 million forested acres from analysis because of their established management plans and data limitations. These excluded areas already have management goals and directives and include national parks, national monuments, national wildlife refuges, congressionally designated wilderness areas, and wilderness study areas.

When selecting datasets to identify forest health and wildfire risk within areas that were not excluded from analysis, MFAAC developed the following selection criteria:

Data must cover all forested lands in Montana, regardless of ownership;

Data must be available at a statewide scale;

Data must cover a timespan of at least 10 years;

Data must have a consistent spatial resolution and be free of data anomalies or abnormalities;

Data must be publicly available and recognized as an authoritative dataset; and

Data must be digitized, preferably in raster or vector format.

These criteria eliminated some datasets from consideration because the dataset did not meet all of the requirements of the geospatial model. Specifically, a lack of adequate, statewide datasets increased the difficulty of modeling several forest health components and metrics as defined by MFAAC. Ultimately, three insect and disease datasets were selected due to the fact such datasets met all of the criteria and could be assessed quantitatively. While a healthy forest does experience some degree of insect and disease activity, extensive disease outbreaks can indicate underlying

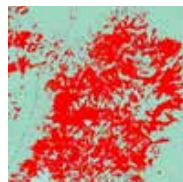
forest health issues and reduce a forest's social, economic, and recreational benefits. For these reasons, insect and disease datasets were used as a proxy for assessing forest health. Although limiting, using insect and disease datasets as a proxy for forest health represents the best available data covering all forested lands in Montana.

After determining the selection criteria, MFAAC selected the following datasets to assess statewide forest health and wildland fire risk conditions across forested lands in Montana:

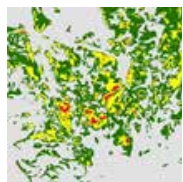
FOREST HEALTH DATA LAYERS



National Insect and Disease Risk: Produced by USDA Forest Service, this dataset predicts future forest loss to insects and diseases across the state. It helps managers understand a forest stand's risk to impacts from insects and diseases and depicts predicted basal area loss through 2027. This is the only predictive dataset MFAAC opted to include in the analysis.



Insect and Disease Impact: Produced by USDA Forest Service, this dataset depicts forested areas with observed tree mortality since 2010. It includes areas impacted by Douglas-fir beetle, fir engraver beetle, and mountain pine beetle.



Western Spruce Budworm Recurrence: Produced by USDA Forest Service, this dataset identifies landscapes with chronic western spruce budworm infestations. Because this species causes defoliation and long-term stress, it was measured separately from the species on the Insect and Disease Impact dataset that are more likely to cause widespread mortality.

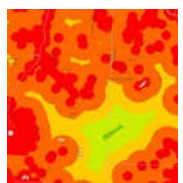
WILDFIRE RISK DATA LAYERS



Wildfire Hazard Potential: Produced by the USDA Forest Service's Fire Modeling Institute, this dataset assesses wildfire risk across the state and is intended for strategic planning and fuels management. This data layer depicts the relative potential for high-intensity wildfires with torching, crowning, and other forms of extreme fire behavior that would prove difficult to contain.

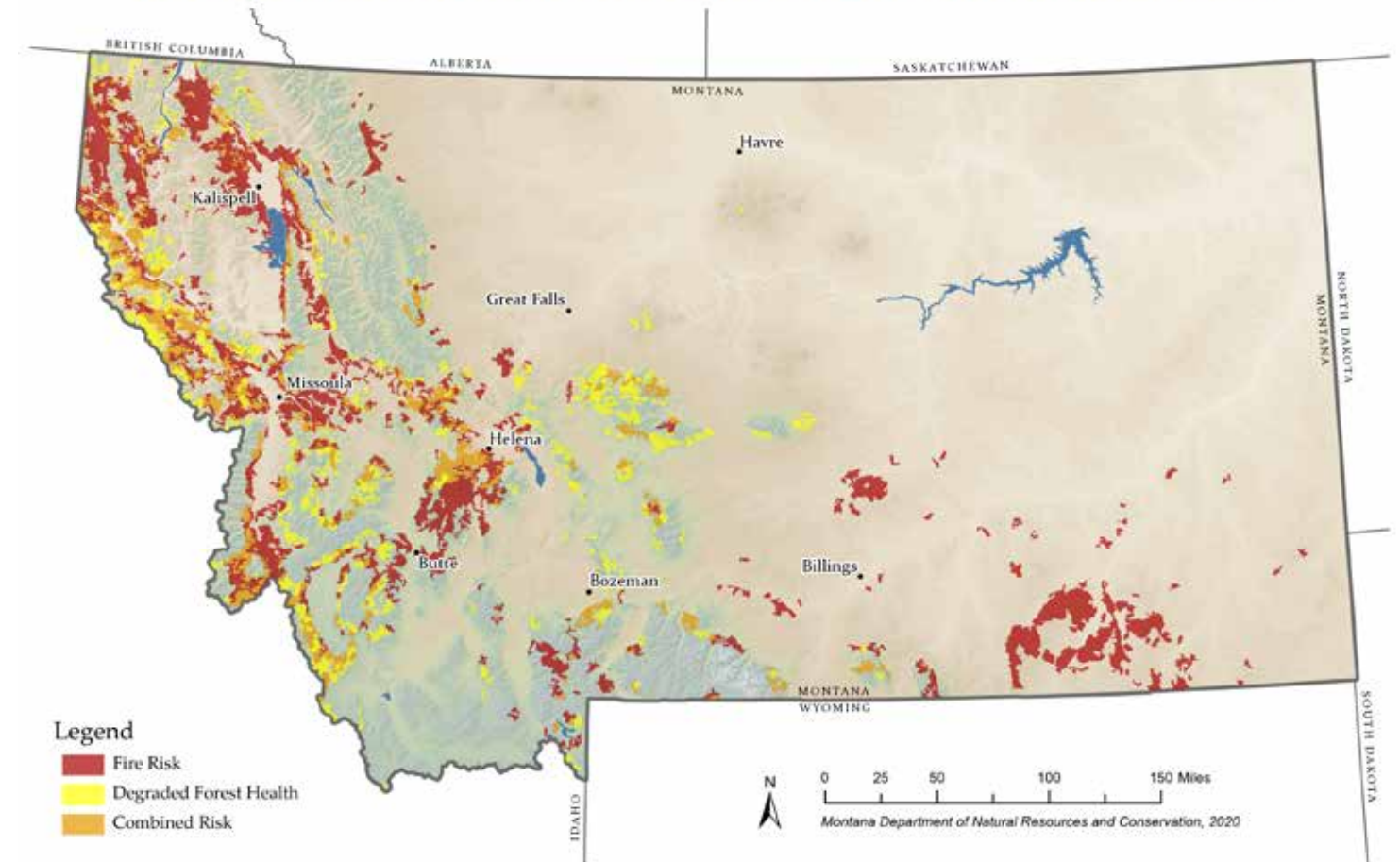


Recent Fire History: Produced by DNRC, this dataset depicts wildfires that have occurred in Montana since 2015. This dataset was used to augment the Wildfire Hazard Potential data layer, which did not account for any fires occurring after 2015.



Distance to WUI: Produced by DNRC, this dataset depicts all known structures in Montana with a weighted gradient from 0-10 miles to create risk zones extending out from the structure, with the highest weight applied to zones within 0-1/2 mile of a structure. The base map uses the federal definition of the Wildland Urban Interface (WUI).

Areas of Elevated Fire Risk and Degraded Forest Health



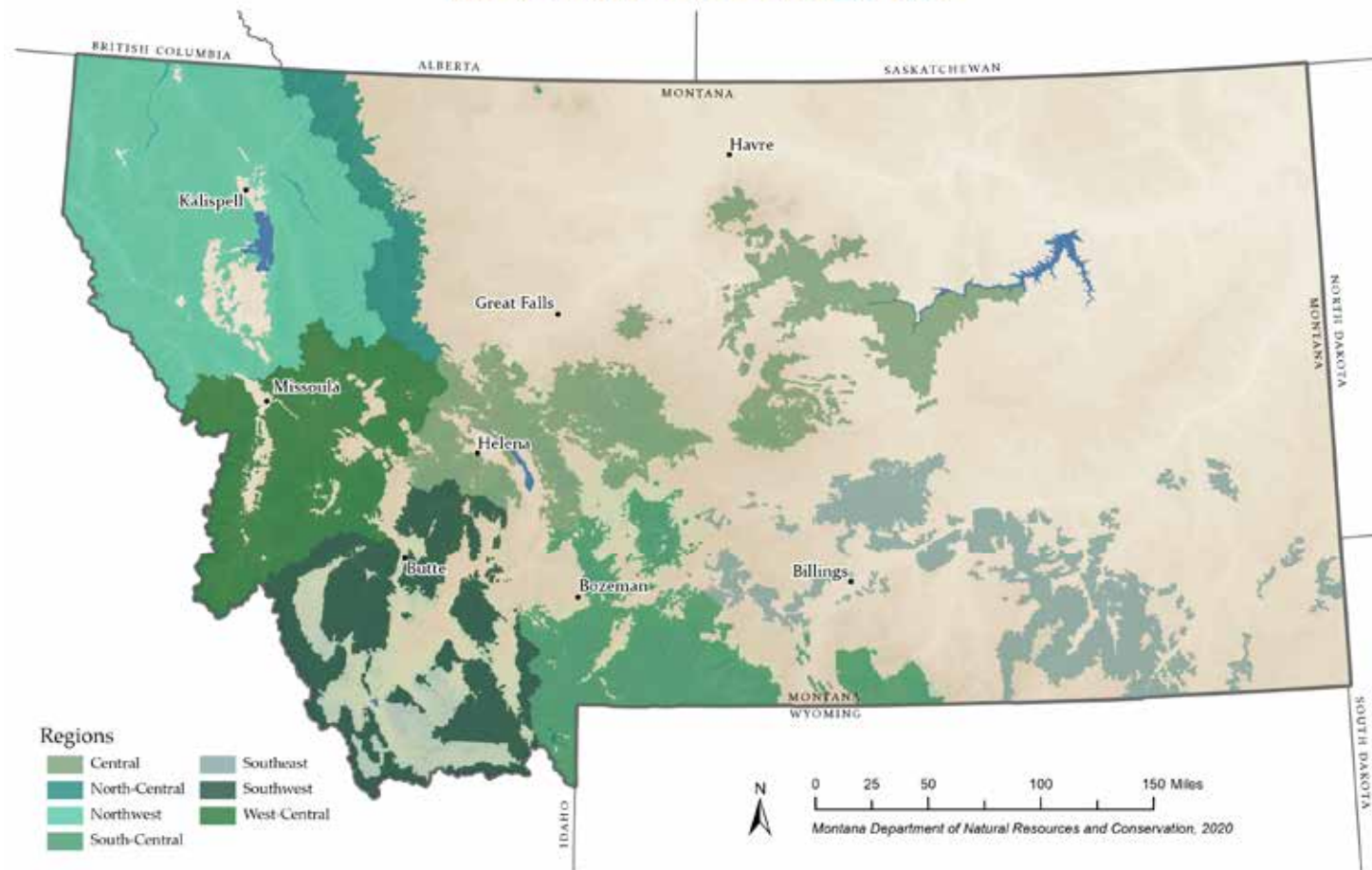
By overlaying these datasets, MFAAC identified approximately 9.1 million acres of forested land that were termed "Areas with Elevated Fire Risk and Degraded Forest Health." Standing at nearly one-third of the forested landscape in Montana, these areas represent portions of the landscape with significant forest health concerns and high wildfire risk to communities and infrastructure.

As MFAAC analyzed modeling outputs, it became evident that a few very high-risk areas in western Montana were driving the model, producing outputs that skewed priority areas more heavily in the western part of the state. Given that wildfire risk and forest health issues occur across Montana and the *Montana Forest Action Plan* is intended to serve the entire

state, MFAAC used a normalization process to ensure that areas are identified relative to fire risk and forest health within various regions throughout the state.

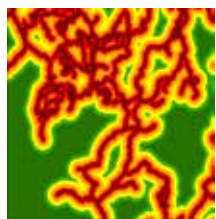
To account for local variations, regional disparities, and the relative importance of wildfire risk and insect pathogens, MFAAC divided the state into seven distinct forest regions based on the unique vegetation community, localized climate conditions, and topography (Arno, 1979). The model was normalized within each forest region to better identify high-risk areas relative to the typical forest conditions found within that region. Normalizing the model output resulted in identification of high-risk areas in eastern Montana and further refinement of the areas in western Montana.

Montana Forest Regions



ADDITIONAL DATA SETS

Given that the “Areas with Elevated Fire Risk and Degraded Forest Health” represented almost a third of the forested landscape in the state, MFAAC used additional datasets to further refine the model to identify a more realistic set of lands for agencies and landowners to prioritize for restoration. MFAAC selected two additional datasets:



Road Proximity: Maintained by DNRC, this dataset measures landscape access and includes all maintained roads in Montana with buffers extending out from roads, and uses a weighted gradient from 0-5 miles, with the highest weight being applied within 0-1/4 mile of a road. Inclusion of this dataset identified and increased the weight of lands that are more readily accessible.



Vegetation Type: Produced by USDA Forest Service, this dataset depicts the dominant vegetation type across Montana. A higher weight was given to forests in lower elevations with a high fire frequency, which are often in close proximity to human infrastructure.

Using these two additional datasets, the model is more likely to identify high-risk areas near existing road infrastructure and in forests more commonly associated with lower elevations. The priority areas thus represent forests with heightened wildfire risk and degraded forest health conditions within close proximity to our communities and infrastructure.

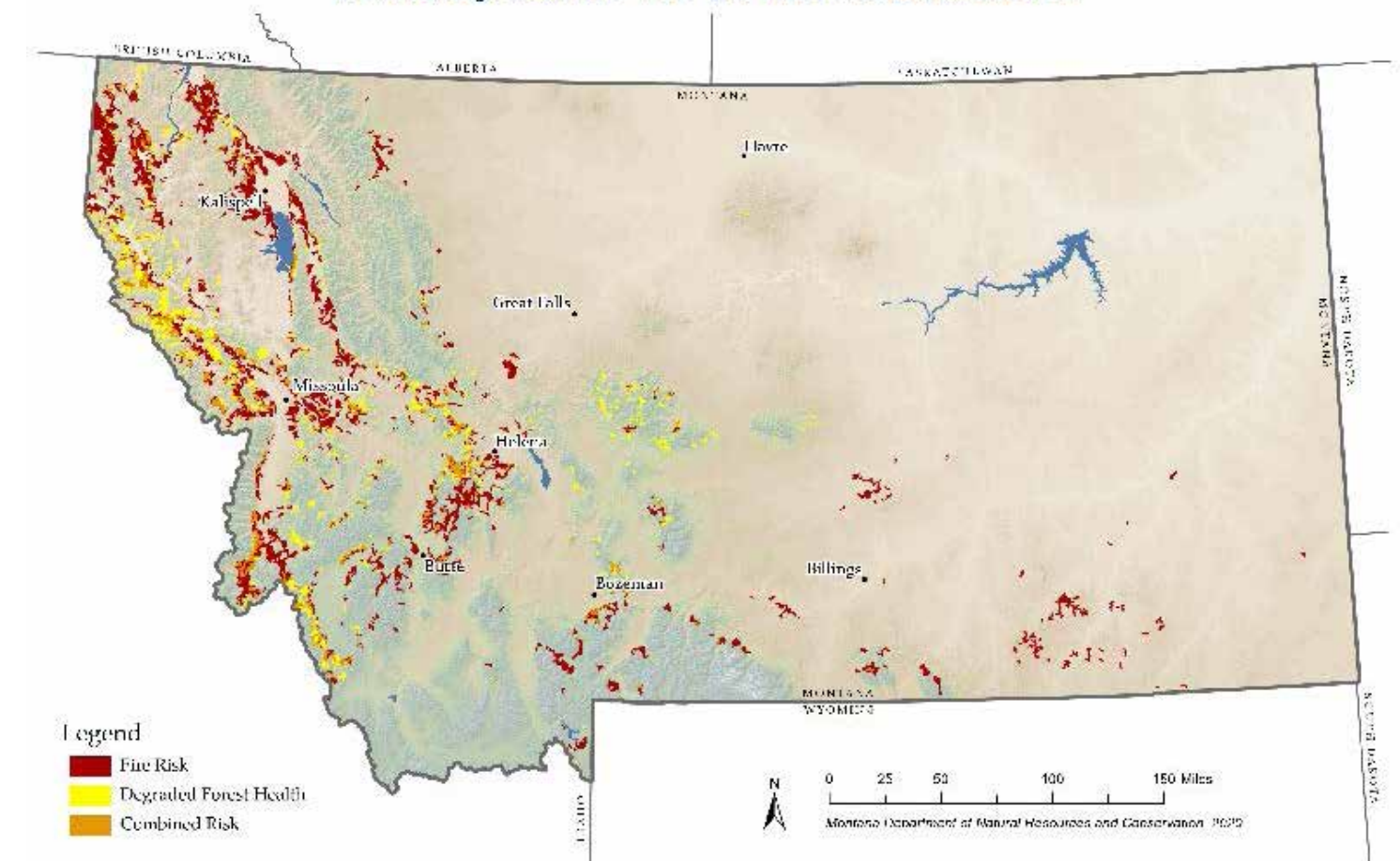
By refining and redesigning the model, MFAAC identified 3.8 million acres of forested land in greatest need of attention, including those most conducive to landscape-scale, cross-boundary forest restoration and management activities. The fact that these areas transcend ownership boundaries and different use types makes it clear that Montana’s forest challenges must be addressed collectively rather than individually.

To clarify the intent behind the identified priority areas, MFAAC elected to call them *Priority Areas for Focused Attention*. This nomenclature signals the need for local land managers, collaboratives, and stakeholders to lend further attention and consideration to these areas. The goal is that the *Priority Areas for Focused Attention* will focus discussions to help ini-

tiate work in the most critical areas at an effective scale. This designation does not change or override any existing planning, designation, or environmental review processes.

The *Priority Areas for Focused Attention* represent 3.8 million acres of forested land in Montana. Notably, this includes approximately 500,000 acres in the WUI and 123,000 acres in drinking water source watersheds. In these areas, designation does not guarantee action or funding for a project; rather, it demonstrates that there are significant forest health or wildfire risk issues that warrant prioritization of forest restoration funds in order to most effectively mitigate risk. Local land managers can overlay modeling outputs from this plan on their own geospatial datasets to help leverage resources and staff to meaningfully address some of the most pressing concerns facing forested landscapes. By using data that covers all land ownerships within the state, the *Priority Areas for Focused Attention* are intended to promote integrated restoration of forest and watershed conditions across ownerships.

Priority Areas for Focused Attention



MONTANA'S FORESTS BY THE NUMBERS:

WILDFIRE

8,512,176 acres

with 'Very High' or 'High' wildfire risk

1,811,401 acres

burned from 2015-2020

2,937,098 acres

burned from 2010-2020

5,953,055 acres

of forest exist within ½ mile of the Wildland Urban Interface

INSECTS AND DISEASE

1,639,366 acres

impacted by recurring outbreaks of western spruce budworm from 2010 to present

7,010,481 acres

with mountain pine beetles impacts, ranging from low to high severity from 1999 to 2015)

7,609,567 acres

at 'High' to 'Moderate' risk of insect and disease outbreak in the next 10 years

5,328,456 acres

impacted by Douglas-fir beetle, dwarf mistletoe, fir engraver beetle, mountain pine beetle, and root diseases since 2010

1,688,265 acres

projected to have greater than 20% volume lost to root diseases (2013 to 2027).

DECISION SUPPORT TOOLS

PRIORITY AREAS FOR FOCUSED ATTENTION INTERACTIVE DASHBOARD –

Alongside the development of the *Montana Forest Action Plan*, DNRC created an interactive dashboard to display the *Priority Areas for Focused Attention*. The online dashboard includes a wealth of information, ranging from data sets that were used in the model's development to the priority area polygons. All polygons are interactive and display information that provide a better understanding of the conditions in a particular area, management considerations, and additional context surrounding why it was included as a *Priority Area for Focused Attention*.

MONTANA WILDFIRE RISK ASSESSMENT –

The Montana Wildfire Risk Assessment (MWRA) is a quantitative analysis of highly valued resources and assets across the state and their potential vulnerability to wildfire. The MWRA analysis considers several different components, each resolved spatially across the state, including the likelihood that a fire will occur, the intensity of a potential fire, the exposure of resources and assets based on their locations, and the susceptibility of those resources and assets to wildfire. This foundational information and data about wildfire hazard and risk supports wildfire response, regional fuels management planning, and revisions to land and resource management plans. This high-resolution wildfire risk analysis will be used to refine the *Priority Areas for Focused Attention* and assist local land managers and decision-makers as they begin to sequence and prioritize their programs of work.

Photo courtesy of USFS, Northern Region

MAJOR FINDINGS AND RECOMMENDATIONS

Drawing from the information in the *Assessment* and the data derived from the *Priority Areas for Focused Attention*, MFAAC identified a set of recommended goals and strategies for each of the major topic areas listed: Forest Health; Wildfire Risk; Working Forests and Economies; Biodiversity and Habitat Conservation; Human and Community Health; and Urban and Community Forestry.

These goals and strategies are intended to facilitate cooperation and coordination amongst land managers, governments, forest owners, and other partners to improve forest health, reduce wildfire risk, support biodiversity and habitat conservation, improve human and community health, and promote the many benefits of urban and community forestry. These strategies and recommendations were largely driven by:

1

Resource and management needs;

2

Opportunities identified within the Assessment;

3

The experience and expertise of MFAAC members; and

4

The need to address existing information and data gaps.

While designed to facilitate cross-boundary collaboration and coordination, the strategies outlined will not replace full public input processes required by MEPA or NEPA. All projects, including those recommended in the *Montana Forest Action Plan*, will continue to be evaluated on best available science in addition to purpose, need, and public input. Federal agencies must adhere to FACA guidelines and will do so in any collaborative efforts which they are engaged.

FOREST HEALTH

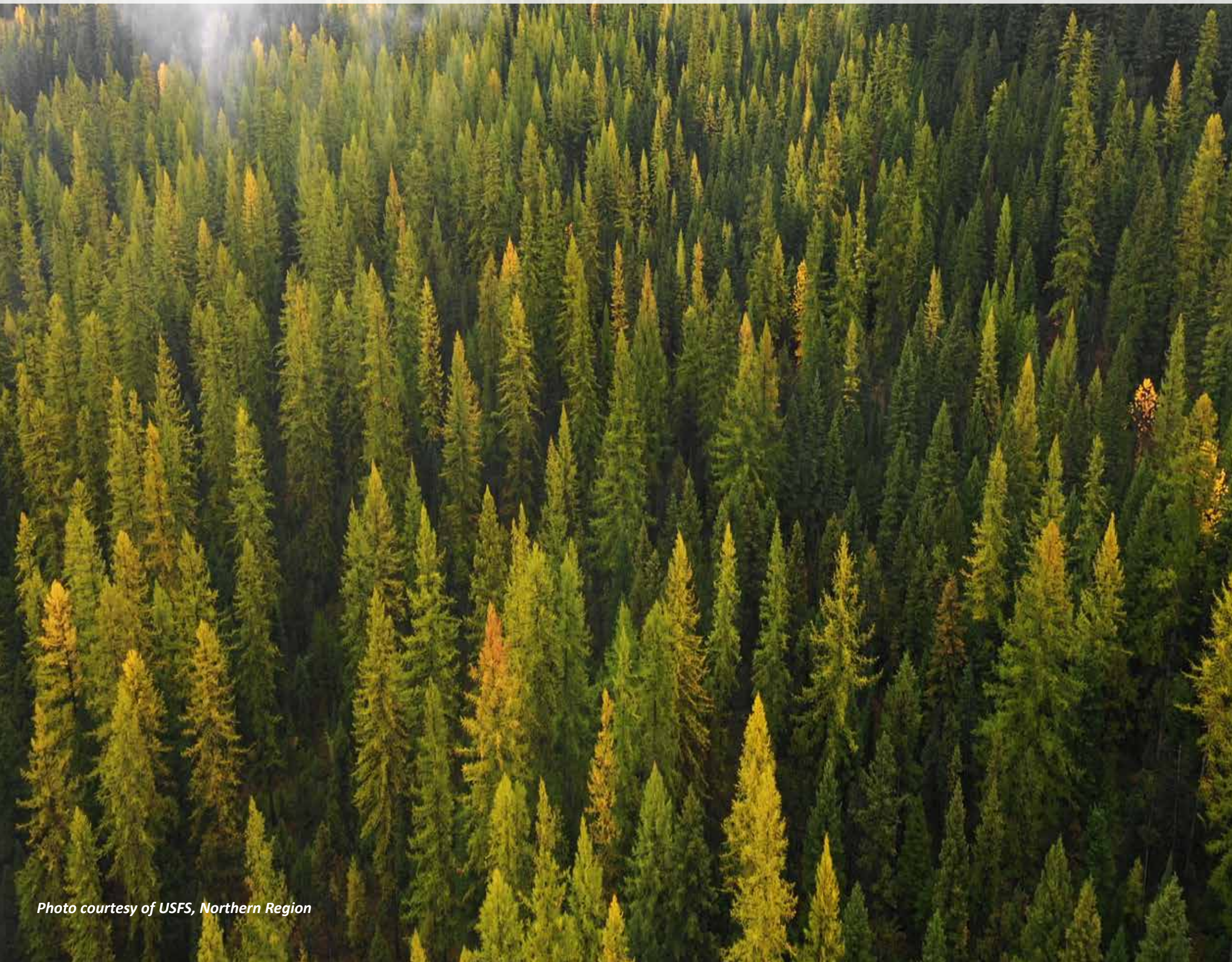


Photo courtesy of USFS, Northern Region

Nearly one-quarter of Montana is covered by forested lands, ranging from mixed conifer stands in the west and ponderosa pine and riparian cottonwood stands in the east, to the ash and elm trees common in our urban and community forests across the state. Climate change and management decisions over the last 100 years have altered the structure and composition of many of Montana's forests, creating conditions in certain forest types that represent a major departure from how forests evolved over time. Large-scale fire exclusion, past harvest practices, and the lack of landscape-scale management altered the species distribution and forest stand types (Naficy et al., 2010). Current data shows that over 60% of Montana's forests are dominated by shade tolerant species and, in some areas, have tripled their extent over the past century (Steinberg, 2002). Throughout the state, shade-tolerant trees are outcompeting species that rely on periodic disturbances from fire (e.g. western larch, ponderosa pine, lodgepole pine; Keane et al., 2002). The absence of fire and related shift in species composition created forests that are uncharacteristically dense and lack the diversity of age classes typical of a fire-adapted ecosystem (Hessburg et al., 2015; Berkey et al., 2020). Additionally, conifer expansion is a common and growing threat across the state's grasslands, although comprehensive data on the current extent and magnitude is in the process of being assessed but does not yet exist.

Species shifts, in combination with stressors from climate change, have increased the occurrence of uncharacteristic levels of disturbance from wildfire, insects, and diseases (Halofsky et al., 2018). Such disturbances have had profound effects on the forest, in some cases altering soils, vegetation, and carbon flow for decades to come. Decadal data from the USFS Forest Inventory and Analysis (FIA) carbon reporting highlights a dramatic change in above-ground carbon flow in Montana forests from the uncharacteristically high levels of disturbance-caused mortality. Montana forests previously functioned as a strong carbon sink (net sequestration) through the 1990's, began shifting to a carbon source (net emitter) between 2000 and 2009, and from 2010 through 2018 the trend of emitting increasing amounts of carbon has continued (USDA FS, 2020). Direction of carbon flow is a key forest health indicator, and carbon emitted emissions from Montana forests is expected to increase with continued mortality from disturbance and climate stressors.

Over the past 10 years alone, insect and disease outbreaks have occurred on nearly half of the 23 million acres of forested land in the state. Impacts from insects and diseases are a natural part of forest succession and are not inherently negative; howev-



Photo courtesy of USFS, Northern Region

er, the effects change when the populations reach outbreak levels. While some outbreaks minimally or temporarily damage trees, bark beetles and root diseases have had a more lasting effect. The mapped extent of the recent mountain pine beetle outbreak in Montana (1999-2015) covers 6 million acres. Some of these areas were minimally impacted with only sporadic tree mortality, while other areas were severely affected and experienced widespread mortality from the beetles. Root diseases are often overlooked when discussing forest conditions, yet they cause significant tree decline and mortality. The main root diseases impacting Montana forests are Armillaria root disease, Heterobasidion root disease, tomentosus root rot, laminated root rot, and schweinitzii root and butt rot. More than 5.7 million acres across Montana and Idaho are currently infested with one or more root diseases, leading to an estimated loss of over 166 million cubic feet of timber per year (USDA FS, 2016). These diseases are expected to continually spread into susceptible forest stands.

Climate scientists project that increasing temperatures and changing precipitation patterns will increase tree mortality and negatively affect forest establishment, regeneration, growth, and productivity (Hankin et al., 2019; Davis et al., 2019). Additionally, the distribution and extent of forests will change over time. Some tree species will expand their geographic ranges while others will contract, and some models predict an overall loss of forested landscapes throughout the state (Keane et al., 2018; Whitlock et al., 2017). Climate change will also continue to exacerbate the spread of

invasive species, threatening increased loss of habitat and ecosystem services. The annual mortality of forests has outpaced annual growth due to the combined effects of climate change, species shifts, fire exclusion, insects and diseases, invasive species, and a lack of active forest management (USDA FS, 2019).

Currently, the scale of the forest health issues far exceeds management capacity to help restore forests to be more resilient to wildfire, insects, diseases, and a changing climate. Based on estimates from several forest management agencies, fewer than 100,000 forested acres are treated annually with mechanized means or prescribed fire. Management activities are rarely coordinated across jurisdictional boundaries to address common issues, and although recent initiatives and authorities help facilitate better planning and management, there are still barriers or gaps in agencies' ability to employ those tools. More must be done to support formal coordination at the local level and ensure that interagency and cross-boundary work becomes a normal part of managing our forests.

Going forward, active forest management and restoration (including commercial harvest, thinning, hazardous fuels reduction, prescribed fire, and wildfire managed for resource benefit) will play an integral role in restoring forest conditions that are more resilient to extreme wildfire, insects and diseases, and climate change. This will require coordination, prioritizing collective work, and using innovative approaches and ideas to improve Montana's forests.

RECOMMENDED GOALS AND IMPLEMENTATION STRATEGIES

The *Montana Forest Action Plan* aims to:

Improve forest resilience to disturbance from fire, windthrow, insects and diseases, drought, invasive species, human use, and climate change through management that ensures forests provide clean water, wildlife habitat and biodiversity, local economic and recreation opportunities, aesthetics, and other benefits for current and future generations of Montanans.

Strategies to achieve this goal include:

INCREASE FOREST RESILIENCE TO WILDFIRE, WINDTHROW, INSECTS AND DISEASES, DROUGHT, INVASIVE SPECIES, AND CLIMATE CHANGE.

- Prioritize lands within *Priority Areas for Focused Attention* when planning forest restoration projects.
- Invest in expanding agency capacity to implement a variety of treatment types, including mechanical treatment and prescribed fire, to increase the pace and scale of restoration treatments in *Priority Areas for Focused Attention*.
- Support projects that ensure forest growth, structure, composition, and function are representative of historical variability, disturbance regimes, and projected future climate change, considering forest type.
- Better serve Indian Country by engaging tribes in Montana in identifying programs of work that address forest health and wildfire risk issues in and around tribal communities.
- Work collaboratively with all forest owners, land managers, and communities to implement management activities that maximize ecosystem service benefits.
- Support state and federal programs that assist private landowners in managing their forested lands and expand the use of cost-share programs and grants to improve forest health.

- Develop a statewide inventory of forest conditions, pests and root diseases, and responses to natural and human disturbances that improves the ability to track and model forest health conditions overtime.
 - o Target at-risk tree species specifically, such as limber and white bark pine, that have potential for threatened and endangered listing.
- Support and expand funding for ongoing applied science efforts—by state agencies, universities, and other relevant partners including citizen scientists—to improve invasive species detection and prevention and are tailored to geographic needs and conditions.
- Work with the Montana Legislature and the Montana Invasive Species Council to explore opportunities to fund long-term monitoring and management of invasive species across ownerships and jurisdictions.



INCREASE THE UNDERSTANDING AND UTILIZATION OF TOOLS AND AUTHORITIES THAT FACILITATE CROSS-BOUNDARY WORK AND BUILD OUR COLLECTIVE CAPACITY TO ACCOMPLISH MORE WORK.

- Promote the use of Good Neighbor Authority with all seven of the national forests and the Bureau of Land Management (BLM) units to build workforce capacity to facilitate forest resiliency, wildfire risk reduction, and other restoration goals on federal forest lands in the *Priority Areas for Focused Attention*.
- Expand and promote education and outreach efforts concerning cross boundary tools and authorities, such as the Wyden authority, to increase active stewardship on private lands and stress the benefits of enduring partnerships.
- Foster a work environment where a spectrum of partners—including collaboratives, federal, state, tribal, and local government agencies—institutionalize cross-boundary projects.
- Support state and federal programs that monitor joint progress over time.
- Provide outreach and education to improve public understanding of and support for appropriate use of wildfire managed for resource benefit.

IMPROVE WATERSHED CONDITIONS AND WATER QUALITY ACROSS FORESTED LANDSCAPES.

- Support projects that maintain or improve intact and connected forested landscapes and watersheds.
- Explore opportunities to expand funding for streamside and instream restoration as well as actions to improve impaired waterbodies.
- Maintain and strengthen the level of compliance with Forestry Best Management Practices across all ownerships.

MITIGATE AND ADAPT TO THE IMPACTS OF CLIMATE CHANGE TO MONTANA'S FORESTS.

- Improve baseline data and risk information on old growth and species at risk, such as whitebark pine and western white pine, due to the ecological importance of these species and the risk of loss due to climate change and uncharacteristic disturbance.
- Work with the Montana University System, scientists, government agencies, and other relevant partners to better understand the role of Montana's forests in the carbon balance of the state.
- Use best available science and support peer-reviewed and agency research on the effects of climate change on forested landscapes.
- Examine forest practices for opportunities to optimize carbon sequestration, climate adaptation, and future resiliency.
- Encourage reforestation efforts after severe events, where appropriate, to promote the regeneration of suitable native species that may be more resilient to the impacts of climate change.
- Develop a forest resilience monitoring program to inform management decisions and actions to manage for forest health.
- Build on the recommendations specifically stated in the *Montana Climate Solutions Plan*:
 - Use forest management practices to maintain structure and composition to increase resiliency to insects, disease, and uncharacteristic stand-replacing wildfires.
 - Protect municipal watersheds.
 - Maintain the long-term capacity of forests to continue to buffer emissions as natural carbon sinks.

WHITE PINE BLISTER RUST

White pine blister rust is a lethal fungal disease that was introduced into the western US in the early 1900's. Since its introduction, white pine blister rust has irreversibly altered 5-needle pine ecosystems across Montana landscapes. Five-needle pines are far-reaching and include the stately western white pine valued for its timber, whitebark pine essential for snowpack retention in high elevation forests, and limber pine that provides valuable wildlife habitat along the Rocky Mountain Front. Each of these species is an iconic component of Montana forests, and each of these species

has been markedly damaged by white pine blister rust. Ongoing efforts aim to restore 5-needle pines that are genetically resistant to this ubiquitous disease, but habitats are changing swiftly as trees die or fail to regenerate.

Montana's forestry professionals continue to work together to prevent additional introductions of invasive species, swiftly detect organisms that have arrived, and aggressively manage outbreaks.



Photo courtesy of DNRC

WILDFIRE RISK



Photo courtesy of USFS, Northern Region

In Montana, fires cover a spectrum of conditions from low-severity localized fires to landscape-scale high-severity wildfires (Neary & Leonard, 2015). For thousands of years, prairies and woodlands were shaped by both naturally-occurring fires as well as the deliberate, purposeful, and careful application of fire by Indigenous people. Over the past 100 years, however, the practice of large-scale fire exclusion and a history of varying management practices have changed the way Montana's forests respond to and recover from wildfires. Many of the forests that were once dominated by fire-tolerant tree species and moderate fuel loads are now dominated by species that are less fire-tolerant, resulting in uncharacteristically dense stands with excessive fuel loads (Arno et al., 1997; Mortiz et al., 2014). Increased fuel loading, shifted fire regimes and forest dynamics, insect epidemics, climate change, and drought are all major factors that contribute to increasing wildfire risk in Montana.

While fire will always play an important and necessary natural role in Montana's forests, the current state of the forests has created a fire-prone landscape more susceptible to high-severity wildfires. Today, over 85% of Montana's forests are at elevated risk of wildfire (DNRC, 2020). Similar to other states throughout the West, Montana's fire seasons are becoming longer and more severe (Holden et al., 2018). More than ever, Montana now experiences megafires (fires over 100,000 acres) and the average fire season is 40 days longer than it was 30 years ago (Freeborn et al., 2016).

Wildfires increasingly threaten communities, critical infrastructure, and the millions of acres of forests and grasslands across Montana. In Montana, over 60% of wildfires are caused by human activity. Over the past 25 years, one in eight new homes in western Montana was built in a high wildfire hazard area, and over 64% of Montanans live in the Wildland Urban Interface (WUI; Radeloff et al., 2018). Because of the increased development in the WUI, the complexity and cost of fighting fires, the chance of unintended human-caused ignitions, and the strain on firefighting resources have all risen substantially (Williams, 2013). The demands posed by these current conditions and the now year-round threat of wildfire exceeds the current capacity of fire preparedness and response resources. The ability to adequately address community needs, proactively minimize risk, and prepare for the eventuality of wildfires is oftentimes over-extended.

Active forest management, such as mechanical thinning and prescribed fire, is one of the most important tools to reduce the risk and severity of wildfire alongside a robust community preparedness strategy. This approach is especially important in the low-elevation

fuel types where past fire suppression has had the greatest impact in terms of increased fuel loading. Focusing management in high-risk areas and specific forest types increases the effectiveness of treatments and restores healthy forest conditions. While active management cannot eliminate wildfires, it can help moderate fire behavior, moderate the severity, and reduce the risk of ember production under certain fire conditions. Forest management can also create safer conditions for firefighters responding to wildfires (Reinhardt et al., 2008). It will be essential to focus management and restoration efforts on the areas that have been identified as *Priority Areas for Focused Attention*, where wildfire risk and forest health concerns are greatest.

Restoring fire to an ecosystem is essential to maintain desired forest conditions. Prescribed fire, or the intentional use of fire in specific conditions, is a tool used by managers. Prescribed fire can help to maintain vital ecosystem functions, while minimizing both short- and long-term fire risk to nearby populations and critical infrastructure. Smoke is an impact of both wildfire and prescribed burning, however, prescribed fires are regulated and monitored by state and local government agencies and subject to strict air-quality standards. Occasionally, smoke from a prescribed fire can inundate a community, but the impacts are usually light and dissipate in a few hours. In contrast, wildfires burn uncontrolled for an undetermined amount of time, making it nearly impossible to manage how much smoke is produced and where it accumulates (Navarro et al., 2018). Federal agencies are also exploring opportunities to manage wildfires for resource benefit or making the strategic choice to use naturally ignited fires to achieve resource management objectives, where appropriate.

Although management actions can reduce the risk and severity of wildfire in certain forest types under some fire conditions, it cannot eliminate the impacts of wildfire on Montana communities and people. The protection of the public and firefighters is always the highest priority and, given the expansion of the WUI in Montana, ensuring communities are prepared and adapted for wildfire is a high priority. Research indicates that a home's characteristics and its imme-



Photo courtesy of USFS, Northern Region

diate surrounding determine the potential for ignition when exposed to embers and radiant heat. To increase the chance of a home's survival during a wildfire, homeowners need to prioritize work in the home ignition zone, or the immediate area including the structure and extending up to 100 feet (Finney & Cohen, 2008). Land managers must deliberately engage with Montanans to help them create fire-adapted communities and anticipate wildfire as an inevitability of the landscape in which they live (Calkin et al., 2014). Homeowners can often take simple and inexpensive mitigation actions to improve firefighter and public safety, greatly reduce their homes' susceptibility to wind-blown embers and radiant heat, and drive down the costs of fire suppression.

Additionally, local government planning efforts that reflect the increasing risk of wildfire in the WUI must be supported. These efforts include Community Wildfire Protection Plans (CWPPs), which assist counties in planning for, responding to, and recovering from wildfire events. In Montana, CWPPs are the primary mechanism used to coordinate response, set local priorities, and reduce the threat of wildfire in the WUI. Building practices and laws also need to evolve to reflect the current wildfire risks to communities and infrastructure, especially in the WUI. By helping community members understand how their actions will allow them to safely coexist with wildfire, Montana can foster fire-adapted communities, restore resilient landscapes, and ensure a safe and effective response to wildfires.

The risk of wildfire to lives, property, and natural resources is ever present in Montana, with over 20 million acres at an elevated risk of wildfire, including over 3 million acres in the *Priority Areas for Focused Attention* (DNRC, 2020). Creating more resilient forests and communities will require a comprehensive approach. No single entity can address the wildfire risk challenges alone. It will require strong partnerships, innovative approaches, and a commitment to work with one another across real and perceived boundaries.

RECOMMENDED GOALS AND IMPLEMENTATION STRATEGIES

The *Montana Forest Action Plan* aims to:

Reduce the risk of wildfire to communities, water supplies, natural resources, critical infrastructure and other values of concern while restoring characteristic fire-adapted landscapes in a manner appropriate to local fire regimes.

Strategies to achieve this goal include:

REDUCE WILDFIRE RISK TO COMMUNITIES, WATERSHEDS, AND INFRASTRUCTURE.

- Prioritize lands within *Priority Areas for Focused Attention* when planning wildfire risk reduction projects and increase community protection efforts by promoting active forest management on landscapes adjacent to high-risk WUI areas.
- Use the *Montana Wildfire Risk Assessment* to focus community risk reduction, community preparedness, fire adaptation, and watershed protection efforts on areas of greatest risk within the *Priority Areas for Focused Attention*.
- Invest in agency capacity to implement a variety of treatment types, including mechanical treatment, prescribed fire, and grazing, to increase the pace and scale of hazardous fuels treatments in *Priority Areas for Focused Attention*.
- Better serve Indian Country by engaging tribes in Montana in identifying programs of work that address forest health and wildfire risk issues in and around tribal communities.
- Work with utility companies to reduce their wildfire risk and jointly identify opportunities for mitigation.
- Expand programs that offer technical and financial resources to communities to treat landscapes where federal lands and private property are adjacent.
- Continue to provide cost-share programs and grants to improve forest health and fire management.



Photo courtesy of DNRC

- Explore opportunities to expand funding resources for communities to mitigate impacts from recent wildfire events and enhance post-fire recovery.
- Support the Forest Legacy Program, conservation easements, and other incentive-based voluntary efforts to conserve high priority working forests and prevent poorly planned urban expansion.
- Explore opportunities to develop a consistent tracking system to account for wildfire response and wildfire risk reduction treatments across ownerships and jurisdictions.
- Expand, when possible and appropriate, the use of wildfire managed for resource benefit in such a way that restores ecosystem function while minimizing the negative impacts on human populations.

RESTORE RESILIENT LANDSCAPES WITH PRESCRIBED FIRE.

- Establish a Montana Prescribed Fire Council to facilitate and coordinate the increased use of prescribed fire and low-risk wildland fire in Montana to restore fire-adapted landscapes.
 - Support the priorities of the Montana Prescribed Fire Council that include taking a strategic and proactive role in addressing prescribed fire liabilities, cross-boundary barriers, capacity constraints, tolerances for fire and smoke, and public education opportunities, as well as incentives to expand the use of prescribed fire and low-risk wildland fire across all ownerships.
- Increase the capacity of agencies, local government cooperators, private land owners, and contractors to use prescribed fire through training and by establishing cooperative agreements to allow for shared resources and personnel across all ownerships.
 - Develop and fund interagency prescribed fire crews and teams to provide additional workforce capacity.

- Evaluate and explore the various agreements in place and identify potential efficiencies or modifications needed to allow the use of prescribed fire across ownerships.
- Increase the capacity of private landowners to use fire as a management tool through a robust education and training program on how to safely, lawfully, and effectively use fire on the landscape.
- Work with willing private landowners to identify and overcome barriers to the widespread application of prescribed fire for maintaining desired ecological conditions and fuel loadings, including insurance liabilities.
- Expand and promote education and outreach on the historical role of fire in western landscapes, on using fire as a management tool, on smoke management, and on the benefits of low-risk wildland fires where allowed.
 - Support land management agencies, universities, state agencies, and others in efforts to engage Montanans on the air quality regulations, the permitting process, and the public health benefits of using prescribed fire.



Photo courtesy of DNRC

FOSTER FIRE-ADAPTED COMMUNITIES.

- Expand investment in local government capacity to contribute to all three tenets of the National Wildland Fire Management Cohesive Strategy, realize the goals and objectives of their Community Wildfire Protection Plans, and engage land managers in relevant planning and project efforts by providing funding, technical assistance, and facilitating shared learning.
- Provide local, state, and federal agencies with additional staff resources dedicated to community preparedness and fire prevention efforts in order to coordinate and support risk reduction activities.
 - Priorities will include targeting high-risk WUI areas to reduce human-caused ignitions, coordinate and support community-led efforts to reduce wildfire risk, and partner with local and volunteer fire departments to enhance preparedness and response efforts.
- Support land management agencies, universities, emergency services, and others in efforts to engage Montanans in preparing their homes, properties, and communities for wildfire.
- Develop a concerted public outreach and education effort tailored to local needs and conditions to help landowners understand the severity of wildfire risk and the fact that mitigation efforts can save lives and minimize damage.
- Work with a range of partners, including Conservation Districts and local collaboratives, to engage and educate the public on their responsibility to mitigate wildfire hazards in the home ignition zone.
- Continue to emphasize the home ignition zone, neighborhood scale initiatives, and the interplay between communities and the health of nearby landscapes.
- Convene a wide array of partners to revise the Guidelines for Development within the Wildland Urban Interface to identify best practices for development in the WUI and identify criteria for providing grant and loan assistance to local government entities to facilitate the adoption of the guidelines.

- Support state and federal agency engagement with local governments on land use and hazard mitigation planning.
 - Promote codes and ordinances that better reflect the conditions on the ground and the growing complexities of fighting wildfire in the WUI.
 - Support the revision of CWPPs and work to align local, state, and federal resources and priorities.
- Amplify existing collaboratives and create new opportunities for communities to form coalitions and leverage partnerships to improve wildfire adaptation.
- Build awareness of collaborative opportunities to address wildfire risk, such as the Fire Adapted Montana Learning Network.

INCREASE FIREFIGHTER SAFETY AND EFFECTIVENESS.

- Provide additional funding to support year-round employment opportunities to adequately staff the fire year and improve training and workforce development programs to expand the skillsets of wildland firefighters.
- Continue to provide grants, equipment, suppression vehicles, training, and prevention materials to fire departments through existing programs, such as the Rural Fire Capacity Program and the State-County Cooperative Fire Protection Arrangement.
- Provide incentives for local government fire services to be robust and effective at initial and extended attack.
- Develop and modernize data capture systems to standardize fire data across Montana.

MITIGATE THE IMPACTS OF CLIMATE CHANGE ON WILDFIRE EFFECTS.

- Increase post-fire recovery efforts, such as reforestation and tree planting, following severe wildfire events and when natural reforestation is unlikely.
- Support peer-reviewed and agency research on climate change's effects on forested landscapes and wildfire.
- Build on the recommendations specifically stated in the *Montana Climate Solutions Plan*:
 - Develop strategies to integrate climate adaptation with disaster mitigation plans and wildfire planning efforts to support resilience planning and facilitate implementation.
 - Continue to address wildland fire risks through coordinating interagency planning and response, supporting wildfire-adapted communities, and building resilient landscapes through active forest management to improve safety and protect communities across ownership boundaries.
- Increase public awareness of the impact of climate change in creating longer, larger fire seasons so that they better understand the importance and urgency of their role in fostering fire-adapted communities.



Photo courtesy of DNRC

COUNTY CO-OP PROGRAM:

By formally partnering with all 56 Counties in Montana, DNRC ensures wildland fire protection on over 45 million acres of state and private land through an arrangement known as the State-County Co-op Fire Protection arrangement.

Through this arrangement, Montana counties agree to provide the basic level of wildland fire protection through a system of rural firefighting organizations and local personnel. These county and local government firefighters provide initial attack and, in most cases, extended attack on wildland fires in their jurisdiction. Thousands of fires are contained and controlled each year without large-scale intervention by wildland fire protection agencies due to the program's effectiveness.

In return for this service, counties receive DNRC support in the form of organizational and technical assistance, fire equipment, training, and fire response assistance when needed. When a wildland fire exceeds the capacity of the county, DNRC mobilizes to assist the county, bringing the considerable resources of the state and its federal partners at no additional cost to the county.

The State-County Co-op Fire Protection arrangement has been a highly effective fire protection model in Montana for the past 50 years and this success can be attributed to the enduring partnerships that exist across the state.

WORKING FORESTS AND ECONOMIES



Photo courtesy of USFS, Flathead National Forest

A strong and diverse forest industry provides the workforce, expertise, and equipment that is essential to meeting forest health, management, and wildfire risk reduction goals. Montana is fortunate to have a largely intact and integrated forest products industry, which uses a wide range of material from active forest management and restoration activities to produce valuable and diverse wood products. This affords forest managers the ability to generate revenue from active management, offsetting the costs of restoration treatments. Without a robust and diverse industry, the cost of restoration and management treatments would be cost prohibitive at a meaningful scale.

Montana has a wide array of forest products manufacturers, including both large and small sawmills, a pulp chip producer, a specialty plywood mill, post and pole mills, facilities that manufacture products from mill residuals, firewood yards, small niche enterprises selling finished wood products, and the country's first manufacturer of cross-laminated timber. Montana has eight large sawmills, primarily situated in the western part of the state, that account for approximately 95% of the state's lumber production and approximately 70 smaller mills that account for the remaining 5% of production. Almost all (99.5%) of mill residuals generated by both large and small mills are utilized by other manufacturers (BBER, 2017). While the forest products industry faces the challenge of finding markets for smaller sub-merchantable material, entrepreneurs continue to explore market solutions through innovations such as biofuels and biochar. These facilities are increasingly important to the economic viability of Montana's communities and to the ability of landowners and managers to complete effective forest management and restoration. Future diversification of timber products will be necessary, and challenging, as the market for forest products shifts. Diversification and investment in new technologies will play an integral role in increasing the utilization of raw forest products and making Montana's forest markets regionally competitive.

While resource managers face the challenge of finding markets for smaller sub-merchantable material, the forest products industry and other entrepreneurs continue to explore market solutions through innovations including new building systems, biomass energy, biochar, and biofuels. Future diversification of timber products will continue to be necessary and challenging, as the market for forest products shifts. Diversification and investment in new technologies will be an integral part of increasing the utilization of raw forest products and making Montana's forest markets regionally competitive. Montana's forest products industry is challenged by several issues, among them are inconsistencies in fiber supply, labor shortages, distance

from forest to mill, distance to market, and competition in national and international markets. Many of the issues are interrelated and addressing them will be necessary not only support Montana's forest industry, but also to ensure the collective ability to manage forests into the future.

The available timber supply is a major factor impacting the size and health of the forest products industry (BBER, 2017b). As of December 2019, Montana mills were running at 60-65% capacity, and nearly two-thirds of the state's large sawmills and small wood products facilities have closed since 1990, following a downward trend in timber harvested in Montana (Morgan et al., 2019). While there have been sharp declines in forest industry employment since 1990, over 9,000 people throughout the state continue to work in wood products manufacturing, logging, or other forestry-related employment (BBER, 2017b; BBER, 2017). Much like the general manufacturing sector in the U.S., Montana's forest industry continues to be challenged by labor shortages and the recruiting and retention of a skilled workforce.

Over 80% of Montana's wood products are exported to markets outside of the state, where they must compete with other commodity products that are often sourced much closer to the consumer (USDA FS, 2020). Transporting goods to markets substantially reduces the profit margin for most of the existing industry. Mills that have weathered the market fluctuations and avoided closures relied on product diversification, innovations, and investing in technology capable of economically processing small diameter material.

In Montana, typically 88% of timber harvested is milled into commodity lumber (Hayes & Morgan, 2017). Commodity markets are volatile; they can fluctuate rapidly and dictate the cost of raw materials. Record setting volatility in lumber prices has occurred in 2020. The combination of an unpredicted increase in demand and curtailed sawmill production across the world has resulted in record high lumber



Photo courtesy of DNRC

prices (NAHB, 2020). The summer surge and consistent upswing in prices normally ends around July, but in 2020 has continued unabated into late September. In November of 2020 prices have been declining, and it is expected that lumber prices will return to a more traditional range over the winter (DNRC Internal Communication, 2020). Regardless of how the market adjusts to the changes seen in 2020, volatility in markets will always impact commodity producers.

Conservation of working forested lands is not only critical to the forest products industry, but also to many of the intrinsic values of forested landscapes. The Forest Legacy Program was established in 1990 by USDA Forest Service in response to the conversion of private timberlands to other uses. The term "working forests" was coined to capture the variety of public values that were targeted to be conserved through the Forest Legacy Program. Forest Conservation is accomplished voluntarily through cash purchases, donations, or a combination thereof. Nationally, the program has helped conserve about 2.8 million acres of working forests. In Montana, the Forest Legacy Program has preserved a total 260,742 acres through permanent conservation as required and outlines in the *Assessment of Need* produced by Montana Fish, Wildlife and Park

While the issues facing the forest products industry are not new, they will continue to shape the industry, especially over the next few decades. With the increasing need to improve forest health and reduce wildfire risk across Montana, maintaining working forests and the industry that supports them is crucial. With a sustainable supply of wood fiber and a qualified workforce, Montana's forest products industry will create opportunities and rise to the challenge of producing products for emerging and established domestic and global markets. Montana's forest products industry has an important and necessary role in achieving landscape-scale forest restoration and management across the state.

RECOMMENDED GOALS AND IMPLEMENTATION STRATEGIES

The *Montana Forest Action Plan* aims to:

Across all land ownerships, maintain working forest landscapes that support multiple values, including the forest products industry and infrastructure.

Strategies to achieve this goal include:

MAINTAIN WORKING FOREST LANDSCAPES FOR MULTIPLE BENEFITS.

- Pursue the conservation of large, unfragmented tracts of forest land through tools like conservation easements and expand the use of existing tools and authorities where current infrastructure exists.
- Actively support projects and programs that contribute to the retention of Montana’s forest products industry in order to manage the expected increase in pace and scale of cross-boundary restoration projects.
- Work with industry partners, the Forest Action Plan Implementation Committee, land managers, collaboratives, and conservation groups to determine realistic and achievable goals and restoration targets for forest management and wildfire risk reduction in Montana.
- Support conservation projects that provide multiple social, economic, and ecological benefits, including an ongoing supply of forest products, public access to recreation opportunities, watershed health, and wildlife habitat.
 - Use stewardship contracts and Good Neighbor Authority to offset the costs of restoration through revenue attained from commercial timber harvest.

- Maximize opportunities presented by commercial harvest to accomplish multi-purpose projects and utilize efficiencies of combining fuels reduction, habitat improvement, and other restoration work.
- Engage private landowners adjacent to federal and state lands to participate in cross-boundary projects as they are developed.
- Utilize farm bill programs that support watersheds and wildfire resilience needs on working lands.
- Increase outreach and engagement with landowners that promotes planning and provides resources for the stewardship of family forest lands.
- Invest in innovative targeted marketing strategies and expand partnerships to increase stewardship activities on non-industrial private forest lands.
- Coordinate with DNRC Trust Lands Management Division to advance opportunities to achieve multiple objectives on forested state trust lands.
- Support projects that highlight the dynamic use of landscapes including grazing, alternative energy projects, and streamside restoration.
- Increase data sharing across jurisdictions, specifically pertaining to road inventories, right of way, and forest stand data to emphasize collaborative transportation planning, where appropriate.
- Prioritize and amplify local collaboration, including the development of projects that accomplish multiple objectives and meet local resource needs.
 - Continue to use DNRC Service Foresters as the primary point of contact for landowners participating in forestry assistance programs.

SUPPORT AND MAINTAIN THE FOREST PRODUCTS INDUSTRY AND MILLING INFRASTRUCTURE.

- Increase volume of fiber and fiber availability to produce a consistent and reliable supply, and develop forest products infrastructure in order to meaningfully address forest health and wildfire risk reduction objectives.
- Work with the forest products industry and local leadership to develop comprehensive, long-term plans that establish a consistent supply of materials for existing processing facilities, and encourage new investment in wood utilization infrastructure.
- Support the efforts of land management agencies, universities, and others to engage Montanans on the benefits of active forest management and increased wood utilization.
- Support the efforts of land management agencies, universities, and others to engage Montanans on the connection between healthy forests and a vibrant forest products industry.
- Expand the scope and use of existing tools and authorities that provide funding for restoration projects within *Priority Areas for Focused Attention*.



Photo courtesy of DNRC, Brooklyn Bridge GNA Sale

SUPPORT THE DIVERSIFICATION OF WOOD PRODUCTS.

- Support market and business developments, mill investment, and industry innovation for forest products, biomass, and wood energy across the state.
- Incentivize or provide cost-share programs for wood innovation and biomass energy sources.
- Encourage the use of technologies that increase the utilization of small diameter wood and restoration by-products.
- Support new markets, business opportunities, and industries that facilitate forest restoration and cross-boundary management.
- Assess the effectiveness of forest product marketing, delivery, and utilization to promote wood products use in Montana.
- Work with partners and Montana’s education system to expand forestry workforce recruitment opportunities and retention.

ENHANCE LOCAL ECONOMIC BENEFITS.

- Expand the use of stewardship contracting and other authorities:
- Support multiple use of lands to best meet the current and future needs of Montanans and their livelihoods.
- Recognize the role private rangeland plays in maintaining working forests landscapes and the economic interdependence of forest, grassland, and water management for Montana’s livestock producers.
 - Give consideration of the value of grassland grazing resources in project selection and design.
- Embrace grazing as a potential forest management approach and tool, when and where appropriate, including the use of grazing as a fuel management tool to reduce fuel loading.
- Monitor available funding resources including Secure Rural Schools and Payment in Lieu of Taxes.

GOOD NEIGHBOR AUTHORITY

DNRC, USDA Forest Service, and the Bureau of Land Management, in close partnership with other agencies, industry, and conservation groups, are working to increase the scale of forest and watershed restoration on federal and adjacent lands through the Good Neighbor Authority (GNA). Authorized by the 2014 and 2018 Farm Bills, GNA allows the USDA Forest Service and Bureau of Land Management to enter into agreements with state agencies to plan for and implement restoration work on federal lands. Through GNA, Montana is improving forest health and resiliency, reducing threats to communities and watersheds from destructive wildfires, and creating more jobs and local economic benefits.

By 2021, all seven national forests and BLM land in Montana will have forest restoration projects implemented through GNA. The benefits of GNA restoration projects include improving forest and watershed health, reducing wildfire intensity and severity, enhancing resiliency to future insect and disease outbreaks, maintaining and supporting the wood products industry, and creating local, well-paying jobs in Montana communities.

Funding from USDA Forest Service, Bureau of Land Management, and other partners as well as the GNA agreements and revenue from GNA timber sales is used to complete restoration activities. In addition, state service contracts and added staffing capacity from DNRC help accelerate restoration activities, such as NEPA support, field data collection, watershed restoration, and fuels reduction activities. Restoration activities will increase in scope and scale as revenue from GNA timber sales increase.

GNA BY THE NUMBERS:

\$3.989 million

in revenue under contract;

29.6 MMBF

sold treating 5,470 acres;

10 non-timber

**sale restoration projects completed
or under contract; and**

12 sales and 2 timber permits

to be advertised in FY21.



Photo courtesy of DNRC

BEST MANAGEMENT PRACTICES (BMP)

Professional accreditation, stringent safety protocols, regulations, and forestry Best Management Practices (BMPs) help ensure forestry work is done safely, to a high standard, and incorporates techniques that ensure Montana's soil and water quality are protected. Montana's logging contractors are professionals with an excellent track record of providing land management services. Over the last 20 years, the DNRC Forest Practices Program, together with the forest products industry and partners, have achieved greater than 90% compliance with BMPs and nearly 100% compliance with slash and stream protection laws.



Photo courtesy of DNRC

FOREST STEWARDSHIP ON FOREST LANDS

In Montana, non-industrial private forest lands account for nearly 25% of all forested areas. Whether someone owns a handful of trees or hundreds of acres of trees, each owner has a unique perspective and value system that guides how they choose to manage their forests, including specific ecosystem and habitat conditions for plants and wildlife, prioritizing long-term timber yields as sources of income, or relying on their forests for ranching and agriculture benefits. In fact, through active management and timber harvest, these private landowners contribute an average 25% of merchantable products to Montana's forest products industry (BBER, 2018).

Additionally, private forests help provide clean water and air to surrounding communities, allow for recreational use and public land access points, and provide environmental carbon sequestration benefits. The informed management of non-industrial forest lands provides significant community protection benefits by reducing wildfire risk.

It is important that the appropriate tools and resources are made available to private landowners, so they can make informed decisions about managing their forests. DNRC and other partners provide outreach and engagement, professional technical assistance, and educational materials and programs to sustain the functional and vital role of these private forest owners.

and programs to sustain the functional and vital role of these private forest owners.

BIODIVERSITY AND HABITAT CONSERVATION

Montana's forested ecosystems are diverse and extensive, providing habitat for fish and wildlife populations. Many species contribute to the health and integrity of ecosystems, making conservation and restoration of forests integral to sustaining the biodiversity that makes Montana unique. Forests also provide ecological, recreational, economic, and aesthetic values to Montana citizens and visitors.

Forest ecosystems are dynamic—they constantly change within their natural range of variability. Montana's forests, however, currently face challenges that threaten their ability to provide essential habitat and conditions to support healthy, viable fish and wildlife populations (Hansen et al., 2002; Mortelliti et al., 2010; Prugh et al., 2010). Conserving and restoring forests, as well as reducing threats to allow for natural disturbance patterns, is critical for the maintenance of healthy, functioning ecosystems (Thom & Seidl, 2016). Influences such as management decisions, climate change, and uncharacteristic insect and disease outbreaks transform natural disturbance regimes, which in turn alters the composition and structure of species within a forested ecosystem (Long, 2009). Management for ecological resilience must also address the impact of human-caused disturbance patterns, including impacts from recreation, roads, structure development, and changing land uses. As human activities and developments disrupt these natural systems, they affect the status and trends of ecosystems and their component fish, wildlife, and plant communities (Haddad et al., 2015; Seidl et al., 2016).

Disruption of Montana's natural fire regime and other land use changes have impacted forested ecosystems, which has had significant implications for habitat and biodiversity (Bradstock et al., 2005). A low-severity mixed fire regime once maintained a range of plant communities and structural conditions (Arno et al., 2000), which are important to a variety of native aquatic and terrestrial animal species. The move away from low-severity mixed fire regimes shifted plant communities in Montana's forests away from those that are fire resistant. Low to mid-elevation ponderosa pine forests across the state are denser, with more trees per acre, while the species composition has gradually shifted to include more fire-susceptible species. (Keeling et al., 2006). Recent research on the effects of reintroducing frequent, mixed-severity fire to such altered forest ecosystems indicates it can restore historic tree and shrub species compositions, and thereby improve habitat conditions for native fish and wildlife (Larson et al., 2013).

Conifer expansion into grass or shrub-dominated uplands, often due to a lack of fire, can reduce the value of these important habitats for a variety of wildlife

Photo courtesy of USFS, Flathead National Forest

species (Coates et al., 2017; Schirokauer, 1996; Grove et al., 2005; Hamilton et al., 2019). For example, sage-grouse avoid tall conifers that encroach into sagebrush grasslands, thus directly reducing their habitats for varying periods of time (Severson et al., 2017). Shading from coniferous trees can also reduce the preferred forage of ungulates—browse or grasses—which is particularly important within wintering areas.

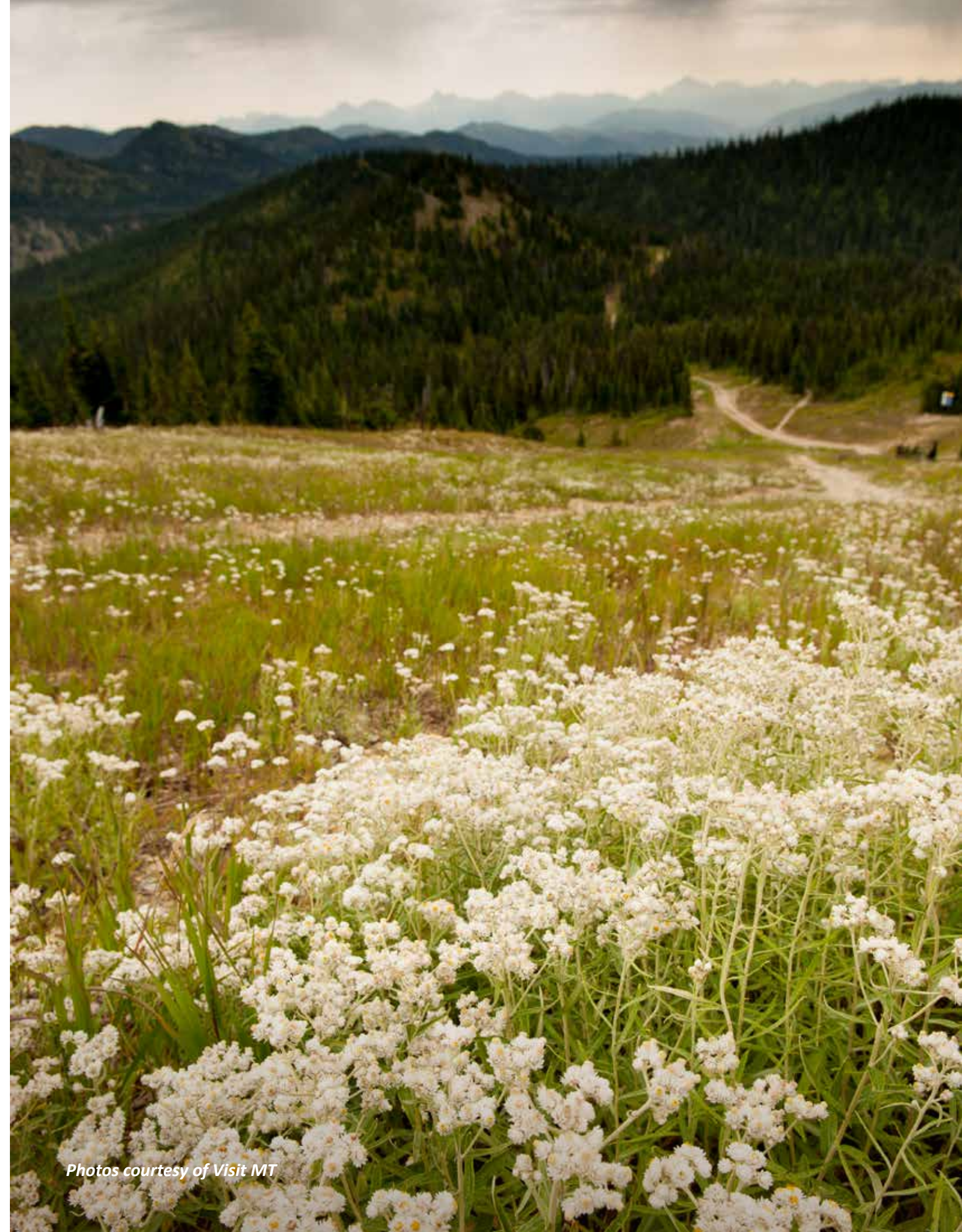
Without natural fire disturbance, there has been an increase in Douglas-fir, which is able to out-compete other tree seedlings that cannot become established under shadier or densely stocked stands. In western Montana, Douglas-fir has replaced ponderosa pine in 40% of its original area, and western white pine has been reduced by 95% due to insect and disease outbreaks (Arno et al., 2000; Keeling et al., 2006). Over time, Douglas-fir, lodgepole pine, and Engelmann spruce have grown in density and replaced stands once composed of sparse ponderosa pine. The harvest of large ponderosa pine, which left other fire-susceptible species in their place, has further altered the natural fire regime. The resulting dense forests of differing composition provide habitats that represent a departure from pre-20th Century conditions, which may not support the same communities of wildlife species as they once did.

One of the greatest threats to Montana’s wildlife and biodiversity is the loss of forested habitat through habitat fragmentation, human development, and other forms of habitat conversion. Eliminating or fragmenting habitats can lead to local extirpation or reduced resilience to new stressors, such as climate change or other factors (Beller et al., 2019; Hames et al., 2006). Individual habitat changes in isolation may seem minor, but the effects of habitat changes can accumulate over time, magnifying their overall impact (Smith et al., 2011; McGarigal et al., 2001; Nitschke, 2008). Severe, uncharacteristic disturbance can also compromise habitat continuity and connectivity. Damage caused by large wildfires and widespread mortality from insect and disease outbreaks can degrade habitat within core forested areas, interrupting key migration corridors (Adhikari & Hansen, 2018). As hu-

man development and associated roads increase, the changes to the landscape can result in the direct loss of habitat, reduced habitat productivity, and increase in human-wildlife conflicts (McKinney, 2002; Hansen et al., 2005; McCance et al., 2017). New road construction should be part of any initial project design work and subsequent environmental analyses.

Riparian forest areas very import to maintaining and promoting biodiversity. Riparian areas support breeding, hiding, and thermal cover; nesting structure; a variety of food types; travel corridors; and a host of other ecological and societal values. The shade provided by tall shrubs and trees and the soil-holding value of extensive deep root systems associated with riparian vegetation are critical for providing cool, clean water and integral to providing stream and river channel integrity, which is critical for many fish species and other aquatic life. The integrity of riparian forests and associated aquatic habitats is also strongly influenced by the condition and management of adjacent uplands. For instance, controlling noxious weeds, providing soil cover, and managing grazing in a manner that sustains native vegetation all directly influence riparian habitats. Water and associated riparian plant communities are essential to a majority of wildlife species in Montana, and these moist areas tend to provide increased productivity, particularly within dryer habitats (Poff et al., 2016).

The Endangered Species Act (ESA) currently lists 16 animal and three plant species in Montana as threatened or endangered. Many more are considered “species of concern” by the Montana Natural Heritage Program (MTNHP, 2019). Federal agencies also identify at-risk species that overlap with the ESA species, including Bureau of Land Management (BLM) Special Status Species and USDA Forest Service Species of Conservation Concern. Among these are eight animal species (mammals, birds, and invertebrates) that depend on forested ecosystems and cold, clean waters for their continued survival and success. Thus, conserving forested ecosystems is essential to protecting all of Montana’s at-risk and imperiled species, as well as ensuring forest health.



Photos courtesy of Visit MT

RECOMMENDED GOALS AND IMPLEMENTATION STRATEGIES

The *Montana Forest Action Plan* aims to:

Improve and maintain Montana’s wildlife and biodiversity, including maintaining and restoring connected habitats, through collaborative approaches.

Strategies to achieve this goal include:

MAINTAIN AND IMPROVE HABITAT CONDITIONS FOR HEALTHY AND VIABLE POPULATIONS OF NATIVE SPECIES.

- Support integrated forest management and restoration projects that provide measurable benefits for fish and wildlife in *Priority Areas for Focused Attention*, including at-risk and imperiled species.
- Support projects that integrate forest management with critical habitat conservation, especially for fish and wildlife species of concern.
- Increase use of programs such as Habitat Montana to aid in habitat conservation and support habitat connectivity throughout the state.
- Promote and maintain desired landscape conditions that restore and sustain fish populations as well as wildlife through planning and implementing habitat management plans.
- Promote important stewardship principles, including wildlife and fisheries conservation, on family forest lands.
- Create opportunities by promoting voluntary, incentive-based approaches to form coalitions and leverage public-private partnerships to maintain or improve habitat conditions, including conditions for imperiled and at-risk species.
- Work to develop management plans for sagebrush and rangeland ecosystems that need removal of low, medium, and high-density encroaching conifers to help increase habitat, protect biodiversity, and increase forage.

- Improve native wildlife mobility and maintain and restore connected landscapes and watersheds.
- Pursue voluntary, incentive-based conservation of large, unfragmented tracts of forest land while working with local government officials and neighboring landowners through the Montana Forest Legacy and other programs.
- Incorporate wildlife movement and migration information when planning for developments that might act as barriers or result in human-wildlife conflicts.
- Support projects to remove unnecessary roads and upgrade low-standard roads in order to reduce stream sediment loads and improve passage and connectivity for native aquatic species.
- Ensure regeneration (either natural or artificial) of desired tree and shrub species with support from programs such as Montana’s seedling nursery or the Forest Service nursery in northern Idaho.
- Invest in and work to implement watershed and collaborative groups’ desired outcomes to help resolve challenging land management policies and projects.
- Build on the recommendations specifically stated in the *State Wildlife Action Plan*:
 - Work with appropriate agencies to maintain quality aquatic habitats and to mitigate impacts and threats to fish and wildlife species of greatest conservation need.
 - Prioritize conservation easements and acquisitions adjacent to current conservation investments in order to create contiguous protected habitat that provides habitat linkages across large landscapes.
 - Support agency and private conservation activities and management practices that encourage and support sustainable land management practices, maintain or improve riparian vegetation, and maintain streambank and channel stability in excellent condition.
 - Encourage restoration of natural fire regimes where appropriate or implement other management actions that mimic the ecological processes provided by fire.

MAINTAIN, RESTORE, IMPROVE, AND CREATE HEALTHY RIPARIAN AND AQUATIC SYSTEMS.

- Improve baseline data and information on riparian zones and aquatic habitats and hydrologic systems in order to better understand conditions and trends.
- Support projects that maintain and improve conditions and functions of riparian zones and associated aquatic habitats and hydrologic systems.
- Ensure that projects continue to follow current Streamside Management Zone Law and Best Management Practices.

MITIGATE THE IMPACTS OF CLIMATE CHANGE TO WILDLIFE AND BIODIVERSITY.

- Improve baseline data and information on habitat conservation and biodiversity in Montana.
- Support peer-reviewed and agency research on climate change’s effects on wildlife migration and movement patterns as well as improving the accuracy of hydrologic projections.
- Consider wildlife components of projects in the *Priority Areas of Focused Attention*.



Photo courtesy of DNRC, Western Larch

WILDERNESS AREAS

Established by Congress and authorized under the Wilderness Act of 1964, the National Wilderness Preservation System includes over 700 wilderness areas in 44 states, totaling more than 107 million acres. Montana is home to 16 Congressionally designated wilderness areas, representing approximately 3.5 million acres (about 3.75%) of the state's lands. They include the highest peaks in the state, as well as low-lying marshland suited for wildlife refuges.

The Wilderness Act defines a wilderness area as follows:

“A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of underdeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation

and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”

Montana's wilderness areas are home to thousands of species of flora and fauna—a number of them threatened or endangered. For many, wilderness areas are places of growth, reflection, and solitude. Montana's wilderness areas help maintain a connection to the land that can be difficult to find elsewhere: the silent, breathtaking views; the still turquoise waters of the glacial lakes; the rugged ridgelines dotted with snow year-round; and the sense of awe that these wild places instill.

Wilderness areas are not only spectacular places to find quiet and connection, but they are among the most vulnerable to change. Plant and animal communities, particularly in high-alpine areas, are slow to respond to changing conditions; threats such as insect and disease outbreaks and wildfire can greatly impact wilderness areas. Wilderness areas are not surveyed in the statewide insect and disease mapping efforts, leaving large areas of land unassessed.

Wilderness areas preserve the qualities of natural, untrammelled, and undeveloped land. Wilderness areas, along with roadless areas and wilderness study areas provide a network of diverse habitats contributing to the biodiversity seen across Montana.

ECOSYSTEM ENGINEERS: THE CASE FOR BEAVERS

Post-settlement human activity in Montana has severely altered floodplain structure and function. Historically, beavers (*Castor canadensis*) were present in much greater numbers before European colonization (Wohl, 2006). Beaver dams increase riparian vegetation, raise water levels, reduce the effects of peak flows from floods, and prevent sediment from being transported downstream (McCullough et al., 2005). Dams form low-flow areas within the water body, adding fish cover and breeding habitat for amphibians, as well as increased habitat suitability for some aquatic insects (Marcus et al., 2002). Beavers are widely known as “ecosystem engineers,” providing structure to wetlands and streams, and changing nearby forest structure. Beaver-dammed riparian corridors have also been shown to remain unaffected by wildfire when compared to similar riparian areas without beaver dams. Beaver activity plays a significant role in riparian vegetation fire resistance and refugia creation (Fairfax & Whittle, 2020).

The large reduction in beaver populations is a leading cause of the loss of wetland habitat and deteriorating riparian ecosystem health (Marston, 1994). Natural resource managers around Montana are working to reintroduce beavers or install “beaver analog” devices to targeted watersheds; the goal is to increase water storage capacity and restore riparian functions to provide more cool, clean water for downstream needs.



URBAN AND COMMUNITY FORESTS

Some of the most important trees to Montanans are those found in backyards, along urban streets, and outside of businesses that people frequent and enjoy. Montana's cities and towns contain a rich diversity of trees that are an important part of the state's history and are critical to the environmental, social, and economic well-being and sustainability.

Over 180 tree species populate Montana's communities. According to 2017 estimates, street and park trees across the state provide over \$17 million per year in economic and ecological benefits. Every dollar spent on managing urban and community forests (UCF's) is matched by nearly two dollars in environmental services and increased property values in return (McPherson, 2002). Urban and community forests provide shade during hot summers in urban heat islands. Shaded spaces can mean the difference of 20-40 °F cooler than peak temperatures of exposed surfaces (EPA, 2019).

Trees add character to communities and serve as wind breaks in wind-prone rural communities. The state's publicly-owned urban forests provide over \$1.8 million in energy savings and intercept more than 122 million gallons of storm water annually, easing the burden on water treatment facilities and acting as an important filtration system for communities that rely on well water (DNRC, 2017). Additionally, they sequester nearly 9.5 million pounds of carbon and remove over 20 metric tons of pollutants from the air yearly.

With the increase in wildfire and related smoke, urban forests are even more critical in improving air quality. With so many of Montana's rivers and streams flowing through communities, trees along these waterways are important in intercepting pollutants, stabilizing banks in the event of flooding, and providing enjoyable recreational spaces.

Nearly 70% of Montana's population live within incorporated towns and unincorporated centers (US Census Bureau, 2010). As the population grows and development increases, community trees face the threat of removal in the absence of intentional and deliberate planning to retain them. Most municipalities across the state lack urban forestry capacity and expertise to ensure that planning incorporates the retention and growth of these beneficial forests.

In addition to threat of removal, Montana's urban and community forests are generally old and lack the diversity to withstand major threats from invasive insects and disease. Many of the most valuable community trees were planted around statehood and are reaching the end of their life cycle. Dead and dying trees pose safety risks and are expensive to remove, sometimes costing over \$10,000 for the removal of

one large tree. While Montanans enjoy a diversity of tree species in their communities, nearly 42% of the total tree population is comprised of three species (ash, maple, and crabapple). Green and white ash make up nearly one-third of all of urban trees and are especially prevalent in eastern Montana. While urban forests face threats from numerous insects and diseases, no threat is likely greater than the one facing the ash tree population. Emerald ash borer has not yet been found in Montana, but with detections in South Dakota and Colorado, its arrival—and its negative impacts on community and urban forests—is almost inevitable.

Urban and community forests, due to the ecosystem services and shade they provide, will play an important role in mitigating some climate change effects. While they will help with mitigation, they remain subject to climate change impacts and will be increasingly vulnerable to extreme weather events, drought, and temperature fluctuations. Therefore, the health and vitality of our communities depends on vibrant urban and community forests.



Photo courtesy of DNRC

RECOMMENDED GOALS AND IMPLEMENTATION STRATEGIES

The *Montana Forest Action Plan* aims to:

Maintain diverse, healthy, and resilient urban and community forests in Montana.

Strategies to achieve this goal include:

INCREASE THE DIVERSITY, AGE CLASS, HEALTH, AND RESILIENCE OF TREES IN URBAN AND COMMUNITY FORESTS.

- Maintain statewide community tree inventories and update every ten years.
- Support programs to plant trees that aid in diversifying the species composition of community tree populations.
- Support land management agencies, universities, and other relevant partners in efforts to engage Montanans on the benefits of urban and community forests and the need to maintain and manage urban trees.
- Encourage nurseries to supply diverse tree species as recommended by the Montana Urban and Community Forestry Association, especially for commercial planting.
- Promote and recommend medium and large tree species for planting to maximize ecosystem benefits.
- Explore additional opportunities to provide funding and grants to aid in medium- and large-sized tree species planting across Montana.
- Expand use of the Community Forest Program to secure forested land adjacent to and within urban environments.
- Raise awareness with local government officials about the need for funding to maintain trees after planting in order to provide benefits into the future.

INCREASE URBAN TREE CANOPY COVER TO ENHANCE ECOSYSTEM BENEFITS.

- Support the development of community management and implementation plans to aid in management of current tree populations and promote short- and long-range planning of tree planting.
- Encourage three trees to be planted per person living in urban landscapes.
- Establish reasonable canopy goals for communities with appropriate partners and organizations.
- Prioritize projects in communities that have the highest population of ash trees, contribute the most to match grant funds, and do not have maintenance programs.
- Encourage counties and communities to include measures to protect UCF's in their CWPPs and follow through with implementation of measures including fuels treatments, planting resilient species, treating weeds, and identifying and developing safety zones.
- Actively promote stewardship of and education on the services and value of urban and community forests in an effort to increase urban tree canopy cover.
- Promote the use of urban tree canopy cover as a tool to mitigate the impacts of climate change and urban heat islands.

MITIGATE THE FINANCIAL EFFECTS OF EMERALD ASH BORER ON MONTANA COMMUNITIES.

- Support the development of emerald ash borer management plans by providing technical expertise and additional funding.
- Prioritize rural and small communities where capacity is limited.
- Support the development and maintenance of plans to rapidly identify and manage future potential outbreaks of emerald ash borer.
- Encourage utilization of urban wood to mitigate economic and environmental impacts invasive species and urban tree mortality.
- Support programs to replant tree species that aid in diversifying community tree populations following the removal of ash trees.



Photo courtesy of DNRC, Missoula

REFORESTATION AND RESTORATION WITH PLANT NURSERIES

Planting trees and shrubs is a simple act, but one with profound benefits and positive impacts. Strategic plantings are increasingly important aspects of forest and rangeland management, as well urban and community forestry. Urban forests surrounding metropolitan areas have high conservation value. They are important for preserving and enhancing surrounding natural areas and habitats, improving water quality, converting open spaces, restoration, climate change mitigation, and sustainability.

Across all habitat types in Montana planting trees and shrubs is a proven management tool for conservation. Seedlings are necessary for reforestation, creating or improving wildlife habitat, and diversifying species and age compositions. Using plantings for these purposes is included in many of the strategies to increase forest resilience to fire, windthrow, insects and disease, drought, invasive species, and climate change.

The Montana DNRC operates the Montana Conservation Seedling Nursery, a critical forest restoration tool that provides plants for conservation activity across the state. Established in 1927, the Nursery has a long history of

cultivating plants, with good genes, to ensure that diversity is maintained and positive attributes are propagated. Currently, the Nursery's annual production is approximately 800,000 seedlings across 40 different species of trees and shrubs, with multiple site-specific types per species. The Nursery has the capacity to produce over 1,000,000 seedlings per year in 4 greenhouses, and has additional capacity for larger plants in its outdoor growing facilities. The Nursery has the space and capacity to significantly increase production to meet future needs.

Planting is essential for perpetuating forest cover throughout Montana in the era of mega-fires and climate change. Conservation planting improves habitat, increases habitat connectivity, and promotes the regeneration of suitable native species that may be more resilient to conditions created by climate change and severe wildfire. There are many opportunities to incorporate cross-boundary reforestation and plantings into restoration work. The Montana Conservation Seedling Nursery is a keystone operation, collecting and storing seeds, and growing plants for restoration and conservation work in Montana.



Photo courtesy of DNRC

HUMAN AND COMMUNITY HEALTH



Photo courtesy of USFS, Northern Region

Due to its vast, open landscapes, Montana has a unique outdoor heritage that depends on a healthy environment. Forests help ensure a healthy environment by providing good air quality, clean water, and other human health benefits.

While Montana enjoys good air quality for large parts of the year, air quality across the state can be highly variable depending on location, time of year, and the severity of the wildfire season. Longer and more severe fire seasons lead to extended periods of wildfire smoke, especially in high population centers. According to the American Lung Association 2019 annual report, Montana was home to six of the 25 counties in the U.S. most affected by short-term particle pollution: Ravalli, Lewis and Clark, Missoula, Lincoln, Silver Bow, and Flathead. The city of Missoula was ranked as the fifth-worst affected by short-term particle pollution and eleventh for year-round particle pollution (ALA, 2019).

Smoke often becomes trapped in the bowl-shaped valleys that form much of western Montana, and can linger until a weather system moves through. Exposure to fire smoke carries public health implications as smoke increases the incidence and severity of respiratory conditions. Healthy urban tree populations can trap, settle, and hold dust and particulate pollutants from smoke and combat some emissions from wildland fires (Chen et al., 2017; Nowak & Dwyer, 2010). The active management of urban trees and forests can play a key role in mitigating the adverse health impacts that exposure to wildfire smoke may cause for those in Montana's high population centers. Additionally, prescribed fire can effectively foster ecosystem health while decreasing the risk of fire, and its associated public health effects, to communities. Prescribed fires are carefully planned, timed and managed to mitigate environmental and human health impacts (WFLC, 2020).

Like air quality, water resources are essential to the health and economic well-being of all Montanans. Water is not only critical for municipal and domestic uses—it also supports agricultural and mining industries, fisheries, and recreational activities. Forested landscapes play an important role in ensuring that both the surface and groundwater is clean and abundant by slowing runoff, reducing erosion, and enabling groundwater recharge. Organic litter on the forest floor and root systems in the soil help filter water through the ground rather than as surface water, reducing overland flow (DNRC, 2015b). Montana encompasses both important river headwaters and groundwater recharge areas — areas that are often forested. That state's forest management practices are designed to maintain and improve water resource

conditions, especially in the case of degraded water quality due to uncontrolled wildfire burns in important watersheds.

Recreational use of forests, particularly on public lands, is central to Montanans' identity, way of life, health and fitness, and increasingly, their livelihood. It's an important reason why people live in and visit Montana, driving both the culture and the state economy. When surveyed, 87% of Montanans identified themselves as outdoor recreation enthusiasts and 96% believe that outdoor recreation is critical to the economic future of the state (Montana Outdoor Heritage Project, 2019). The exceptional recreation opportunities that forested landscapes provide can present management challenges for land managers and local government. With growing popularity and use comes increased pressure on natural ecosystems, infrastructure, and the strategies used to balance these varied uses. Forest-based recreation opportunities and experiences are inherently dependent upon forest conditions. Although dead and dying trees are a natural part of a forest, they can pose a threat to life and property when located in or near developed recreation sites, such as campgrounds, trailheads, fishing access sites, and along public roads.

Montanans don't have to go far to experience the many benefits trees provide. Trees in urban settings support critical environmental functions and are essential to human health and wellbeing. Urban forests help conserve energy, improve air quality, moderate

temperatures, and reduce storm water runoff (Blum, 2016). Through shade and transpiration, trees help regulate temperatures in urban settings. With predicted rises in temperature associated with climate change, urban tree populations can provide cooling effects that reduce heat related impacts on human health. Additionally, spending time in treed settings improves short-term memory, boosts the immune system, restores mental energy, and relieves stress (Kuo, 2015).

Though all people are affected by air and water quality, forest conditions, and access to outdoor spaces, certain communities are uniquely impacted by the health of our natural environment. While Montana's tribal nations have distinct cultures, languages, and histories, many share close relationships with, dependence on, and a cultural imperative to respect and care for the natural world. These cultural values are reflected in ceremonial and spiritual practices, as well as in formally adopted policies and programs of modern tribal government (For more information, please see *Indigenous Peoples & Forests in the Assessment*). Many of Montana's tribal nations have developed climate change planning efforts to address the threats climate change poses to their diverse ecosystems, communities, health, livelihoods, and cultural resources. For Montana's rural and tribal communities, climate change is likely to further impact access to clean water, adequate and affordable energy supply, and the resources needed to respond to natural disasters. By aligning management with the leadership, expertise, and knowledge of tribal nations, Montana can promote equitable and culturally-relevant natural resource management and community readiness and capacity building efforts to ensure the health and wellbeing of all.

Whether it's the clean air and water or the many recreational and health benefits that forests provide, Montanans recognize the need to improve forest health and reduce wildfire risk across the state. Due to current forest conditions, the ability to understand and plan for natural hazards and disasters is imperative to protect communities and natural resources from damage or, in the most severe cases, loss of life. It is critical that federal, state, tribal, and local governments work together to acquire the proper resources and equipment to meet projected needs and keep people safe. Montanans themselves have a role, as they can take actions to build awareness, expand collaborative opportunities, and mitigate risk across boundaries. Fostering human and community health in a heavily forested state requires an organized approach in responding to natural hazards and disasters and to protect the forested environments and ecological services that so many rely on.

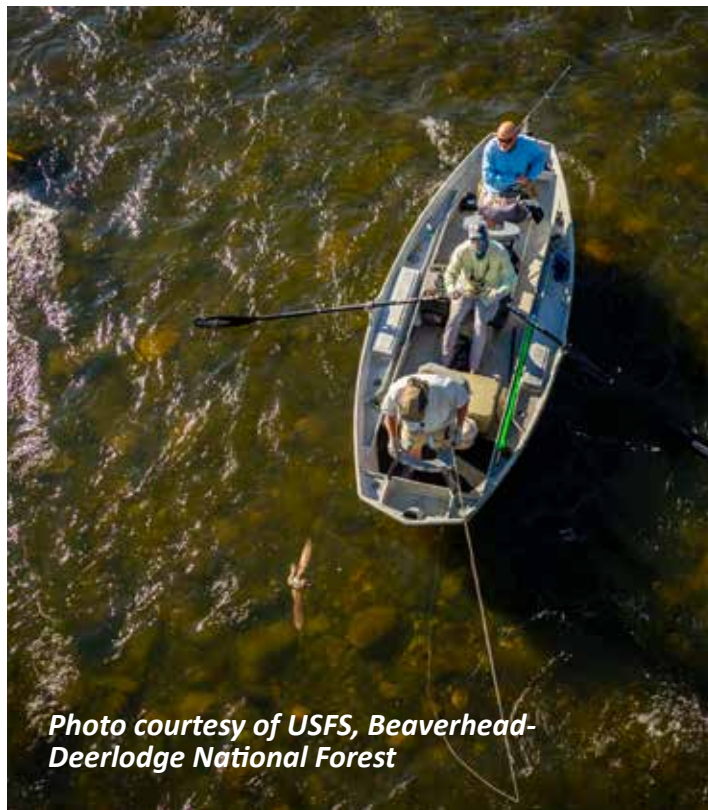


Photo courtesy of USFS, Beaverhead-Deerlodge National Forest

RECOMMENDED GOALS AND IMPLEMENTATION STRATEGIES

The *Montana Forest Action Plan* aims to:

Maintain a healthy and resilient forest that provides public benefits and ecosystem services for current and future generations of Montanans.

Strategies to achieve this goal include:

SUPPORT AND MAINTAIN HEALTHY AND FUNCTIONING HYDROLOGIC SYSTEMS.

- Support projects that maintain or improve intact and connected forested landscapes and watersheds.
- Prioritize management and restoration projects in *Priority Areas for Focused Attention* that support municipal watersheds and other beneficial water uses.
- Explore opportunities to expand funding for streamside and instream restoration as well as actions to improve impaired waterbodies.



Photo courtesy of USFS, Flathead National Forest

INCREASE PUBLIC AWARENESS OF THE BENEFITS OF USING PRESCRIBED FIRE YEAR-ROUND TO DECREASE THE SEVERITY OF WILDFIRES AND ASSOCIATED PUBLIC HEALTH IMPACTS RESULTING FROM WILDFIRE SMOKE.

- Support the development of plans to manage smoke, public health, and community readiness for the effects of wildfire.
- Ensure the public receives clear and consistent information and notifications about the use of prescribed fire in and around their communities and is prepared with adequate public health protections.
- Coordinate closely with Montana Department of Environmental Quality and the Montana and Idaho Airshed Group to identify opportunities to increase burn permitting across all ownerships and jurisdictions, when appropriate.
- Support ongoing education and outreach campaigns with the Department of Environmental Quality, Montana and Idaho Airshed Group, conservation partners, local government, fire authorities, and other relevant partners to increase the use of prescribed fire throughout the year.

MAINTAIN OR INCREASE RECREATIONAL OPPORTUNITIES.

- Pursue opportunities to increase access to public lands through a variety of mechanisms including land exchanges, permanent access, and conservation easements.
- Work with the Montana Legislature and U.S. Congress to maintain or increase funding for recreation management.
- Explore opportunities to manage recreational opportunities and visitor use across ownerships and jurisdictions.
- Work to expand education and interpretive opportunities regarding the values, services, and benefits of forests in Montana.
- Expand and promote education and outreach efforts on the benefits of urban and natural forests on human and community health.
- Foster collaboration across agencies, recreation groups, and other appropriate stakeholders to recognize and address ecological and economic impacts of recreational opportunities.

- Increase public awareness and education efforts on the benefits of forest management in maintaining outdoor recreation opportunities.
- Build on the recommendations specifically stated in the *Statewide Comprehensive Outdoor Recreation Plan (SCORP)*:
 - Develop interagency collaborative data collection effort to gauge statewide and regional outdoor recreation-related visitor use.
 - Assist in the establishment of long-term funding for an Access Coordinator that works across jurisdictional boundaries. Identify “locked” public land and develop cross-jurisdictional strategies to find solutions.
 - Support and expand the efforts of the Montana Office of Outdoor Recreation.
 - Promote coordination and communication between outdoor recreation managers and emergency management and first responders.
 - Balance outdoor recreation use with ecological function of natural resources including fish, wildlife, and their habitats.

MITIGATE THE IMPACTS OF CLIMATE CHANGE TO THE PEOPLE OF MONTANA.

- Maintain healthy forests to sequester carbon and maximize human health and ecosystem benefits.
- Support programs to improve community readiness to prepare for and respond to natural disasters.
- Collaborate with tribal nations to support tribal-led projects that address the impacts of climate change on tribal health and wellbeing.
- Support peer-reviewed and agency research on climate change’s effects on human health and forested landscapes.
- Promote the use of urban tree canopy cover as a tool to mitigate the impacts of climate change and urban heat islands.

- Build on the recommendations specifically stated in the *Montana Climate Solutions Plan*:
 - Incorporate strategies from the forthcoming assessment of climate-related health risks and monitor climate-related illnesses to support local, regional, and tribal health providers in response to extreme climate events such as extreme heat, vector-borne diseases, water-related illnesses, food safety and nutrition, wildfires, allergens and air quality, and mental health.
 - Ensure local infrastructure such as schools, hospitals, community centers, and shelters incorporate adaptation strategies to address the needs of the young, sick, aging, and other vulnerable populations related to climate impacts such as smoke and air quality, extreme heat, flooding, winter emergencies, and distributed energy needs.
 - Develop climate information and tools specific to the outdoor recreation and tourism sectors and include climate adaptation strategies related to outdoor recreation and tourism in local plans and policies such as parks and recreation plans and hazard mitigation plans.



Photo courtesy of USFS, Beaverhead-Deerlodge National Forest



Photo courtesy of USFS, Lolo National Forest

SUSTAINING CROSS-BOUNDARY WORK IN MONTANA



Photo courtesy of Visit MT

When it comes to managing Montana’s forests, the challenge of improving forest health and reducing wildfire risk is too great to be accomplished by any single person or organization. That’s why the work of cross-boundary, collaborative forest restoration and management is more pressing than ever. In their deliberations, the MFAAC identified a lack of formal coordination and resources in Montana to facilitate cross-boundary work among resource areas and partners. There are currently partnerships across the state accomplishing cross-boundary work, yet it is often done opportunistically and may only take place where agencies or other partners have staff dedicated to building capacity and coordinating efforts across jurisdictions

At present, agency resources and staffing capacity are not adequate to address the issues facing Montana’s forests with the required urgency. Existing authorities and funding sources are being leveraged with great effect. In order to protect the state’s ecosystems from further harm and safeguard communities and infrastructure from wildfire events, however, increasing the pace and scale of work will require additional resources. As previously stated, estimates show that forest management agencies treat fewer than 100,000 forested acres annually with mechanized means or prescribed fire. At that rate, with nearly 4 million acres identified in the *Priority Areas for Focused Attention*, it would take approximately 40 years to accomplish integrated restoration within those areas alone. All the while, conditions will evolve and present more challenges, likely beyond the extent of these areas.

In conjunction with *Forests in Focus 2.0* and *Shared Stewardship*, the *Montana Forest Action Plan* aims to help localize and facilitate work across boundaries with new partners and extend the effectiveness of already existing authorities to address this capacity issue. By sharing resources, outlining common goals, and supporting enduring partnerships for restoration, outreach, and education, the *Montana Forest Action Plan* will create a roadmap for new collaborative work that will bolster durable, long term solutions.

The goals and strategies outlined in the *Montana Forest Action Plan* are based on a collective understanding of the threats and pressures that the state of Montana, the forests, and its citizens are facing. These recommendations are applicable to all partners throughout the state who work to improve forest conditions and reduce wildfire risk to communities and infrastructure. No one entity has the staffing or capacity to accomplish them individually. State, federal, and tribal agencies, conservation districts, watershed groups, NGOs, private managers, and other relevant partners should view these recommendations as a

foundation to unite behind and begin to collectively discuss and address the challenges faced at the landscape-scale. To help address the capacity issue, the *Montana Forest Action Plan* will support cross-boundary partnerships where they already occur and work to create a body that will provide statewide leadership toward collaborative forest restoration and management efforts.

The Montana Forest Action Advisory Council created the Forest Action Plan Implementation Advisory Committee to ensure that the *Montana Forest Action Plan* catalyzes action. The Implementation Advisory Committee will be responsible for developing novel ways to fund cross-boundary forest restoration work that helps achieve the goals of the *Montana Forest Action Plan*. Through annual requests for proposals, the Implementation Advisory Committee will solicit projects that amplify existing collaboratives and create new opportunities for communities to form coalitions and leverage partnerships.

The Implementation Advisory Committee will oversee and report progress of the Forest Action Plans implementation and cross-boundary projects. Furthermore, the Implementation Advisory Committee will set metrics-based targets that will be measured and reported as a part of project outcomes. Metrics will include acres treated, the number of communities and watersheds protected, acres of wildlife habitat preserved and restored, jobs created, and partners engaged.

To be successful, relationships with cooperators must be strengthened and new partnerships must be forged. Across Montana today, substantial cross-boundary work is taking place, exemplified by strong existing partnerships. Building off of this, the *Montana Forest Action Plan* will help to coordinate work and resources in the most critical areas of the state in order to address the collective problems of improving forest health and reducing wildfire risk.



Photo courtesy of DNRC

RECOMMENDED GOALS AND IMPLEMENTATION STRATEGIES

The *Montana Forest Action Plan* aims to:

Sustain and prioritize landscape-scale, cross-boundary forest management and restoration projects across the state of Montana through collaborative engagement.

Strategies to achieve this goal include:

FORM AN IMPLEMENTATION ADVISORY COMMITTEE THAT WOULD BE ADMINISTRATIVELY ATTACHED TO THE DNRC TO OVERSEE THE IMPLEMENTATION OF THE MONTANA FOREST ACTION PLAN BEYOND THE DISSOLUTION OF MFAAC.

- Oversee, advocate for, and assist with the implementation of the *Montana Forest Action Plan* and ensure efficient, effective, and collaborative cross-boundary management within *Priority Areas for Focused Attention*.
- Seek members with a diversity of perspectives to serve on the committee to ensure that actions reflect a broad set of values surrounding Montana's forests.
- Develop a charter that addresses purpose, roles and responsibilities, membership, voting, and scope of work.
- Identify and release performance targets by Summer 2021, and track them through the *Montana Forest Action Plan*.
- Seek dedicated and additional staffing capacity to sustain cross-boundary work and achieve identified targets.
- Track and annually publish reports on the progress of cross-boundary coordination that work to accomplish the recommendations within the *Montana Forest Action Plan*.
- Increase the pace and scale of cross-boundary projects at both the local and statewide level.

- Facilitate strong partnerships with tribal nations to ensure coordination across sovereign nation boundaries.
- Create additional capacity across the state by leveraging existing authorities, funding, and capacity to increase the pace and scale of cross-boundary work within *Priority Areas for Focused Attention*.
- Identify barriers to accomplishing cross-boundary work and make recommendations to decision-making bodies to remove those barriers.
- Actively support local government and collaborative groups' capacity in engaging in cross-boundary coordination.
- Develop, implement, and fund an adaptive management strategy for the *Montana Forest Action Plan*.
- Amplify existing collaboratives and create new opportunities for communities to form coalitions and leverage partnerships

DEVELOP A STATEWIDE FINANCIAL STRUCTURE THAT POOLS AND LEVERAGES FUNDING TO INCREASE THE AMOUNT OF CROSS-BOUNDARY WORK AND EXPEDITE THE TIMING OF WORK BY AGENCIES, PARTNERS, TRIBAL NATIONS, COLLABORATIVES, CONSERVATIONS DISTRICTS, WATERSHED GROUPS, AND OTHER RELEVANT PARTNERS.

- Initiate an annual RFP process to award funds that enhance capacity, and work to progress the goals and strategies called for in the *Montana Forest Action Plan*.
- Coordinate with other grant managers to create a single portal for applicants looking for funding opportunities that are applicable to their goals and individual eligibilities.
- Encourage consistency in grant management processes among different funding entities to streamline project implementation across jurisdictional boundaries.

SUPPORT LOCALIZED CROSS-BOUNDARY COORDINATION THROUGHOUT THE STATE OF MONTANA.

- Build and strengthen relationships with tribal nations to help facilitate cross-boundary projects that benefit tribal members and surrounding communities.
- Promote the use of cross-boundary decision support tools such as the *Priority Areas for Focused Attention* Interactive Dashboard.
- Promote and support local collaboration efforts through funding, peer-learning, or other identified mechanisms. Work in close partnership with the Montana Forest Collaboration Network, the Montana Watershed Coordination Council, Montana Association of Conservation Districts, and other organizations to support collaborative engagement at the local level.
- Encourage local cross-boundary coordinating bodies to engage with collaborative groups, tribal nations, local government, and other stakeholders to prioritize work in and around communities.
- Assist local cross-boundary coordinating bodies in developing governance structures and finding capacity to ensure that coordination continues over time.
- Promote and support the use of authorities and programs developed to increase the pace and scale of forest management and restoration, such as Good Neighbor Authority, Stewardship Agreements and Contracting, Collaborative Forest Restoration Program, Environmental Quality Incentives Program, and Joint Chief's Landscape Restoration Partnership.

HOW CAN PARTNERS USE THE FOREST ACTION PLAN?

The *Montana Forest Action Plan* sets a framework for coordinated, targeted actions and investments that will be critical to reducing wildfire risk and improving forest health conditions across the nearly 4 million acres identified to benefit from management actions. We hope that local land managers and collaboratives will use the *Montana Forest Action Plan* to refine their analyses and start a dialogue about how to leverage

resources and staff to meaningfully address the most pressing concerns facing our forests. The *Montana Forest Action Plan* will help land managers and local decision-makers sequence programs of work and collaborate across jurisdictional boundaries to address wildfire risk and forest health issues while ensuring the safety and resilience of our communities and infrastructure.

LOCAL GOVERNMENT ENGAGEMENT AND MONTANA FORESTS

Local governments across Montana play a key role in working with agencies, landowners, and stakeholders across all lands within their jurisdiction. County commissioners and staff work with state and federal managers to help align federal plans and projects with county plans, goals, and priorities. DNRC's Local Government program has expanded the capacity for county commissioners and staff to engage with federal land managers by providing technical assistance and

funding. In this expanded capacity counties and their collaborative groups regularly review and comment on federal plans, and projects and may choose to support the federal agencies in litigation.

These deliberate engagements have strengthened project proposals and increased local government support for active forest restoration and management activities.



Photo courtesy of USFS, Flathead National Forest

ACKNOWLEDGMENTS

Over one year ago, Governor Bullock appointed a number of individuals to the Montana Forest Action Advisory Council who not only had careers and livelihoods connecting them to Montana's forests, but who also had a history and commitment to collaboration. This group of individuals traveled during inclement weather, devoted hours to reviewing documents, sorting through and worked to understand data, and adapted to a world of virtual meetings to complete the *Montana Forest Action Plan*. We are indebted to these public servants and thank them for their engagement, thoughtful deliberation, expertise, and leadership. Through their efforts, they are changing the culture of how to work together across real and perceived boundaries to address the most pressing issues facing Montana's forests.

This group was supported by a small team of dedicated individuals who worked to ensure that the process of MFAAC was inclusive, honored its members' engagement and expertise, and produced outcomes that will ultimately change how to work together on forestry issues across the state of Montana. Without the Core Team, this effort would not have been possible. Those members are:

Wyatt Frampton, DNRC Project Leader
Paige Cohn, DNRC
Kristin Sleeper, DNRC
Samantha Treu, DNRC
Nick Youngstrom, DNRC
Matt Arno, DNRC
Brian Collins, DNRC
John Hagenruber, USDA FS

Thank you to the Montana Forest Action Advisory Council Co-Chairs, Montana State Forester Sonya Germann and USDA Forest Service Region One Regional Forester Leanne Marten for their leadership and guidance of the Core Team and MFAAC.

We would like to thank the members of the MFAAC Leadership Committee who worked hard to ensure the process was inclusive, collaborative, and who provided invaluable guidance to the Core Team. Those members are:

Commissioner Carol Brooker
Commissioner Mark Peck
Jim Durglo, Intertribal Timber Council and Confederated Salish and Kootenai Tribes
Gordy Sanders, Pyramid Mountain Lumber

Darcie Warden, Greater Yellowstone Coalition
Tim Love, Montana Forest Collaboration Network
Dr. Tom DeLuca, University of Montana W.A. Franke College of Forestry and Conservation

We would like to thank the other members of MFAAC who provided invaluable leadership on committees, reviewing documents, and finding consensus on difficult topics. Those members are:

Mark Aagenes, The Nature Conservancy
Fred Bicha, President of the Montana Urban and Community Forestry Program
Tony Colter, Sun Mountain Lumber
Steve Hedstrom, Montana Association of Conservation Districts
Blake Henning, Rocky Mountain Elk Foundation
Holly McKenzie, Private Forest Landowner
Pete Nelson, Defenders of Wildlife
Jack Rich, Montana Outfitters and Guides Association
Jeff Schmidt, Red Lodge Mountain
Tom Schultz, Idaho Forest Group
Land Tawney, Backcountry Hunters & Anglers
John Todd, Montana Wilderness Association
Jason Todhunter, Montana Logging Association
Ethan Kunard, Montana Watershed Coordination Council
Terry Spang, Northern Cheyenne
Clarence Sivertsen, Little Shell tribe of Chippewa Indians
William Walks Along, Northern Cheyenne
Raymond King, Fork Belknap

We would like to thank our ex-officio interagency partners who provided expertise, data, funding, and content for all aspects of the *Montana Forest Action Plan*. Those members are:

Delila Bruno, Disaster & Emergency Services
Jodie Bush, United States Fish and Wildlife Service
David Klemp, Montana Department of Environmental Quality
Dawn LeFleur, Glacier National Park
Rick Northrup, Montana Department of Fish Wildlife and Parks
Mike Philbin, Bureau of Land Management
Kyle Tackett, Natural Resources Conservation Service
Tom Watson, Natural Resources Conservation Service

And thank you to the outstanding facilitation team with the National Forest Foundation. Without the excellent and dedicated work of Karen DiBari, Spenser Plumb and Holly Nesbitt, our meetings would not have produced such excellent outcomes.

Many thanks to the following additional state and federal staff who supported the Core Team and provided assistance throughout the process: Katie Alexander, Matt Anderson, Michelle Anderson, Paul Azevedo, Kristen Baker-Dickenson, Mo Bookwalter, Steve Brown, Brenda Christensen, Jennifer Coulter, Shelagh Fox, Amy Gannon, Ian Harris, Liz Hertz, Ashley Juran, Jamie Kirby, August Kramer, Lucas Kopitzke, Meghan Montgomery, Tom Perry, Jeremy Rank, Andy Ray, Corey Richidt, Bob Storer, Abigail Varney, Ella Varney, Erik Warrington, Kate Wilson, and Roger Ziesak.

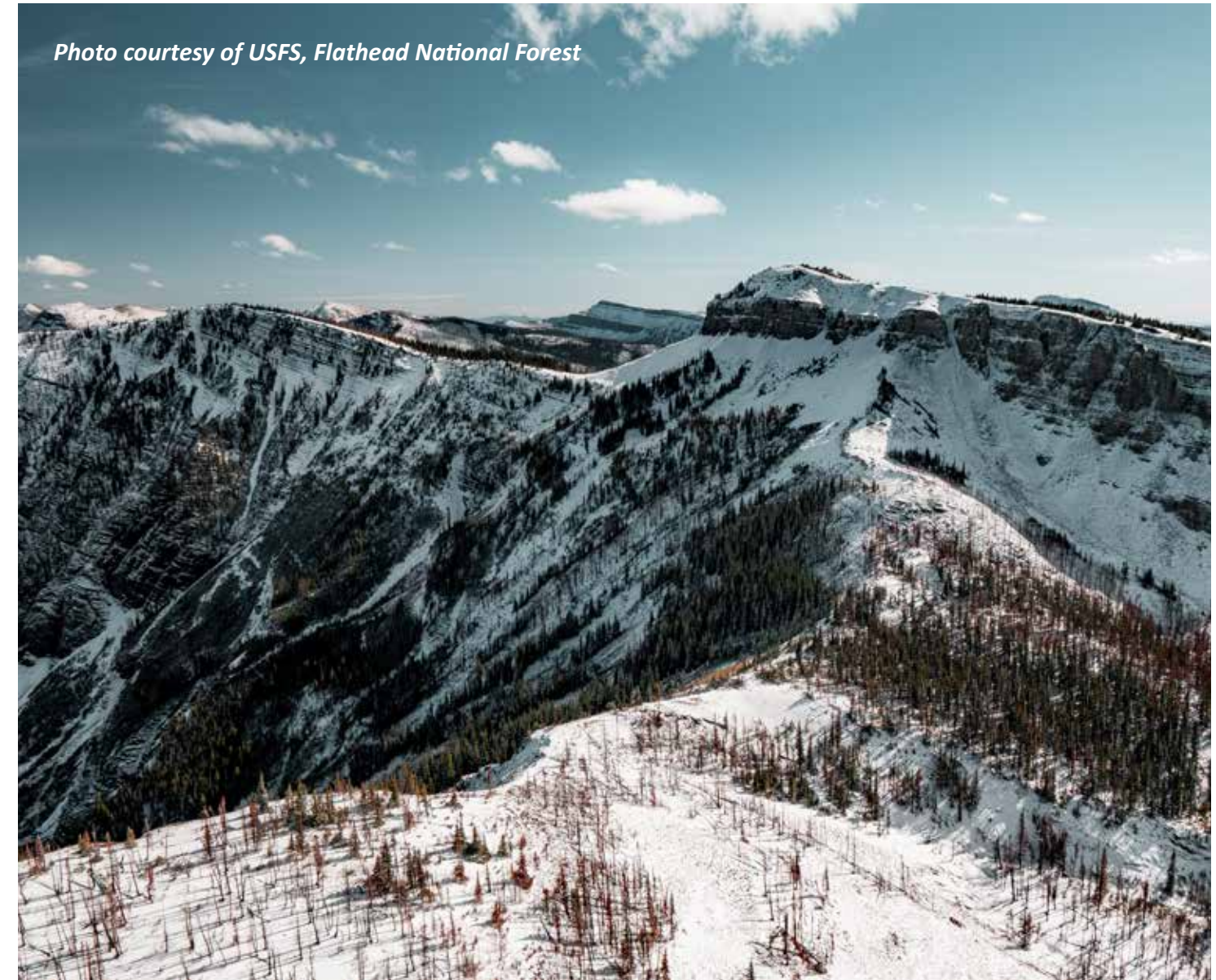
For their extensive work and generosity as contributing authors to the *Montana Forest Action Plan*, we

would like to especially thank the Séliš-Qłispe Culture Committee of the Confederated Salish and Kootenai Tribes. We are especially indebted to Director Tony Incashola and Tribal Historian Thompson Smith, who wrote the *Indigenous Peoples and Forests* section and provided the Core Team with invaluable guidance and input throughout the process.

Special thank you to the University of Montana Staff and Faculty at the W.A. Franke School of Forestry and the Bureau of Business and Economic Research, the Montana Department of Commerce and Visit MT, and the Council of Western State Foresters.

For their foresight and dedication to natural resources in Montana, thank you to Governor Steve Bullock, Lt. Governor Mike Cooney, Policy Advisor for Natural Resources Patrick Holmes, and the Montana Department of Natural Resources and Conservation Director John Tubbs and Deputy Director Kerry Davant.

Photo courtesy of USFS, Flathead National Forest



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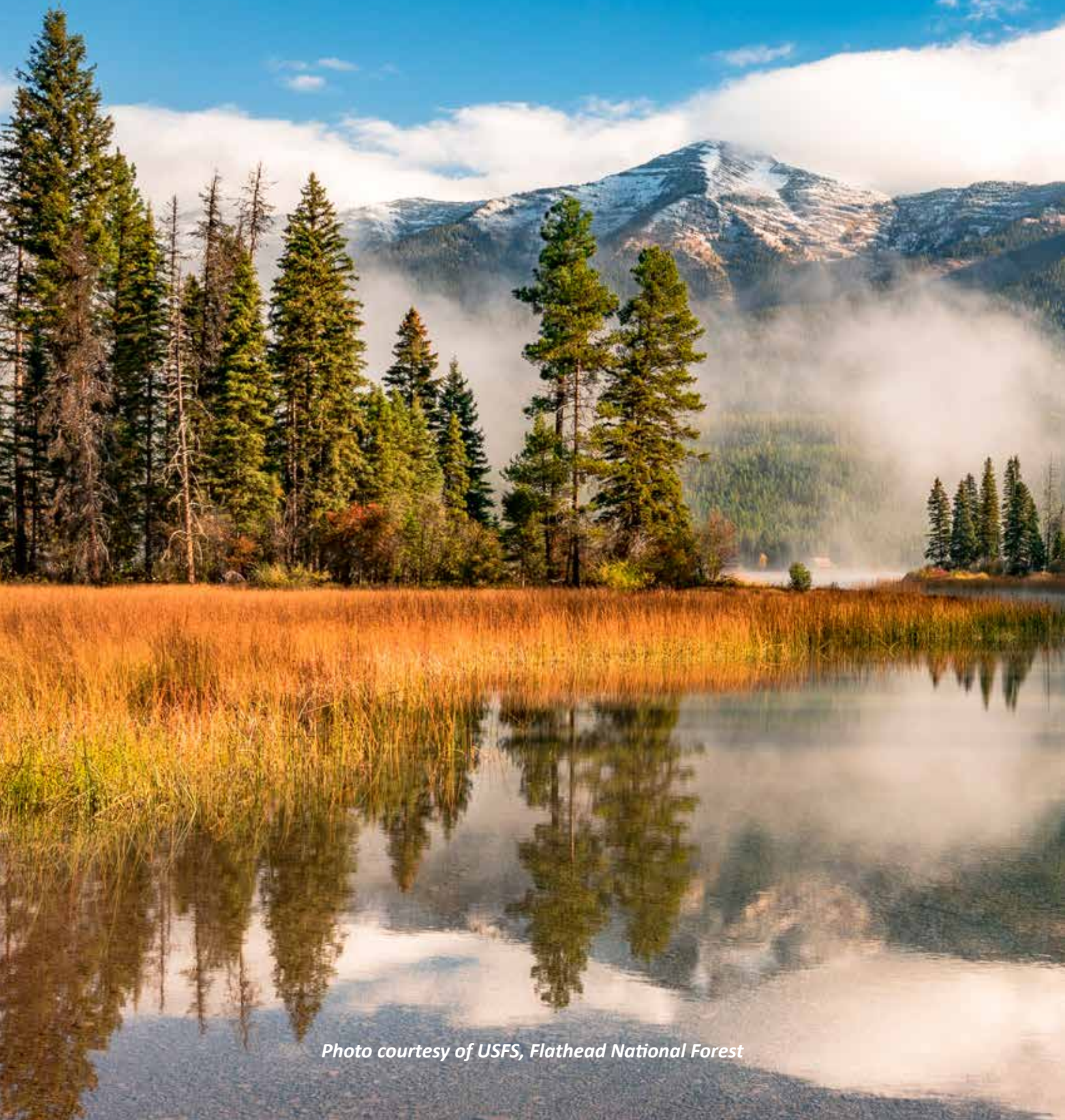


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