



DIVISION OF FISHERIES & WILDLIFE

Montague Plains WMA Habitat Restoration Summary CT-MP-TS8

Location

Site: Montague Plains WMA

Town: Montague

District: Connecticut Valley

Project Area

265 Acres

MassWildlife's Approach to Habitat Management

MassWildlife uses habitat restoration and management to conserve both common wildlife and vulnerable species, including rare plants and animals protected by the Massachusetts Endangered Species Act (MESA) and other declining Species of Greatest Conservation Need (SGCN) identified in the Massachusetts State Wildlife Action Plan (SWAP). As part of this effort, biologists plan and implement projects to create, restore, and maintain a variety of healthy habitats to increase biodiversity and climate resiliency across our forests, wetlands, streams, fields, and more.

Biologists plan habitat projects that may include tree cutting, mowing, and mulching to strategically increase open habitats, promote patches of vigorous young forest, restore natural processes, and remove invasive plants. This project has been designed to ensure consistency with recommendations for climate-oriented forest management provided by the Climate Forestry Committee ([Climate Forestry Committee Report, 2024](#); see below).

Site Significance

The project area covers approximately 265 acres within the 2,000-acre Montague Plains Wildlife Management Area (WMA) (Fig 1). This project builds on two decades of successful restoration at the WMA that supports a suite of barrens communities, including pitch pine-oak woodlands, heathland, and scrub oak shrubland. Over 25 rare and declining plant and animal species occur in this globally and regionally important barrens. Montague Plains WMA is home to the greatest diversity of native bees documented in Massachusetts, which benefit from exposed mineral soils and abundant flowering plants. Many specialized moths and butterflies benefit from extensive shrubby understories, which also provide excellent cover for ground nesting birds, like American woodcock and eastern whip-poor-will.

Targeted management will create continuity between adjacent parcels of the WMA that have already been restored using tree harvest, prescribed fire, and invasive plant removal. This will directly benefit

MESA-listed birds, reptiles, insects, and plants that thrive in these fire-influenced habitats, as well as common wildlife.

Project Activities and Expected Outcomes

Targeted tree thinning and removal will be conducted across approximately 265 acres at varying intensities to stimulate different understory vegetation responses. Individual trees or clusters of trees with high ecological value will be retained to provide habitat resources for wildlife. The work will enhance continuity across the interior of this WMA for the benefit of barrens wildlife and make the use of prescribed fire safer and more effective. This project aims to restore priority natural communities and associated SWAP listed species.

This project will thin approximately 20 acres (northern unit) of pole sized hardwoods to reduce generalist species and allow understory shrubs and oak trees to grow. Approximately 70 acres (central unit) of closed-canopy pitch pine-white pine-oak forest will be thinned while pitch pine, oak, and hickory, along with occurrences of sassafras and chestnut, will be retained. A 15 acre area (southern unit) requires the removal of fallen and downed trees impacted by a wind event in early 2026 to maintain public safety along a developed boundary of the WMA.

Tree removals will create space between healthy overstory pine, oak, and hickory trees. This will allow additional light to stimulate growth of understory vegetation, such as black huckleberry and blueberry, which will benefit MESA species. Spacing pitch pine approximately 30 feet apart will make the forest more resilient to potential southern pine beetle infestations. The reduction in woody fuels will allow for the safe application of prescribed fire. Project design will consider future site management and consultation with fire ecologists will explore the placement of new fire breaks.

Project planning and oversight will be implemented by a team of experienced habitat biologists and restoration ecologists. This project will build on past successful habitat work in the area. Planned activities will promote a mix of barrens habitats, including pitch pine-oak woodlands and scrub oak shrubland, and diversify the habitats currently available in the area.

Highlights:

- Thinning and removal of pitch pine will create a partially open canopy that will reduce wildfire risk and act as a preventative measure for pests like the southern pine beetle.
- Tree cutting will promote the growth of understory vegetation, like blueberry, huckleberry, and scrub oak, which will benefit MESA-listed insects that rely on these plants for food, shelter, and reproduction. This activity will also improve habitat for many declining native plants, provide additional mast, like fruit and nuts, and create conditions in the understory that benefit ground-nesting birds and other wildlife.
- Fuels reduction to enable the safe application of prescribed fire.

Climate Considerations

This project was designed to ensure consistency with recommendations for climate-oriented forest management provided by the Climate Forestry Committee and includes:

- Thinning to decrease tree density reducing vulnerability to wildfire and harmful insects, like the southern pine beetle;
- Thinning to prepare the site for the reintroduction of low-intensity prescribed fire to restore resilient native fire-influenced natural communities; and
- Restoring fire-influenced ecosystems that provide reliable carbon sinks in the long term compared to vulnerable dense fire-excluded forests.

See page 5 for more details.

Project Proposal Map

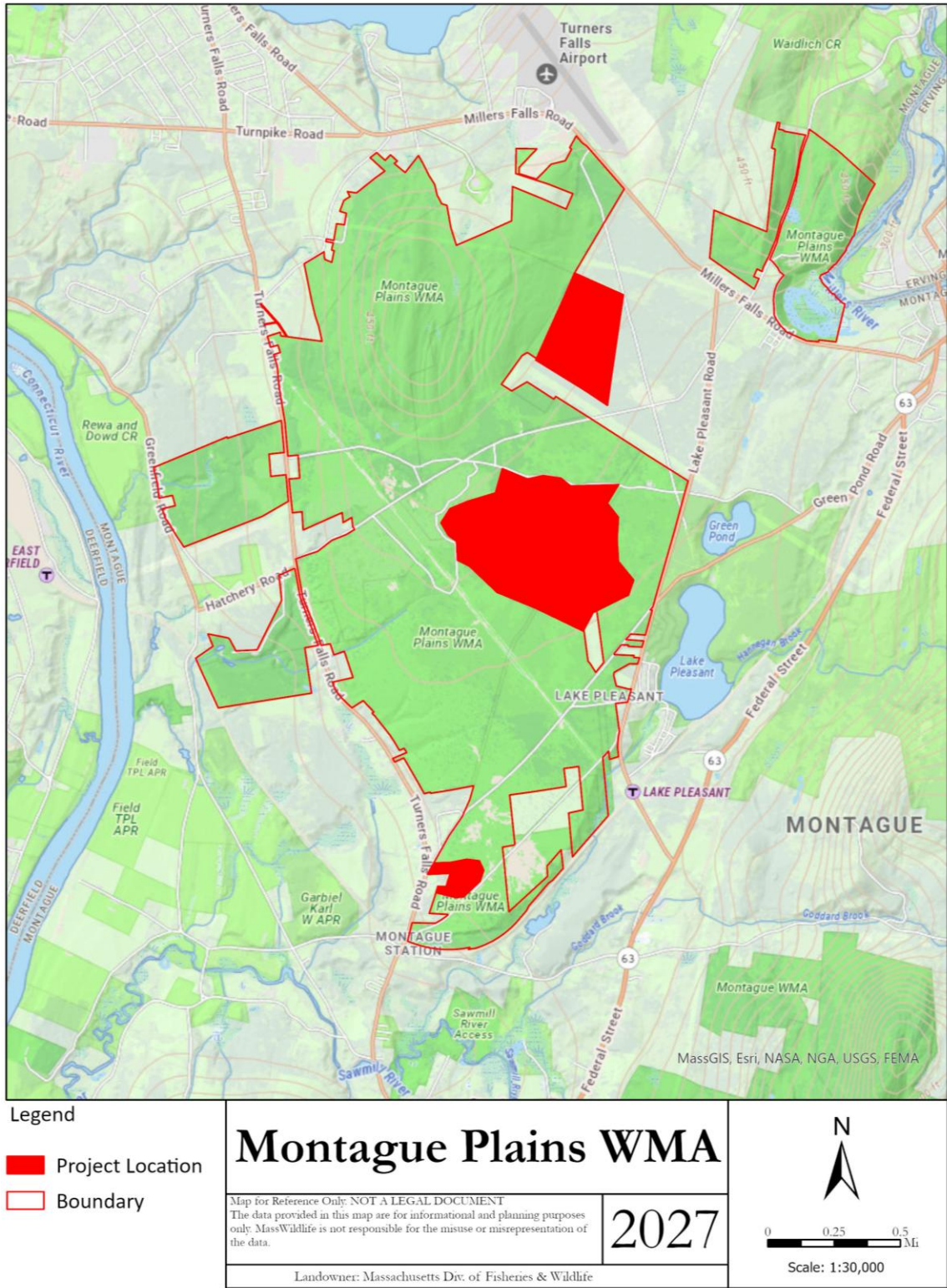


Figure 1. Map of Montague Plains Wildlife Managements WMA with highlighted project area.

Climate Considerations Details

MassWildlife has determined that the decision to implement this project is consistent with EEA climate goals and guidelines and agency land management objectives. Carbon and climate change considerations specific to the activities proposed for this project are discussed below.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
<p>Invasive plant control, including pre- and/or post-harvest and follow up treatments.</p>	<p>Strong consensus exists among land managers and climate science experts regarding the threat to future forest health posed by the introduction and spread of invasive plants. Invasive plants can:</p> <ul style="list-style-type: none"> • aggressively outcompete native plant species, • dominate understory communities, and even climb, kill, and topple mature trees, • threaten overall biodiversity. • threaten soil health and long-term carbon storage. <p>Monitoring and controlling invasive and interfering plant populations prior to and following forestry operations is a critical practice for minimizing the risk of further impacts inadvertently (though not unexpectedly) spread by harvesting-related activities.</p>
<p>Habitat restoration and maintenance prescribed fires—heath, shrubland, woodland, or grassland.</p>	<p>Prescribed Fire is the planned use of fire in a particular place and time, under established conditions and safety requirements to accomplish resource management goals.</p> <ul style="list-style-type: none"> • Prescribed fire improves habitat for a variety of wildlife and native plants and restores natural communities dependent on fire. • In fire-influenced natural communities, fragmentation of the landscape and the suppression of fires (prescribed or natural) leads to accumulation of volatile hazardous fuels in the surface, mid-story, and canopy vegetation layers. • Excessive vegetation density negatively impacts the habitat quality of the natural community and may eventually lead to fuel buildup and unplanned, catastrophic wildfire. • Prescribed fires that reflect natural return intervals increase below-ground carbon storage and sequestration. <p>The consequences of catastrophic wildfires include:</p> <ul style="list-style-type: none"> • The release of large amounts of carbon including soil carbon. • Tree mortality. • Severe soil, duff, and below ground vegetation impacts. • Potential alteration of soil chemistry. • Threats to firefighter safety, human communities, and property damage. • Threats to human health from severe smoke impacts both locally and potentially at long distances.
<p>Silvicultural burning for initiating/maintaining regeneration.</p>	<p>Although most often used in Massachusetts for open habitat maintenance, prescribed burning is also used within oak forests in Massachusetts and elsewhere for silvicultural purposes. Fire rapidly converts a fraction of a forest’s stored organic carbon into other forms including CO₂ but carefully applied use of low intensity fire offers great payback value in trade for this minor loss. Prescribed fire can:</p>

	<ul style="list-style-type: none"> • prepare a site for reforestation, • discourage invasive species, • and encourage native tree regeneration better adapted to fire regimes, particularly oak and hickory. <p>Forest stands treated with periodic light burning exhibit reduced biomass losses in the event of a wildfire, generally have more resistance to pathogens, and should be more resilient under climate scenarios that anticipate more frequent drought facilitated fires.</p>
<p>Establishing and/or maintaining fuel/fire breaks.</p>	<p>Climate models predict drought and wildfire potential increasing in the region due to climate change, and the agency is adopting strategies to both reduce the risk of catastrophic fire spread and maintain fire-adapted habitats. Fuel breaks and fire breaks are essential tools for both prescribed burning and wildfire control.</p> <p>Fuel breaks are:</p> <ul style="list-style-type: none"> • vegetated areas, • maintained at lower structure and density, • designed to slow the spread of fire, • designed to control prescribed fire or wildfire, • opportunities to encourage open woodland, shrubland, or grassland natural communities. <p>Fire breaks may be natural or constructed barriers to the movement of fire, with some examples being:</p> <ul style="list-style-type: none"> • open water, • paved roads, • graveled woods roads, • trails, • and periodically mowed paths (“fire lines”). <p>The fuel and/or fire breaks proposed in this project were designed as part of agency planning efforts for fire control and management for this area within a framework of reducing climate vulnerability.</p>
<p>Tree mowing (for maintaining aspen, e.g.)</p>	<p>Mowing is used to perpetuate both non-forest (grasslands) and young sproutland forest conditions within a given footprint on the landscape. This practice is one dependable way to provide such critical habitats in the absence of discrete localized natural disturbances such as flooding or fire. Mowing to reset the development of a stand that has grown out of the sapling stage is recommended as one climate-smart alternative to achieve the agency’s young forest habitat goals (rather than harvesting mature forest stands over time in a mosaic of large adjacent patches). Although mowing and mulching trees in place aligns with carbon objectives and avoids harvesting older forest, it can be prohibitively costly to implement.</p>
<p>Diffuse overstory removal, partial cut, habitat modification/maintenance.</p>	<p>Open woodlands, savannas, barrens, and heathlands are low tree-density, fire-dependent forests with diverse understory vegetation critical for conserving many state-listed rare species. They are imperiled across Massachusetts due to development and negative ecological alterations resulting from a lack of management primarily decades of fire exclusion. Climate experts recommend prioritizing and maintaining sensitive or at-risk species and habitat, with the expectation that pressure on these will only increase with changing climate. Ecological restoration of these sites ensures continued habitat function and reduces climatic vulnerability:</p>

	<ul style="list-style-type: none"> • Reducing tree density reduces vulnerability to pests like southern pine beetle and to drought stress. • Restoring native species that are best adapted to the site promotes resilience to future drought, wildfire, and harmful insects. • Reintroducing low-intensity fire promotes resilient native vegetation. • Removing heavy fuel loads reduces vulnerability to wildfire. • Restoration better positions these sites to adapt to climate change. • Restored sites are more reliable carbon sinks in the long term than highly vulnerable dense fire-excluded forests. <p>The agency recognizes that this site may store less carbon than denser forests in the short term. But climate models predict an increase in disturbance on these sites including drought, wildfire and range expansion of harmful insects that puts a dense fire suppressed forest at greater risk of becoming a carbon source in the long term. Projects like this are undertaken on Federal, state agency, and other conservation lands across the Commonwealth, under the guidance of collaborative teams consisting of biologists, restoration ecologists, foresters, and fire management professionals.</p>
<p>Pest or pathogen related pre-salvage or sanitation harvest.</p>	<p>Salvage operations in response to a disease or pathogen are usually focused on one or more of the following: removing host trees, increasing the spacing between host trees, and/or disrupting the life cycles of the agent. These activities are designed to both stop the spread of the pathogen and begin reducing the pathogenic agent’s population, potentially allowing the stand to fight the infestation on its own. In Massachusetts large scale pest and pathogen outbreaks that threaten the functioning of forested system have been caused by non-native insects and diseases.</p> <p>Responses to infestations are determined by the agent, but common activities include one or more of the following:</p> <ul style="list-style-type: none"> • Heavy thinning in preparation of an outbreak the virtually eliminates competition between trees and significantly increases the availability of essential resources; light, moisture, growing space, and nutrients. <ul style="list-style-type: none"> ○ The reduced stand density minimizes opportunities for chemical signatures such as pheromones and the volatile chemicals released by stressed trees to build up and encourage additional swarming and feeding behavior. • All host trees are removed within a prescribed radius of an infested tree. • Pathogen specific chemical treatments. <p>Opportunities to incorporate climate smart practices can include:</p> <ul style="list-style-type: none"> • Depending on the agent, trees that have already been killed might be left in the woods to maintain carbon stocks on the landscape. • Pre-salvage operations usually have a higher proportion of sound wood that can be used for long-lived durable goods, as compared to active infestation or post infestation salvaged wood.