DIVISION OF FISHERIES & WILDLIFE

Birch Hill-Deland Road WMA Habitat Restoration
CE-BH-TS3

Location

Site: Birch Hill WMA
Towns: Royalston and Winchendon
District: Central

Project Area

110 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 improve, 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, or 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

This 110-acre project area lies within the 4,500-acre Birch Hill Wildlife Management Area (WMA) along Deland and Royalston Road North. The project site was selected because of the physical and vegetation characteristics, along with associated species, that indicate a successful restoration potential for fire-influenced barrens and oak/pitch pine habitat. The site is located on flat kame terraces of sand and gravel outwash, which currently support vegetation indicative of fire-influenced natural communities. This includes pitch pine and oak trees and an understory of blueberry, huckleberry, and sheep laurel. This site follows similar patterns of vegetation composition and habitat suitability as nearby restored sites on Birch Hill WMA located a mile to the south along the same Priest Brook drainage. The site is mapped as NHESP priority habitat for three MESA-listed species, which will benefit from these habitat restoration efforts.

The project will complement past successful habitat work that started in 2019 at Birch Hill WMA off New Boston Road, which is now supporting numerous MESA species and SGCN. Targeted management will

add ecological diversity to this already-rich landscape and will directly benefit plants and animals identified SGCN in the Massachusetts SWAP, along with common wildlife.

Project Activities and Expected Outcomes

Selective tree harvest will occur on approximately 110 acres to restore an open woodland habitat. The tree removal allows more sunlight to reach the ground, helping native plants grow and support rare and declining wildlife. Some trees, especially oak and pitch pine, will be kept because they provide important food and cover to wildlife. Other generalist tree species, such as white pine, eastern hemlock, and red maple, will be removed. Prescribed fire will be used in the future to help native plants thrive and keep the woodland open for critical species of conservation concern.

Tree harvesting is often required as an initial step in restoring fire-influenced natural communities that have experienced long-term fire exclusion. These harvests are designed to remove the generalist, non-fire-tolerant tree species that would have been naturally suppressed when these landscapes were exposed to fire on an occasional basis. Tree harvesting is meant to reset the composition and structure typical of woodland communities. Following the harvest, long-term restoration and management activities will focus on invasives plant control and periodic prescribed fire.

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 develop open habitats and diversify the habitats currently available in the area.

Highlights:

- Targeted tree removal will create conditions that promote vigorous growth of overstory oak and pitch pine trees, blueberry heathlands, as well as oak regeneration, to provide cover for declining wildlife, including ruffed grouse, Eastern whip-poor-will, and prairie warblers.
- Tree cutting and the use of occasional prescribed fire for long-term habitat maintenance will promote the growth of understory vegetation, like scrub oak, black huckleberry, and lowbush blueberry, that will provide high-quality habitat for vulnerable and common insects and other types of wildlife.

Climate Considerations

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

- Invasive plant control, including pre- and/or post-harvest and follow up treatments;
- Diffuse overstory removal, partial cut, habitat modification/maintenance; and
- Habitat restoration and maintenance prescribed fires - heath, shrubland, woodland, or grassland.

See page 4 for more details.

Project Proposal Map

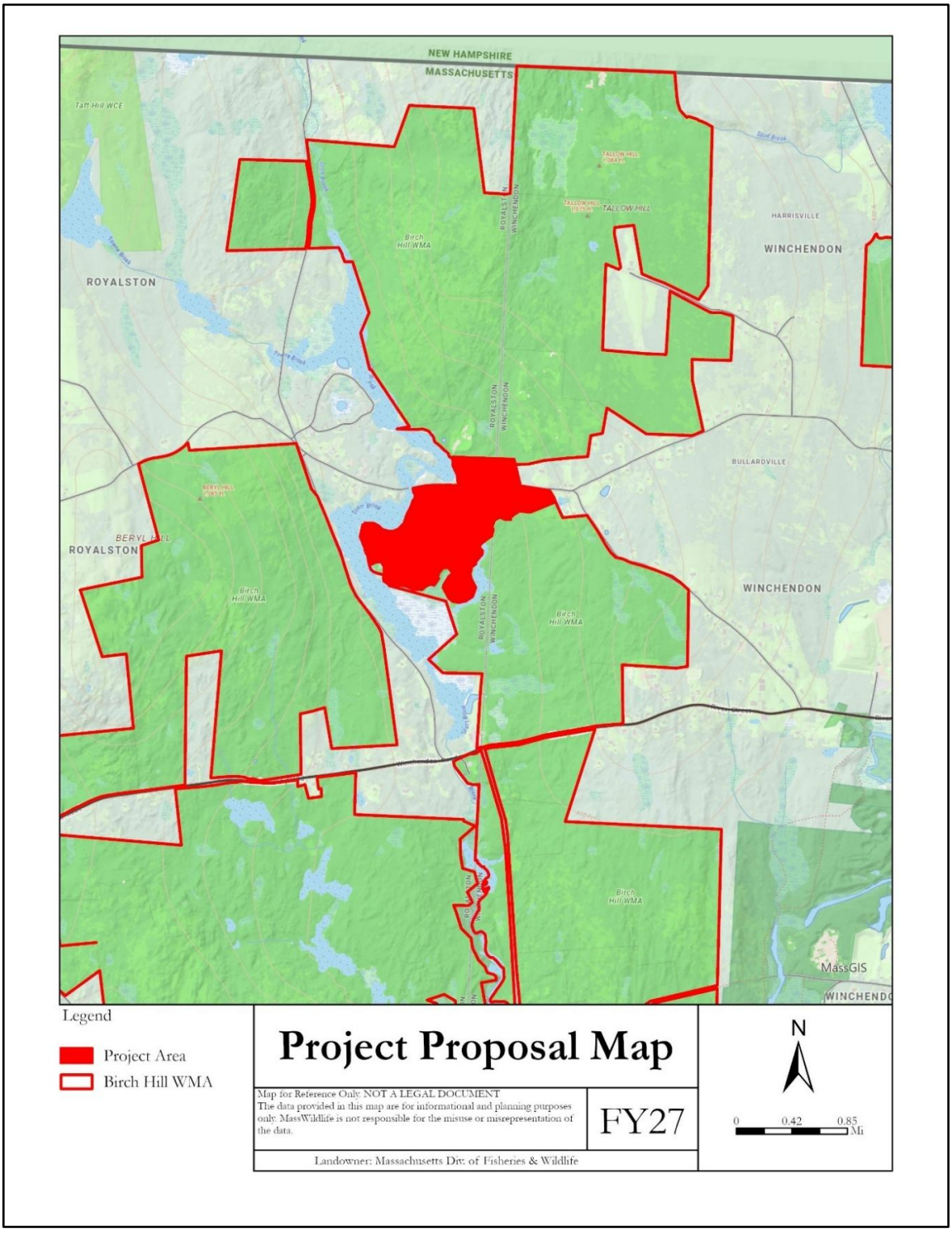

Figure 1. Map of Birch Hill WMA with highlighted project area

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
Access improvements (landing improvements, gravel, road grading, ditch maintenance, road widening, straightening, and alteration of intersections).	Roads, landings, and associated infrastructure are critical for access by both the public and natural resource managers. These infrastructure elements are also associated with both **vulnerabilities** and **opportunities** in terms of climate change **resiliency**. **Vulnerabilities:** • Roads occupy areas that would otherwise be carbon rich forest. • Road edges can become avenues for the spread of invasive species. • Roads have the potential for sediment transport into surface water resources. **Opportunities** • A well-designed and well-maintained access system makes all other land management and monitoring activities possible while minimizing impacts. • Roads provide for public access including hiking, hunting fishing, etc. • Roads are critical for both Emergency Response (Injuries, Accidents, etc.) and Incident Stabilization (fire, flood, storm damage, etc.) Given the predicted **increase in storm frequency and intensity**, improving and maintaining roads, road surfaces, and stormwater infrastructure is imperative. • Proper surfacing, grading, and ditching **minimize erosion** from stormwater and snowmelt. • Periodic maintenance is required to **avoid water channelizing** within compacted tire paths. • **Adding gravel** or other material to the road surface helps support the **heavy vehicle traffic** associated with forestry work, fire operations, and post-storm recovery efforts. Alterations (**widening, straightening**) are often needed to upgrade old, narrow farm lanes to meet modern vehicle access needs. • Ditching, cross culverts, and relief cuts can be designed with **future storm intensities** in mind and should minimize, to the greatest degree possible, impacts to surface water resources. Most log landings are **temporary** in nature. Permanent landings that are properly located and well-built can serve as permanent access infrastructure, concentrating activities and minimizing the non-forested footprint required to conduct agency management. Whether temporary or permanent, the use, maintenance, and stabilization of landings will include considerations of **future climate change impacts**. Landing BMPs include:

	• **Post-harvest stabilization** measures such as grading and smoothing to prevent erosion and sedimentation. • **Seeding** to provide cover and further stabilize the soil. • **Invasive plant survey and control** to minimize further infestation risks. • Periodic mowing of permanent landings to allow herbaceous and shrubby vegetation to dominate the site between harvests, adding **diverse habitat opportunities** for local wildlife.
Erosion and sedimentation control installation, including water bar installation and seeding landings and other disturbed areas.	Water bars help stabilize skid trails and ensure that **excessive erosion** is avoided while maintaining the site for future forestry operations. Properly stabilized skid trails will **revegetate** naturally while being discernable enough to use in future operations. Beyond compliance with the BMP manual standards, the size and frequency of water bar installation, and degree of stabilization, should be determined by: • **Other uses** that may occur between operations, e.g. hiking trails, snowmobiles trails, use as firebreaks, or unauthorized uses (OHV/ATV) • The **impacts of future climate conditions**, especially more frequent storms. If the area is already known to be wet, and in the future **more frequent storms are expected**, more water bars than what may be normally installed are encouraged. • **Soil type**. Land managers may consider seeding and mulching water bars on highly erodible soils, steep slopes, or excessively wet areas to ensure longevity and prevent water bar degradation.
Temporary stream or wetland crossing.	Temporary stream crossings are occasionally necessary to facilitate forest management activities, though careful project layout can help **minimize the number of stream crossings required**. • Crossing design, installation, maintenance, and removal should be done in accordance with the highest standard BMPs to minimize impacts to sensitive stream and wetland resources. • Plan for worst case **climate scenarios** that generally indicate a greater frequency of higher intensity precipitation events. • Changing **climatic conditions** change will require the continuous evaluation on the types of structures used.
Invasive plant control, including pre- and/or post-harvest and follow up treatments.	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: • 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**. **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.
Habitat restoration and maintenance prescribed fires—heath, shrubland, woodland, or grassland.	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. • 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.** The consequences of **catastrophic wildfires** include: • 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.
Establishing and/or maintaining fuel/fire breaks.	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. **Fuel breaks** are: • **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. **Fire breaks** may be natural or constructed **barriers to the movement of fire**, with some examples being: • open water, • paved roads, • graveled woods roads, • trails, • and periodically mowed paths (“fire lines”). 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**.

Diffuse overstory removal, partial cut, habitat modification/maintenance.	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: • 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. 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.