DIVISION OF FISHERIES & WILDLIFE

High Ridge WMA Habitat Restoration Project Summary
CE-HR-TS5

Location
Site: High Ridge Wildlife Management Area (WMA)
Towns: Gardner, Westminster
District: Central

Project Acres
~170 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 2,358-acre High Ridge WMA has a wide diversity of habitats, including 193 acres of permanent fields, 413 acres of wetland and open water, and 1,752 acres of central hardwood, northern hardwood, and mixed-wood forests. The WMA is home to numerous SWAP species and several MESA-listed species, contains one stream designated as a Coldwater Fish Resource, and is an important property for outdoor recreation, including pheasant hunting and birding.

The broad vision for this WMA is to carry out restoration projects to promote a diverse mosaic of high-quality conditions across the forests, grasslands, streams, and wetland habitats through a variety of practices that are designed to directly benefit MESA-listed species and SGCN species, along with promoting habitat for game species.

Project Activities and Expected Outcomes

The project area covers both 120 acres of forests and 50 acres of fields and grasslands. Select tree removal will occur at varying intensities to promote the growth of diverse regenerating trees, understory shrubs, grasses, and forbs.

To promote young forest habitat conditions, select areas totaling up to 50 acres will have 60–90% of the overstory tree canopy removed, resulting in the dense growth of tree saplings, such as maple, aspen, white pine, and cherry, along with flowering plants, including goldenrod and asters, to benefit a wide variety of declining wildlife including pollinators. Retention of individual and groups of healthy large trees will provide mature forest attributes within the matrix of regenerating forest and will result in a more diverse plant community. Retention of healthy oak and cherry trees will provide both hard and soft mast, while retention of hemlock will provide cover, all of which will provide benefits to both game and nongame wildlife species utilizing young forest habitat.

Up to 70 acres will be managed for partially open forest conditions, where select removal of 20–40% of the tree canopy will create patches of dense understory vegetation. This will result in a predominant mature forest overstory with intermittent openings containing regenerating trees, shrubs, and flowering plants that prefer partial light conditions. This will provide important cover, nesting, and foraging sites for species in decline and will provide a gradual transition from the more open canopy young forest conditions into a more closed canopy forest.

Within the 40-acre portion of this unit that encompasses the grasslands, islands, and rows of non-native and non-desired trees, like scotch pine and plantation red pine will, be removed, mulched, or mowed, and invasives will be removed, to improve habitat for grassland species. Field edge feathering, by cutting or mulching trees and other vegetation along the borders of fields, will create a gradual transition between field and forest habitats, making it more suitable for wildlife.

Throughout the project area snags, cavity trees, and others with high habitat value will be retained to provide wildlife with food, cover, and space to survive and reproduce while adding complex forest attributes. Project planning and oversight will be implemented by a team of experienced Habitat Biologists.

Highlights:

- The creation of gradual transitions between field and forest habitats will benefit numerous SGCN species, including eastern whip-poor-will, chestnut-sided warbler, eastern towhee, prairie warbler, ruffed grouse, Nashville warbler, American woodcock, brown thrasher, white-throated sparrow, black-billed cuckoo, smooth greensnake, and wood turtle.
- The improved age class diversity and structural complexity resulting from the harvests will provide high-quality habitat and critical resources for SGCN species, such as wood thrush, Canada warbler, black and white warbler, black-throated blue warbler, and veery.
- Selective tree removal, mulching, mowing and invasive plant control in open field habitat will benefit pollinators and grassland birds.
- The work will also support important game species, like wild turkey, ruffed grouse, white-tailed deer, and black bear.

Climate Considerations

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

- select removal of overstory trees to promote a forest with diverse age classes, species composition, and structure that enhances overall forest resiliency;
- retention of specific trees that support biodiversity (e.g. large dead trees, cavity trees, diverse tree species mix);
- partial cutting via irregular shelterwood that will store carbon on the landscape for extended periods and improve growth and carbon sequestration rates on remaining trees; and
- invasive plant control to minimize future forest health threats the plants pose while maintaining native plants on the landscape.

See page 5 for more details.

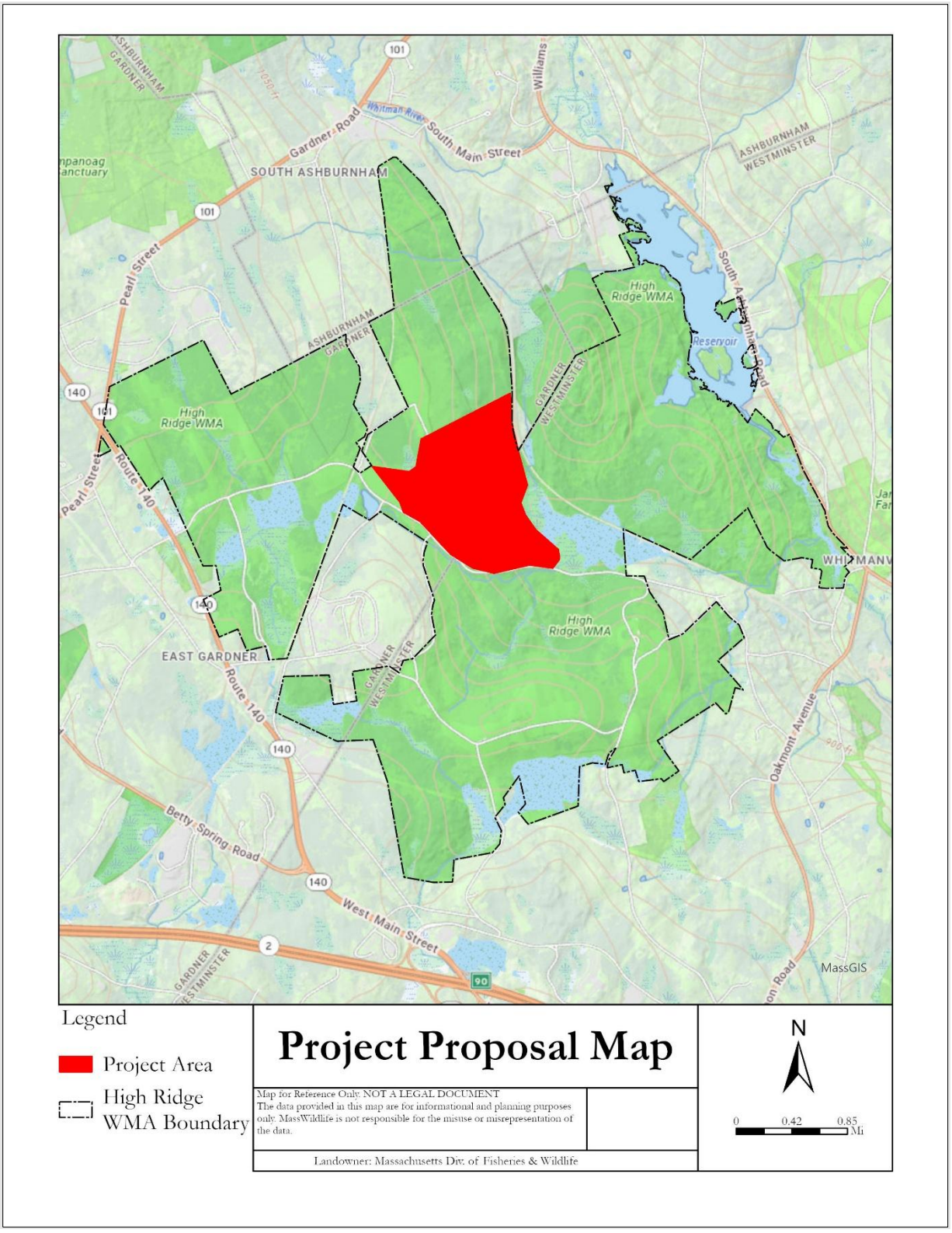

Figure 1. Map of High Ridge Wildlife Management Area with highlighted project area.

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 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.) 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.
Tree mowing	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**.

Full overstory removal, partial stand, variable retention harvesting	Variable retention (VR) is a regeneration technique based on natural disturbance ecology that retains important biodiversity components of the stand during the harvest to meet habitat objectives. The retained components include a diverse species mix of live and dead trees in a range of diameters with an emphasis on the larger sizes, cavity trees, and large snags and logs of different decay stages. These are in a patchwork pattern across the stand from single trees to large groups measured in acres. • This practice more closely **aligns with natural disturbance patterns**. • Promotion of a diversity of age classes, species composition and structural diversity **enhances overall forest resiliency**. • **More carbon is left on the landscape** for longer periods, in live trees, snags, and coarse woody material while regeneration develops. • **Improving conditions for a wide variety of local wildlife** through the creation of temporary young forest habitat. • Maintenance of continuous forest corridors provides for wildlife habitat connectivity. • As part of a regeneration system this method can be used to **help guide species diversity towards more future-adapted mixes.**
Diffuse overstory removal, partial cut, late rotation regeneration related.	Partial cutting via single trees or small groups in a mature stand can advance a variety of management objectives as well as **climate-smart practices**. Single tree or very small group removals, if used exclusively and repeatedly, will perpetuate an **uneven-aged stand condition** with a species mix shifted towards higher shade tolerance. However, this type of harvest can also serve within an even-aged system to establish regeneration of species of lower shade tolerance under a partial canopy for subsequent release using larger group or patch cuts (irregular shelterwood) or complete-stand overstory removals. Advantages of partial overstory removals include, but not limited to: • Partial cutting **retains carbon on the landscape** for extended periods while regeneration develops. • Reducing competition for resources improves growth and **carbon sequestration** rates on residual trees. • Promotion of a diversity of age classes enhances overall forest **resiliency**. • Maintenance of continuous forest corridors provides for wildlife habitat. • As part of a regeneration system this method can be used to help guide species diversity towards more **future-adapted mixes**.

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