dcr
Massachusetts

Resource Management Plan
Hubbardston State Forest

Adopted by the DCR Stewardship Council MONTH, 2025

Massachusetts Department of Conservation and Recreation
Division of Conservation and Resource Stewardship
Office of Cultural Resources

Maura T. Healey, Governor
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Purpose

Resource Management Plans (RMPs) are foundational documents that identify a park, forest, or reservation's defining natural, cultural, and recreational resources and identify potential threats and opportunities to guide DCR's continued stewardship of the property and to inform future decisions about the property in a way that celebrates and preserves its identity.

RMPs are prepared for "all reservations, parks, and forests under the management of the department" (M.G.L. c. 21, § 2F). These plans "shall include guidelines for the operation and land stewardship of the aforementioned reservations, parks and forests, shall provide for the protection and stewardship of natural and cultural resources and shall ensure consistency between recreation, resource protection, and sustainable forest management." DCR finalizes RMPs following a public process and adoption by the DCR Stewardship Council. The contents of this RMP represent the best available information at the time of adoption by the Stewardship Council.

Mission and Core Principles

The Massachusetts Department of Conservation and Recreation, an agency of the Executive Office of Energy and Environmental Affairs, oversees 450,000 acres of parks and forests, beaches, bike trails, watersheds, dams, parkways, and over 100 National Register listed properties. The agency's mission is to protect, promote, and enhance our common wealth of natural, cultural, and recreational resources for the well-being of all.

DCR strives to be an exemplary leader in conservation and recreation. DCR's staff is passionate, dedicated, and continuously employs best practices, expertise, and a sense of place in carrying out the mission. The following core principles ground the agency in its work. For the benefit and well-being of all—people and the environment—DCR pledges to:

- Provide access to a diversity of outdoor recreational experiences and unique landscapes that is equitable, inclusive, and welcoming.
- Conserve lands, water, and forests by integrating science, research, and technical expertise into the management of our natural resources.
- Advance climate change mitigation and adaptation efforts by implementing sustainable practices and advancing resiliency across our infrastructure, assets, and resources.
- Support healthy communities by providing places for people to connect with nature and each other.
- Inspire generations of stewards by recognizing and honoring our legacy through partnerships, public engagement, and education.

Stewardship

DCR honors Indigenous people for their care, throughout many generations, of the land that DCR now stewards on behalf of the people of the Commonwealth. DCR embraces this legacy of stewardship, fostering a sense of shared responsibility by all people for protection of the waters, lands and living things for the enjoyment and appreciation of all.

To learn more about the DCR, its facilities, and programs please visit us at www.mass.gov/dcr. Contact us at mass.parks@mass.gov.

Hubbarston State Forest

1. Property Overview

Characteristic	Value
Date Established	1908 & 1924
Location	Hubbardston, Phillipston
Ecoregion	Worcester Plateau
Watershed	Chicopee, Millers
DCR Region	Central
DCR District	Central Highlands
DCR Complex	Wachusett
Management Forestry District	Mid-State
Fire Control District	North Worcester
Size (acres)	1,240
Boundary Length (miles)	19.6
Elevation - Minimum (feet)	815.5
Elevation - Maximum (feet)	1,313.3
Environmental Justice (acres)	0.0
Estimated Annual Attendance (2020)	10,000
Interpretive Programs (# programs, 2023)	0
Interpretive Programs (# attendees, 2023)	0

2. Landscape Designations

Designation	Acres
Parkland	0.0
Reserve	0.0
Woodland	1,161.1
No Designation	77.9

3. Regulatory Designations

Designation	Acres
Outstanding Resource Waters – Ware River Intake	966.0
Priority Habitat (MESA)	67.3
Surface Water Supply Protection Zone A	510.6
Watershed Protection Act	348.8

4. Long-Term Agreements

Agreement	Expiration Year
None Identified	N/A

5. Concessions

Concession Type
None

6. Partners & Friends

Group(s)
Town of Hubbardston Open Space Committee

7. Features of Interest

Feature
Burnshirt River
Canesto Brook
Trails Network
Ware River Rail Trail (managed as separate DCR property)

8. Natural Resources

Resource	Value
Tree Canopy (acres)	1,233.6
Rivers and Streams (miles)	9.7
Open Water (acres)	2.1
Wetlands (acres)	64.2
Certified Vernal Pools (#)	15
Potential Vernal Pools (#)	14
State-Listed Species (# Regulatory)	3
State-Listed Species (# Non-Regulatory)	2
Federally Listed Species (#)	0
Aquatic Invasive Plants (# known species)	1
Terrestrial Invasive Plants (# known species)	7

9. Forest Management (Since 2012)

Management Objective	Acres
N/A	0.0

10. History of Wildfires and Conditions Influencing Future Wildfires

Wildfire Attribute	Value or Characteristic
Number of wildfires on property; 2019–2023	0
Acres burned by wildfires on property; 2019–2023	0.0
Number of wildfires in Fire Control District; 2019–2023	294
Acres burned by wildfires in Fire Control District; 2019–2023	1,169.6
Type of Wildland-Urban Interface	Intermix
Predicted rate of spread, based on Fire Behavior Fuel Model 13	Moderate

11. Climate Change (By 2070)

Type of Change	Amount of Change
Increase in annual days over 90° F	>30
Change in annual maximum daily rainfall (inches)	>10
Massachusetts Coastal Flood Risk Model area of inundation (acres)	N/A

12. Natural Hazards

Hazard Type	Acres
Flood (1.0%-chance)	79.2
Flood (0.2%-chance)	79.2
Hurricane Inundation (Cat. 1)	N/A
Hurricane Inundation (Cat. 4)	N/A

13. Cultural Resources

Resource Type	#
Archaeological	0
Historic - Total MACRIS Listed	0
Historic - National Register Listed	0
Historic - National Historic Landmark	0

14. Recreation Resources

Resource	#
Trail System	3

15. Recreation Activities

Activity
Bicycling, mountain
Dog walking, on leash
Hiking/walking
Horseback riding
Hunting
Nature study/photography
Picnicking
Running/Jogging
Skiing, cross-country
Snowmobiling
Snowshoeing
Wildlife viewing

16. Roads and Trails

Metric	Value
Roads - Unpaved (miles)	0.0
Roads - Paved (miles)	0.0
Forest Roads - Unpaved (miles)	3.6
Forest Roads - Paved (miles)	0.0
Trails - Unpaved (miles)	3.5
Trails - Paved (miles)	0.0
Trails - Unauthorized (miles)	2.35
Trail Density (miles/acre)	0.008
Area of Impact (acres)	559.45

17. Parking

Parking Resources	#
Lots	1
Parking Spaces - Total	4
Parking Spaces - Accessible (HP)	0
Parking Spaces - Other	4

INTRODUCTION

Hubbardston State Forest (Hubbardston, or the Forest) lies primarily in the Town of Hubbardston (the Town), with a 77-acre parcel in Phillipston, and is approximately 20 miles northwest of Worcester. The Town is a sparsely populated (4,328 persons in 2020 U.S. Census) rural community and is bounded by towns of similar character, excepting the city of Gardner to the north. Route 2 passes through Gardner and is approximately 2 miles from the nearest Forest parcel. All adjoining communities host DCR parks or forests, with the largest, Wachusett Mountain State Reservation, just 1.5 miles east of the Town boundary.

A large proportion of the Town's land area (10,952 acres, or nearly 42%) is permanently conserved through fee ownership, conservation restriction, or Watershed Preservation Restriction (similar to a conservation restriction), primarily under control of DCR's Division of Water Supply Protection (DWSP). Much of Hubbardston is within the Ware River Watershed, part of the DCR/Massachusetts Water Resources Authority source water supply that serves over three million people in the greater Boston region. DWSP is the largest owner of the Town's conserved lands and also owns or protects substantial tracts of Ware River Watershed lands in the adjoining communities of Barre, Oakham, and Rutland. Thus, the conservation value of many of the Forest tracts is best understood in the context of the DWSP and other protected lands that adjoin them (see tract discussion below).

A short (<1 mile) portion of the DCR's Ware River Rail Trail (aka Ware River Valley Rail Trail, not managed as Forest) passes through a 181-acre tract of Hubbardston State Forest Land at the Town's boundary line with Phillipston. This multi-use gravel trail, acquired in 1985, extends about 15 miles through the towns of Barre, Hubbardston, and Templeton, passing through multiple tracts of DWSP lands. Where the trail crosses through the Forest, it follows the Burnshirt River and the river's Williamsville Pond impoundment.

Hubbardston State Forest is on land shaped by generations of Indigenous and non-Indigenous inhabitants. Past and present Indigenous residents embody fluid, relational connections to the places and spaces now known as Hubbardston State Forest. Groups and individuals, including Indigenous people known as the Nipmuc, are recorded in available documentation (Massachusetts Historical Commission 1984, Native Land Digital 2023) as having relationships to this place over seasons and generations. European settlers took the lands that make up the Town of Hubbardston as part of the "Naquag" purchase of 1686. By the early 20th century, the Town's declining population and historical agriculture and forestry activities had created the cut-over and economically unproductive lands that were typically targeted by the Commonwealth's forestry programs. Forest land acquisitions in the Town occurred in several campaigns under these initiatives. Beginning in late 1908, the Commonwealth purchased over 200 acres (primarily lots now adjacent to the rail trail) as "reforestation lot[s]" under Chapter 478, Acts of 1908 (Massachusetts General Court (MGC) 1908). The 1908 reforestation program authorized limited land purchases for reforestation, water quality protection, and demonstration of scientific forestry, with a 10-year option for reacquisition by the previous landowner. (Subsequently, the MGC passed Chapter 126, Acts of 1931, that designated all Commonwealth-owned lands from this program as state forests.) Larger land purchases, totaling over 630 acres and focused on tracts along Mount Jefferson and New Templeton roads, occurred between 1923 and 1936 under Chapter 604, Acts of 1920, a 15-year, $3 million-dollar state forest expansion for "producing timber and protecting the water supply of the commonwealth". Thus, the Commissioner of Conservation's fiscal year 1924 report

listed Hubbardston as a "new" state forest (Department of Conservation 1925:5). During the Great Depression, the need to employ Civilian Conservation Corps (CCC) workers leant impetus to and shaped these acquisitions. CCC laborers from Camp S-63 at Otter River State Forest completed forestry work and built forest roads and water holes in Hubbardston. Two more recent purchases, each less than 200 acres, occurred in 1959 and 2021. The Forest was previously managed under a 1997 Department of Environmental Management (DEM) Guidelines for Operations and Lands Stewardship plan (i.e., GOALS plan) for the Northeastern Connecticut Valley region (DEM 1997). Adjacent DWSP properties are managed under a variety of watershed-specific plans (i.e., DWSP 2018, 2023).

Hubbardston State Forest's legal parcels form nine noncontiguous land tracts with surface areas ranging from approximately 14 to 722 acres. (See Land Stewardship Zoning Map on page 24.) Proceeding clockwise from the north side of town, these tracts consist of:

- **Main Tract.** This is the largest Forest tract, hosts the Forest's largest and only trail network that may be accessed by the general public, and is used year-round for passive recreation. The tract has frontage on Mt. Jefferson and New Templeton roads and is also connected to a portion of Templeton State Forest, DWSP land, and to the Town-owned Mt. Jefferson Conservation Area. Trail systems between this tract and the Mt. Jefferson Conservation Area are connected, and the Town of Hubbardston Open Space Committee (HOSC) has created a trail map for this portion of the Forest (Town of Hubbardston n.d.). A cleared AT&T underground utility easement crosses the tract.
- **Off Pitcherville Road Tract.** This is a small, forested, "land-locked" (i.e., no access from a public way) tract crossed by forest roads and having several sand and gravel pits in close proximity.
- **Off Old Westminster Road Tract.** This small, forested, landlocked tract is located on the Westminster town line and has no forest roads or trails.
- **Lombard Road Tract.** Added to the Forest in 2022, this tract fronting Lombard Road includes forest, wetlands, and a small upland meadow. DWSP and other protected lands connect to this tract.
- **Asnacomet Pond Tract.** This small, landlocked parcel between Simond Hill Road and the Asnacomet Pond is entirely forested and has no trails. It adjoins DWSP lands.
- **West Branch Ware River Tract.** This landlocked tract near the Town Beach is almost entirely wetlands connected to the West Branch of the Ware River. It is surrounded by DWSP and municipal protected lands.**Barre Road Tract.** This forested tract fronts Barre Road and is not developed with any recreation infrastructure. Most of the tract is flanked by DWSP lands.
- **Off Hale Road Tract.** This small landlocked tract is evenly divided between forest and wetlands and is not developed with any recreation infrastructure. It is surrounded by DWSP lands.
- **Ware River Rail Trail Tract.** This tract, the second largest in the Forest, straddles the Templeton-Hubbardston town line. The forested land has frontage on Mile Road and the Burnshirt River. The Ware River Rail Trail transects the tract north–south but is managed as a separate DCR property. Much of the tract is surrounded by DWSP and Department of Fish and Game lands.

In general, the Forest's tracts are concentrated in hilly upland areas with only a few lowland areas, swamps, and streams (including the headwaters of Canesto Brook) and forested primarily with white pine, hemlock, and mixed hardwoods. Stone walls, cellar holes, water holes, cart paths, water-powered mill remains, and railroad roadbed evidence historical-period land uses. Because of the Town's rural character and extensive conserved lands, most Forest parcels are surrounded by a combination of

undeveloped land, historical farms, and lightly settled modern (post-1950) development, excepting the sand and gravel pits of the Off Pitcherville Road Tract. The remaining tracts are accessed from paved and unpaved town roads, some of which are isolated and minimally maintained.

PARK IDENTITY

Hubbardston State Forest conserves valuable open space in the Town for recreation, wildlife habitat, forestry, and water resource protection. The Forest's identity is derived from its multiple, dispersed locations within a rural, Eastern New England Upland community; its connectivity to and embeddedness within other conserved lands (especially those of the DWSP) that combine to form large swaths of open space across multiple communities; and its history and current status as a managed forest. Future management activities should be consistent with the Forest's identity as a Woodland for sustainable forestry and forest productivity, balanced with resource protection and passive, dispersed recreation (particularly in the Main Tract).

DEFINING RESOURCES AND VALUES

Resources and values that define the Forest are largely related to the geographic and historical characteristics of Hubbardston. They include:

- Sustainable management of the Forest's northern hardwoods and oak-pine forest stands. The stands provide habitat for four species protected under the Massachusetts Endangered Species Act (MESA): one Threatened plant species, one plant Species of Special Concern, one bird Species of Special Concern, and one reptile Species of Special Concern.
- Passive recreation on the trail network off Mount Jefferson and New Templeton roads in the Main Tract. This network is the largest public trail system in the Town. (Calculated without including the Ware River Rail Trail, which has fewer trail miles than the aggregate of the Forest's trails.) The system includes historical CCC fire roads and water holes.
- Cultural landscapes and archaeological resources from the historical period that are associated with the Town's agricultural and industrial development. These resources include a historic mill site on Canesto Brook and a possible copperas (pyrite) mine site.
- Contributions to landscape-scale protected open space used for agriculture, forestry, recreation, and watershed protection. These connections include the DCR's Templeton State Forest, Ware River Rail Trail, Wachusett Mountain State Reservation, DWSP lands, and numerous other state, town, and private conserved lands. DWSP fee simple and Watershed Preservation Restriction lands represent the largest proportion of these conserved open spaces.

STATEMENTS OF SIGNIFICANCE

Statements of Significance describe the importance or distinctiveness of a place and its resources (National Park Service 1998). These statements reflect current scholarly inquiry and interpretation and go beyond a simple listing of resources to include contextual information that makes the facts more meaningful. When developing significance statements, the following criteria are considered:

- The property's significance at the time of its establishment.
- How the property, or our understanding of the property, has changed since its acquisition that makes it significant or unique within the state park system today.

- The property's role in recreation and its importance to the community it supports, particularly regarding activities that are unique to that property.

For park planning, these statements focus management actions on the preservation and enjoyment of those attributes that most directly contribute to the importance of the place. For interpretive planning, they comprise the information upon which the interpretive themes and overall program are built.

The following Statements of Significance have been identified for Hubbardston State Forest. The sequence of these statements does not reflect their level of significance.

- Beyond the original intents of timber harvesting, pest control, and fire control, DCR forest management objectives have evolved to include carbon sequestration and storage, diverse wildlife habitats, forest resiliency, safety, and water quality.
- The state forests were partly created to lessen the Commonwealth's dependency on out of state lumber and to support industry in Massachusetts. Early forest management strategies were driven by productivity and economics. As the science and societal stewardship values evolved, increased consideration was given to the environmental impacts of a site-specific forest management project. In some cases, other objectives, such as improving wildlife habitat or to maintain maintaining forest health resilience might be the primary reason for a particular project.
- While not a motivation in establishing the state forests, foresters at the time recognized the importance of trees to a watershed. The long-term impact of the reforestation of Massachusetts led to improved water quality in the Commonwealth.
- Unique to Massachusetts, the reforestation lot program let landowners turn over land to the state for reforestation; after 10 years they could then buy back the land at the cost of the reforestation. Unclaimed lots ended up as part of the State Forest system resulting in a system with parcels of varying sizes all over the state.

UNIFYING THEME

The Unifying Theme is a statement that ties a property's stories together and shapes the overall interpretive message that DCR wants to share with visitors in their experience at the property. The theme provides an overarching conclusion for visitors to contemplate (Ham 2013) and answers the question "so what?" The theme guides all interpretation for the park, both personal (i.e., formal and informal interactions with visitors) and non-personal (e.g., exhibits, signage, brochures).

The Unifying Theme for Hubbardston State Forest is:

> Managing our State Forests for diversity and resilience leads to a healthier environment.

VISITOR EXPERIENCE

Hubbardston State Forest provides a variety of visitor experiences oriented around its rural wooded character, including the following:

- **Virtual Experience.** Potential visitors will find little information about Hubbardston on DCR's web site. The "Find a Park" tool (https://www.mass.gov/info-details/find-a-park) identifies the Forest's location and lists Hiking/Walking as activities that visitors may enjoy here. There is no additional

information to help potential visitors plan a trip. The Dunn State Park web page does not list Hubbardston as being one of its "related parks."

- **Entering the Forest.** The Main Tract is the most popular portion of the Forest, although there is no formal "gateway" to the property. Visitors entering the trails network from either of two Town roads park at informal shoulder pull-offs or small dirt lots in front of forest road gates. Parking areas have Welcome Waysides with maps. Alternately, the Forest may be accessed from connecting trails within Templeton State Forest (which does have a formal entrance or "gateway," as discussed in the Templeton State Forest RMP) and the Mt. Jefferson Conservation Area. The Ware River Rail Trail Tract does not have a formal entrance. All tracts are marked with standard blue plastic property boundary markers.
- **Trail-based Passive Recreation**. Visitors seeking recreational opportunities may access a modest trails network that provides visitors opportunities for year-round passive recreation, wildlife viewing, photography, and informal picnicking.
- **Trail-based Motorized Recreation.** Snowmobiling is a popular activity within the Forest, especially on the Main Tract.

THREATS AND OPPORTUNITIES

The following information identifies potential threats to the park's natural and cultural resources and identifies opportunities to enhance their protection and stewardship. Although recreation is not considered a resource under statute (M.G.L. c. 21, § 2F), it is included below because recreation is an important part of the park-going experience, helps define a park's values, and is a key part of assessing the consistency of activities taking place in the Commonwealth's forests, parks, and reservations.

Threats and opportunities identified below are used to inform the development of management recommendations. Potential recommendations must meet prioritization criteria to be included in the Priority Recommendations table (Table 19, page 28).

Natural Resources

Threats

- A combination of high visitor usage and insufficient resources to implement trail maintenance best management practices (BMPs) is leading to trail erosion and consequent sedimentation of sensitive resource areas such as wetlands and streams. Unauthorized off-highway vehicle (OHV) use may contribute to poor trail conditions.
- Some existing culverts and stream crossings are inadequate in condition or design for natural resource protection and therefore are negatively impacting stream connectivity, aquatic habitats, and/or the water quality of adjacent streams/wetlands and associated sensitive aquatic resource areas.
- The following seven invasive species have been identified at the Forest: common buckthorn, glossy buckthorn, Japanese barberry, Morrow's honeysuckle, multiflora rose, Oriental bittersweet, and purple loosestrife. Tartarian honeysuckle, a Likely Invasive species, is also present. Invasive species may negatively impact both the ecological integrity and biodiversity of the Forest.
- Invasives were not inventoried at this Forest during fieldwork for the Invasive Plant Management Plan: Central Region (BSC Group 2017). Because of this, there is limited information on the presence

or distribution of invasive plants in Hubbardston State Forest. Such information is needed to determine if any sensitive resources are being impacted by invasive plants.

- Fire suppression efforts may be hindered by lack of maintenance of water holes, fire roads, and associated bridges.
- There are at least two unapproved geocaches in the Forest. Inappropriately located geocaches may threaten sensitive natural resources.
- Forest visitors have created several unsanctioned trails, at least one of which passes through wetland areas. Construction of trails without authorization or applicable regulatory review may threaten MESA-protected species habitat, natural communities, and/or ecosystem functions.

Opportunities

- The Forest is located within the Quabbin to Cardigan Initiative's (Q2C) project area. This initiative is a public-private collaborative effort to conserve the Monadnock Highlands of north-central Massachusetts and western New Hampshire. The Forest's location within the project area offers opportunities to participate in organizational partnerships, grants, and land acquisitions in support of the DCR's and the Q2C's mutual conservation and recreation goals (Q2C 2023).
- Multiple Forest tracts in the south part of the Town that fall within the Ware River Watershed abut or are nearly surrounded by DWSP property. Intra-agency discussions between DWSP and State Parks can determine if it is appropriate to transfer control of specific tracts to ensure optimal water supply protection, recreation, and forest management.
- Approximately 77.9 acres of the Forest has no Landscape Designation (DCR 2012). Assigning Landscape Designations to these areas could help better manage associated natural resources and ensure management consistent with DCR properties statewide.
- The high level of local interest in land protection, combined with the abundance of farmland and open space in the Town, has contributed to land acquisition for the Forest and may present opportunities for future Forest expansion.
- The Forest's Off Old Westminster Road Tract is located partially within the DCR Priority Watershed "Bents Pond." DCR construction projects within Priority Watersheds maximize Stormwater Control Measures, potentially beyond those necessary to meet regulatory criteria (VHB 2022). By maximizing treatment, DCR addresses existing impairments in the receiving waters and contributes to improving water quality in the Priority Watershed. Designers of future projects at in this tract should review the latest Massachusetts Department of Environmental Protection (MassDEP) 303d list to understand other impairments of the receiving water and to fine tune stormwater treatment to address these pollutants, in accordance with the DCR Stormwater Design Handbook (VHB 2022).
- Improved application of the DCR's Trail Maintenance BMP and Trails Guidelines and Best Practices Manual could reduce adverse impacts to adjacent sensitive natural resources and communities.
- Inventorying and assessing trail stream crossings, including application of standards contained in the Massachusetts Stream Crossings Handbook (Division of Ecological Restoration 2012), would allow prioritization of culvert replacement/restoration and reduction of future impacts to water quality, aquatic and adjacent habitats, and potentially biodiversity.

- Priority Habitat for a MESA-listed reptile, a Threatened species is present in the Forest. There may be opportunities to utilize habitat management and timber harvesting guidelines as a means of protecting or increasing this animal population.
- In addition to Priority Habitat (i.e. Regulatory Habitat), there is also Non-Regulatory Habitat for three MESA-protected species. Unlike Regulatory Habitat, which is based on verified records of state-listed species and has associated mapped Priority Habitat, Non-Regulatory Habitat is based on the presence of suitable habitat and there is no associated mapped Priority Habitat. On state lands, both Regulatory and Non-Regulatory Habitat are protected under MESA (321 CMR 10.00). Requesting pre-filing consultation with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) for "all works, projects, or activities" in the Forest, regardless of location in or out of Priority Habitat, will ensure continued protection of this habitat and compliance with MESA.
- There is an opportunity to design and implement a forest management plan in the Ware River Rail Trail Tract to benefit habitat for a plant protected under MESA (Schlüter 2024).
- There is an opportunity to design and implement a forest management plan in the West Branch Ware River tract to improve habitat for plants and turtles (Schlüter 2024).
- Some of the Forest's 14 potential vernal pools may "support rich communities of vertebrates and invertebrates" (Massachusetts Division of Fisheries and Wildlife (MassWildlife) 2009) and serve as important habitat components for other wildlife. Surveying and certifying these pools (DCR (n.d.) and MassWildlife (2009)), as appropriate, may help better protect these animals.
- Much of the Forest is even aged, containing the Oak-Hemlock-White Pine Forest natural community type. There are opportunities to create forest conditions that can increase forest resiliency in the face of climate change through the implementation of forest management projects that diversify species and age classes (structure).

Cultural Resources

Threats

- Erosion from natural events and recreational uses threatens archaeological sites. In particular, industrial archaeological sites associated with historical water powered mills in the Canesto Brook drainage are endangered.
- Vegetation is growing in cellar holes in the Forest, threatening the structural and archaeological integrity of these sites.
- There are at least two unapproved geocaches in the Forest. Inappropriately located geocaches may threaten sensitive cultural resources.
- Construction and use of the previously mentioned unauthorized trails may disturb areas of the Forest that have potential archaeological resources.
- Portions of the Main Tract, Burnshirt River Tract, Asnacomet Pond Tract, West Branch Ware River Tract, and Hale Road Tract lie within the Federal Emergency Management Agency (FEMA) 1.0%-chance flood zone. Because a cultural and archaeological resources survey of the Forest has not been completed, it is unknown whether any significant cultural resources are exposed to flood damage. (These data are derived from FEMA's paper Flood Insurance Rate Maps, or FIRMS, dating to 1979. Because of their age, FIRMS may only be used to portray zones of uncertainty and possible risks

associated with flooding, not the absolute delineation of flood boundaries (Massachusetts Bureau of Geographic Information (MassGIS) 1997).)

Opportunities

- Approximately 77.9 acres of the Forest has no Landscape Designation (DCR 2012). Assigning Landscape Designations to these portions of the Forest could help with management of associated cultural resources and ensure management consistent with DCR properties statewide.
- Trail maintenance and/or trail rerouting (perhaps in cooperation with the HOSC and/or Student Conservation Association) could help to protect archaeological sites that are threatened by erosion.
- An archaeological reconnaissance survey (950 CMR 70), including research into related ancient and historical period contexts, could help to identify, protect, and interpret archaeological sites in the Forest. Relevant contexts include ancient Indigenous land use and occupation, historical period hydro-powered industries (sawmills), mining (copperas/ferrous sulfate mine), upland agriculture, and associated European immigrant community development (Lithuanian, Finnish), and CCC improvements. Partnering with municipal, tribal, and regional conservation groups could assist in implementation and identification survey tasks.
- The Hubbardston Historical Commission (HHC) is working on a project to mark and document historical mill sites in town. There is an opportunity to partner with the HHC, and possibly the HOSC, to leverage resources for this study and for the creation of an interpretive trail of town and state forest land (HOSC 2019:64).
- Certain public roads (Barre Road, Lombard Road, Mile Road, Mt. Jefferson Road, and New Templeton Road) that are adjacent to the Main Tract, Barre Road Tract, Lombard Road Tract, and Ware River Rail Trail Tract are designated Scenic Roads under Hubbardston General Bylaws, Chapter 32 (Town of Hubbardston 2018; authorized under M.G.L. c. 40, § 15C). DCR's preservation of forest edges (e.g. aesthetic buffers) and stone walls maintains the scenic character of these public ways.

Recreation

Threats

- There is limited official information available on Hubbardston State Forest. DCR's web page does not include information on the Forest, making it difficult for potential visitors to become aware of the property and its recreational opportunities.
- There is no Main Gateway for the Forest.
- There is intensive, widespread, unauthorized OHV use in the Forest that damages trails and is detrimental to other users' experiences of the forest.
- User-created mountain bike trails can threaten natural and cultural resources and create treadways whose design does not meet DCR guidelines and BMPs (DCR 2019).
- The Canesto Hill Trail should terminate at the Forest boundary. However, it is shown in DCR trails data as crossing onto private land in Templeton, then connecting to the Red Oak Trail in Templeton State Forest. This has led trail users to inadvertently cross onto private property. Some mountain bikers are conducting unauthorized trail work on this private land, leading to negative interactions with the property owner.

- Trails are subject to erosion from foot, horse, and bike traffic, but also due to stream crossings and general storm damage.
- A former monitoring well (plastic pipe at grade) on the east side of Mount Jefferson Road (adjacent to small wetland) is exposed and is a tripping hazard to visitors.
- There is an old wood deer stand on Laurel Trail that is potentially hazardous to visitors and is damaging trees.
- A bridge over Canesto Brook may need replacement in order to ensure continued trail access.
- Portions of the Main Tract, Burnshirt River Tract, Asnacomet Pond Tract, West Branch Ware River Tract, and Hale Road Tract lie within the FEMA 1.0%-chance flood zone. Approximately 0.19 miles of trail in the Main Tract falls within this flood zone and could therefore be exposed flood damage. (These data are derived from FEMA's paper FIRMS, dating to 1979. Because of their age, FIRMS may only be used to portray zones of uncertainty and possible risks associated with flooding, not the absolute delineation of flood boundaries (MassGIS 1997).)
- There are several trail segments that lead onto private property, which may lead visitors to inadvertently trespass or become lost.

Opportunities

- Adding a Hubbardston State Forest web page to the DCR's web site would allow potential visitors to become aware of the Forest, its resources, and associated recreation opportunities.
- Due to the scale of the trail network and connections to trails on other conserved lands, the Main Tract of the Forest is very popular with local hikers and horseback riders. There are anecdotal accounts of high yearly visitation, but specific visitation numbers are not available. Acquiring accurate visitation counts could help to ascertain appropriate levels of staffing, maintenance needs, and infrastructure for this tract.
- Increased law enforcement presence could help curb unauthorized OHV use, trail cutting, and other detrimental behaviors.
- The presence of the Ware River Rail Trail affords opportunities for enhanced recreational connectivity between the Forest and other conserved open space in northern Worcester County.
- There may be opportunities to enhance stewardship of MESA-protected species habitat on the Ware River Rail Trail Tract by monitoring and discouraging off-trail uses that originate from the rail trail (Schlüter 2024).
- The Forest, especially its Main Tract, is well-used and loved by local residents and HOSC members (HOSC 2019). There may be future opportunities to partner with the HOSC to identify and complete trail maintenance projects and on unauthorized dumping clean ups. For example, local horseback riders are a constituency that have successfully worked within the HOSC for trail improvements.
- The increasing popularity of mountain biking at Hubbardston offers opportunities to partner with the New England Mountain Bike Association or other user group to maintain or improve trails at the property.
- There is an opportunity to improve trail users' experience of the Forest and protect wetland resources by installing bridges or boardwalks on the Laurel Trail, Link Trail and Mill Pond Trail.

- There are no accessible trails in the Forest. As trail work is completed in this Forest, the system may be assessed for opportunities to add an accessible trail.
- Creating a Forest Gateway with a parking lot and kiosk with Welcome Wayside, DCR usage rules, and trail map would improve user access and compliance with DCR regulations.

CLIMATE CHANGE

Climate change impacts nearly every aspect of DCR's properties, from ecosystem health, to infrastructure, to recreation. (See DCR 2024 for an overview of these impacts.) The Department is actively working to mitigate and adapt to current and future impacts through such actions as forest management; decarbonizing DCR's buildings, vehicles, and power equipment; protecting wetlands; and using nature-based solutions to minimize stormwater impacts. Information on these, and other, efforts is incorporated into RMPs as available and appropriate.

Any discussion of climate change requires a shared understanding of terminology. Because of this, this RMP section adopts commonly accepted terms to the greatest extent possible. In general, climate-related technical terms used in this RMP are as defined in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2021). Exceptions to this are the terms Adaptation, Risk, and Sensitivity, which are used as defined in DCR's Climate Change Vulnerability Assessment (CCVA; Weston and Sampson 2022).

DCR manages its forests to provide a range of ecosystem services such as recreation, clean water, wood commodities, and wildlife habitat (DCR 2020). For ecosystems under its management, DCR carefully considers both their vulnerability to climate change and their ability to mitigate the effects of climate change by storing carbon in ecosystems and harvested wood products. Several approaches are used to monitor DCR forests and to design forest management strategies to adapt to climate change and provide ecosystem services. (See Swanston et al. (2016) for information on adaptation strategies and approaches associated with DCR's forest management.) Established in 1957, DCR's Continuous Forest Inventory (CFI) system uses a network of more than 2,000 permanent plots on which repeated measurements are taken on an ongoing basis. The CFI measures the status, size, and health of over 100,000 trees; other vegetation; down woody material; and the forest floor. (See DCR 2022 for additional information on the CFI system.) This information helps DCR understand at a strategic scale the current character, condition, and trends of forest ecosystems under its care. DCR also uses operational inventory to help plan specific treatments and evaluate their outcomes. Using these different scales of information, remotely sensed data, and local and regional external expertise, DCR plans projects that help its stands, forests, and other lands adapt to climate change and mitigate greenhouse gas emissions. The conservation and science-based management of forest lands are an essential element to ensuring crucial carbon storage and advancing climate change resilience (Massachusetts Executive Office of Energy and Environmental Affairs (EEA) 2024). For additional information on the relationship between DCR's forest management practices and climate change, please see pages 77–85 in Massachusetts Forest Action Plan 2020 (DCR 2020) and Managing Our Forests…For Carbon Benefits (DCR 2023).

The Department is actively assessing and addressing the vulnerability of its properties and facilities to the impacts of climate change. In 2022, DCR conducted a CCVA (Weston and Sampson 2022). Findings from this CCVA are being used by DCR to enhance park operations and maintenance, inform resilient investment, and provide a framework for hazard mitigation and climate adaptation for natural resources,

cultural resources, recreational activities, buildings, facilities, and other infrastructure. Property-specific climate change information from the CCVA is included in the Climate Change (by 2070) table (Table 12) at the beginning of this RMP. An overview of the impacts of climate change on DCR facilities and operations is presented in the DCR Climate Impacts Story Map (DCR 2024).

Climate Exposure and Impacts

A summary of the ways in which the Commonwealth's natural, cultural, and recreational resources may be impacted by climate change is provided below. During the preparation of RMPs some resources may be identified as having particularly high exposure and/or sensitivity to the anticipated hazards or consequences of climate change. When this occurs, these resources and the projected impacts to them are described. In some instances, the potential impacts of climate change on a given resource are not well understood. When this occurs, only exposure is discussed.

Natural Resources—General Impacts

Climate change affects temperature, precipitation, and atmospheric and ocean chemistry, which in turn directly and indirectly affect the natural environment, including the plants, animals, and natural communities of DCR's forests, parks, and reservations.

Climate is known to influence the presence, absence, distribution, reproductive success, and survival of both native and non-native plants (Finch et al. 2021). Native northern and boreal species, including balsam fir, red spruce, and black spruce may fare worse under future conditions, but other species may benefit from the projected changes in climate (Janowiak et al. 2018). Some non-native invasive species will be affected by climate change while others will remain unaffected, and some non-invasive non-native species are likely to become invasive (Finch et al. 2021). In general, elevated temperature and CO_2 enrichment associated with climate change increases the performance of non-native plants more strongly than the performance of native plants (Liu et al. 2017). Climate change may result in the presence of new non-native invasive plants on a property, and changes to the distribution and/or abundance of invasives already present on a property.

Exposure to a changing climate affects wildlife in a variety of ways. For animals that live in or near aquatic environments, "changes in habitat and hydrological regimes are expected to shift their abundance and distribution" (Isaak et al. 2018: 89). Impacts to terrestrial animals are expected to be highly variable (Halofsky et al. 2018) but may be considered to fall into the following four categories: 1. habitat loss and fragmentation; 2. physiological sensitivities (i.e., innate characteristics that influence the ability to cope with changing temperature and precipitation conditions); 3. alterations in the timing of species' life cycles; and 4. indirect effects (e.g., disruption of ecological relationships) (Friggens et al. 2018). Although all Northeast wildlife are exposed to hazards associated with climate change, some groups, "including montane birds, salamanders, cold-adapted fish, and freshwater mussels, could be particularly affected by changing temperatures, precipitation, sea and lake level, and ocean processes" (MassWildlife 2015: 357). In addition, it is the position of the NHESP that state-listed species and Priority Natural Communities are likely to be highly sensitive to climate change and that all state-listed species will be negatively affected by hydrologic changes, changes in water, soil, and air temperature, and changes in forest composition.

Natural Resources—Property-Specific Exposure and Impacts

Two of the Forest's streams have been identified as Coldwater Fish Resources by MassWildlife. These are Canesto Brook and the West Branch of the Ware River, for the full length of both streams as they fall within the Forest. Such streams provide important habitat for coldwater species, which are typically more sensitive than other species to alterations in stream flow, water quality, and temperature (MassGIS 2021).

Climate change may cause some vernal pools to dry earlier in the season than they have historically, potentially interfering with amphibian life cycles (Cartwright et al. 2022). Because of this, some of the Forest's pools and associated wildlife may be negatively impacted. Similar impacts may occur at the Forest's potential vernal pools that function as vernal pools.

The Eastern newt species of salamander is present in the Forest and is particularly sensitive to the impacts of climate change.

Responses of Massachusetts' invasive plants (i.e., those categorized as Invasive by the Massachusetts Invasive Plant Advisory Group (MIPAG) (n.d.)) to a changing climate are largely unknown. However, sufficient information exists to project the likely future trend for Japanese barberry and Oriental bittersweet. "Available data suggest that bittersweet is likely to benefit from the warming and increased precipitation that are predicted for the Northeast" (Rustad et al. 2012), resulting in expansion throughout New England. Areas where the forest canopy or forest floor has been disturbed are particularly susceptible (McNab and Loftis 2002). Because of this, it is anticipated that Oriental bittersweet will continue to expand within Hubbardston State Forest in response to climate change. Climate change facilitates invasion by Japanese barberry "because of higher growth and germination in warmer climates" (Merow et al. 2017). Because of this, it is anticipated that barberry will further spread at Hubbardston.

Cultural Resources—General Impacts

Climate change may negatively affect cultural resources, their preservation, and maintenance (EEA 2022a; International Council on Monuments and Sites (ICOMOS) Climate Change and Cultural Heritage Working Group 2019; Rockman et al. 2016: 3, 18; United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Center 2007). In Massachusetts, cultural resources may be exposed to the following natural phenomena that are correlated with adverse impacts: higher annual average temperature (especially in winter), increased numbers of freeze-thaw cycles, increased precipitation intensity, higher relative humidity, higher wind speeds, an increase in severe storm events, increased numbers and severity of wildfires, more severe seasonal droughts, increase in number and severity of inland flood events, increased coastal flooding and erosion, increased probability of landslides, changes in groundwater levels, shifts in native and invasive species distribution, performance, and phenology; and changes in oceanic and atmospheric chemistry (Rockman at al. 2016; Commonwealth of Massachusetts 2023: 5.1-31–5.1-61).

The phenomena listed above may produce a variety of adverse impacts to Massachusetts' cultural resources. Sensitivity and potential impacts vary based on resource category (i.e., archaeological sites, cultural landscapes, ethnographic landscapes and sites, and buildings and structures). Resource-specific factors such as location, design, materials, condition, etc. will also influence sensitivity and consequent impacts. All categories of cultural resources may be subject to complete or partial destruction through

wildfire, inland flooding, sea level rise, storm surge, or landslides. Additionally, these resource categories may be subject to other types of impacts, as follows. Archaeological sites may have site stratigraphy disrupted by changes in hydrography, may suffer accelerated decomposition of artifacts and features, and may be impacted inadvertently during disaster response. Cultural landscapes may lose plantings due to a variety of stressors (e.g., drought or flood, pests, soil salinity), may be infiltrated by invasives, may be eroded by surface runoff, may experience more rapid deterioration of hardscaping and site furnishings, and may be damaged by high wind or heavy snow events. Ethnographic landscapes, traditional cultural places, and associated communities (including Indigenous peoples) may suffer both tangible and intangible impacts such as loss or diminishment of natural species used for food, ceremony, or medicine; alterations in timing of hunts, etc.; increased difficulty of vulnerable subgroups (e.g., the elderly) to perform outdoor tasks; and a loss of cultural knowledge associated with resources and practices. Buildings and structures may be damaged or destroyed by high wind or heavy snow events, suffer accelerated deterioration through a variety of mechanisms (e.g., elevated humidity, chemical reactions, destructive pests and organisms), may be destabilized by hydrological changes, or be damaged by inadequate gutters or drainage systems (ICOMOS Climate Change and Cultural Heritage Working Group 2019: 73–89; Rockman et al. 2016: 20–24). (See Rockman et al. 2016: 19–24 for a detailed assessment of the potential impacts of climate change on cultural resources.)

Cultural Resources—Property-Specific Exposure and Impacts

No cultural resources with known elevated exposure or sensitivity to potential consequences of climate change were identified at this property.

Recreation—General Impacts

Outdoor recreation and park visitation are dependent on weather and climate and will be affected by a warming climate (Wilkins and Horne 2024). Higher temperatures positively affect participation in most outdoor activities, except snow-based activities (Wilkins and Horne 2024). “Winter is warming substantially faster than other seasons, and winter warming is especially pronounced in the...Northeastern United States” (Wilkins and Horne 2024: 15). Exposure to this climate change phenomenon is projected to significantly reduce the length of winter recreation seasons for downhill skiing, cross-country skiing, and snowmobiling, decreasing recreational opportunities and causing substantial economic impacts (Wobus et al. 2017). Whitewater rafting, primitive area use, and hunting are also projected to be negatively impacted by exposure changing weather patterns associated with climate change (Askew and Bowker 2018). Although “coldwater fishing habitat is expected to decline under a warming climate, which will likely result in fewer fishing days,” overall fishing participation in the Northeast is projected to rise “due to the more favorable temperatures” (Wilkins and Horne 2024: 11). Horseback riding on trails, boating, swimming, and visiting interpretive sites are also expected to see higher participation in the Northeast under climate change (Askew and Bowker 2018). Temperature preferences of campers indicate that the “number of ideal days” for camping will also increase (Wilkins and Horne 2024: 13). Participation in biking is also projected to increase, especially in the winter and shoulder months (Wilkins and Horne 2024: 13). Climate change may also impact outdoor recreation through increased impacts to recreation infrastructure (e.g., flooding impacts), and increased exposure to disease vectors (e.g., mosquitoes and ticks), longer pollen seasons, and heat-related illnesses (O’Toole et al. 2019).

Recreation—Property-Specific Exposure and Impacts

Recreation activities at the Forest likely to be negatively impacted by exposure to weather changes resulting from climate change include hunting and snow-dependent sports (i.e., cross-country skiing, snowmobiling, and snowshoeing). Other recreation activities may see increased participation, such as horseback riding and mountain biking.

Recreation infrastructure with exposure to increased precipitation (i.e., a greater than 10-inch increase in maximum daily rainfall; Table 12) and flooding associated with climate change consists of approximately 0.19 miles of trail in the Main Tract that falls withing the FEMA 1.0%-chance flood zone (MassGIS 1997). (Precipitation changes due to climate change (see EEA 2022b and Weston and Sampson 2022) are not factored into FEMA flood plain modeling. Climate change may result in additional exposure to and impacts from flooding for cultural resources in the future. A FEMA-contracted report (AECOM 2013) finds that: "For the riverine environment, the typical 1% annual chance floodplain area nationally is projected to grow by about 45%, with very large regional variations ... approximately 70% of the 45% (or 31.5%) growth in the 1% annual chance floodplain is due solely to climate change" (AECOM 2013: ES6–ES7). Site-specific projections for future floodplain areas were not available at the time this RMP was prepared.)

APPLIED LAND STEWARDSHIP ZONING

DCR assesses the appropriate uses and stewardship of its properties at two spatial scales: the landscape level and the property level.

Landscape Designation

In 2012, DCR engaged in a comprehensive system-wide assessment of lands managed by its Division of State Parks and Recreation, designating them as Reserve, Woodland, or Parkland. (See Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines (DCR 2012) for details.) Multiple Landscape Designations may apply to individual properties with diverse resources and levels of development. All of Hubbardston State Forest was designated Woodland. Identification of Land Stewardship Zones within Hubbardston State Forest was performed in the context of the Woodland Landscape Designation.

The following Land Stewardship Zoning is recommended to guide management and any future development. (See Figure 1. Land Stewardship Zoning Map, page 24, and the Land Stewardship Zoning layer on DCR's Stewardship Map: https://dcrsgis-mass-eoeea.hub.arcgis.com/.)

Zone 1

Zone 1 areas have highly sensitive ecological and/or cultural resources that require additional management approaches and practices to protect and preserve these special features and their values (DCR 2012). The following areas of Hubbardston have been designated Zone 1.

- Entirety of the West Branch Ware River Tract in the southern portion of Hubbardston. This parcel is mostly marshland and lies almost entirely within NHESP Priority Habitat for a reptile Species of Special Concern that is vulnerable to human disturbance.

Zone 2

Zone 2 areas provide for a balance between resource stewardship and recreational opportunities that can be appropriately sustained. They include stable yet important cultural and natural resources. These areas provide a buffer for sensitive resources, recharge areas for surface and groundwaters, and large areas where existing public recreation activities can be managed at sustainable levels (DCR 2012). The following areas of Hubbardston have been designated Zone 2.

- All portions of the Forest not in Zones 1 or 3.

Zone 3

Zone 3 areas include altered landscapes in active use and areas suitable for future administrative, maintenance, and recreation areas (DCR 2012). The following areas of Hubbardston are currently developed, appropriate for potential future development, or intensively used for recreation. They have been designated Zone 3.

- Approximately 1,000 square feet at the Main Tract's Old Cross Road Trail trailhead as a potential parking area and location for a DCR Welcome Wayside.

Significant Feature Overlay

Significant Feature Overlays provide precise management guidance in order to maintain or preserve recognized resources features regardless of the zone in which they occur. The following Significant Feature Overlays were developed for Hubbardston:

- **Surface Water Supply Protection Zone A.** Land uses and activities within this overlay, which crosses multiple Forest tracts, should be consistent with Massachusetts' Drinking Water Regulations to protect surface water supplies. Refer to 310 CMR 22.20B and 310 CMR 22.20C for specific guidance.
- **Watershed Protection Act Overlay**. Land uses and activities within this overlay should be consistent with Massachusetts Watershed Protection Act (WsPA) regulations. Overlay boundaries on map encompass WsPA Primary and Secondary Protection Zones and are approximate, other geographic areas may be regulated under the WsPA. See 313 CMR 11.00 for regulations and the associated guidance document (DCR 2017) for details on the processes used for implementation of the act.

DCR Stewardship Map Tool

This RMP should be viewed in conjunction with DCR's Stewardship Map, a GIS-based tool that allows users to view a property's natural, cultural, and recreational resources. The Stewardship Map tool is dynamic, and information continues to be updated after adoption of an RMP. Guidance for using the tool, as well as BMPs for resource stewardship, are located on the Stewardship Map site: https://dcrsgis-mass-eoeea.hub.arcgis.com/.

Because authorized trails are located within State-Listed Species Habitat on this property, managers should consult an additional GIS-based tool, the NHESP 2022 Guidance Codes for DCR Trail Maintenance Map. (https://mass-eoeea.maps.arcgis.com/home/item.html?id=cb252e8df40d408c81fe8fcf690e14f6) This tool allows users to select specific trail segments and identify restrictions and regulatory review associated with performing 10 common trail maintenance activities on these segments. Because site-specific rare species information is confidential under Massachusetts law (M.G.L. c. 66, § 17D), access to this tool is restricted.

CONSISTENCY REVIEW

Resource Management Plans "shall ensure consistency between recreation, resource protection, and sustainable forest management" (M.G.L. c. 21, § 2F). For planning purposes, an activity is considered consistent with resource protection if it has no significant, long-term, adverse impact on resources. To this end, a series of indicators were developed to evaluate the impacts of recreation and forest management on natural and cultural resources.

Many activities with the potential to negatively affect resources are already subject to agency and/or regulatory review (e.g., forest management activities, projects within Priority Habitat). For these activities, compliance with state regulations, regulatory authority guidance, DCR policies and processes, and BMPs is considered an indicator of consistency between park use and resource protection. New indicators were generated for activities not subject to agency or regulatory review, and are based on available data, information readily identifiable via aerial imagery or site visits, assessments by DCR subject matter experts, or the property manager's knowledge of park conditions and use. (See Table 18, page 25.)

Indicators are applied during the RMP planning process in order to ensure a standardized assessment of consistency across all properties in the DCR system. Inconsistencies identified via the application of indicators are used to inform the development of management recommendations.

The status of indicators (Yes, No, Unknown, and N/A) were accurate at the time this RMP was prepared and were used for planning purposes. However, they represent a snapshot in time and may not reflect future conditions. In addition, the status of indicators will change as recommendations get implemented.

MANAGEMENT RECOMMENDATIONS

Fourteen priority management recommendations were developed for this property. They are presented in Table 19, page 28. All recommendations are of equal importance.

Priority management recommendations derive from Threats, Opportunities, and Consistency Assessment information presented in this RMP. For a recommendation to be considered a priority and listed in the table, it must meet one or more of the criteria listed below. Maintenance and management needs not meeting one or more of these criteria are not included in the table but are identified in the Threats and Opportunities sections.

The following types of recommendations are considered priority:

- Natural resource stewardship and restoration activities consistent with park identity and intended to improve ecological function and connectivity.
- Cultural resource management activities consistent with park identity and intended to prevent the loss of integrity of significant cultural resources.
- Improvements consistent with park identity that are needed to support intended park activities.
- Actions required for regulatory compliance or compliance with legal agreements.
- Activities that prevent or ameliorate threats to the health and safety of park visitors and employees.
- Activities that address inconsistencies among recreation, resource protection, and sustainable forest management, as identified through use of the Consistency Assessment checklist.

Progress toward implementing priority recommendations is tracked through the use of DCR's Capital Asset Management Information System (CAMIS). The property manager should enter each recommendation listed in Table 19 (page 28) into CAMIS as a separate work order, noting "*RMP" in the description field. Non-traditional work orders (e.g., volunteer trail work, posting of Department of Public Health (DPH) Fish Consumption Advisory posters, certification of vernal pools) should be closed out by the property manager, once the recommendation has been implemented.

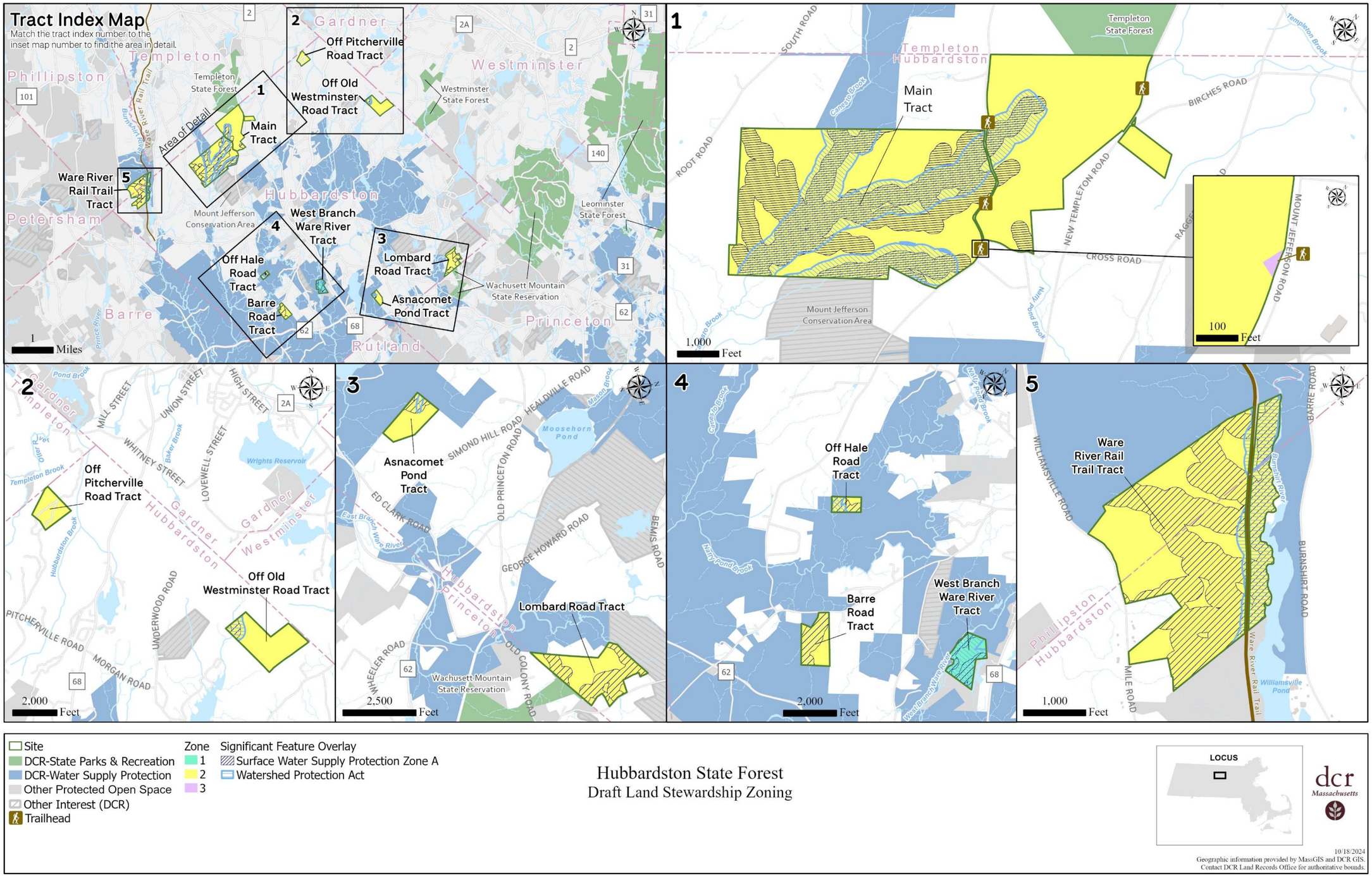

Figure 1. Land Stewardship Zoning Map.

Table 18. Consistency Assessment. This assessment represents a snapshot in time and may not reflect future conditions.

Category	Metric	Status
Landscape Designation	1. All development and uses of the park since 2012, or currently planned for the park, are consistent with its Landscape Designation(s).	Yes
Natural Resources	1. All projects (normal maintenance activities, special projects, volunteer projects) conducted within Priority Habitat were reviewed and approved through DCR's internal review process and by NHESP for potential impacts to rare species and their habitats.	N/A
Natural Resources	2. All projects conducted within areas subject to state and/or federal wetlands or waterways regulations were reviewed and approved through DCR's internal review process; reviewed and approved through the appropriate, local, state, and/or federal review process; and were carried out in accordance with the terms of a valid permit.	N/A
Natural Resources	3. Sensitive resource areas, such as steep slopes, riverbanks, streambanks, pond and lakeshores, wetlands, and dunes are free of desire paths and other user-created trails.	No
Natural Resources	4. Aquatic areas adjacent to beaches, boat ramps and launches, roads, and hiking trails are free of eroded sediments.	N/A
Natural Resources	5. The extent of exposed soil in campground and/or picnic sites is stable or decreasing.	N/A
Natural Resources	6. The extent of native vegetation in campground and/or picnic sites is stable or increasing. (As assessed by property manager.)	N/A
Natural Resources	7. Area of trail impacts in Reserves is less than 50% of total area. (See Naughton (2021) for information on primary area of trail impacts.)	N/A
Natural Resources	8. Congregations of breeding, migratory, or wintering wildlife are protected from disturbance by temporary (e.g., seasonal) restrictions on recreational access.	No
Natural Resources	9. Geocaches, letterboxes, orienteering control locations, and other discovery destinations are located outside sensitive natural resource areas and their locations have been reviewed and approved by park personnel. (As assessed by property manager.)	No
Natural Resources	10. Zone I wellhead protection areas are free of vehicle parking, chemical storage, or concentrated recreation.	N/A

Category	Metric	Status
Natural Resources	11. All boat ramps and launches have cleaning stations and/or educational signs and materials on preventing the spread of aquatic invasive organisms. (As assessed by property manager.)	N/A
Natural Resources	12. For each barrier beach there is a current, approved Barrier Beach Management Plan and all beach-related activities are conducted in accordance with this plan.	N/A
Cultural Resources	1. All maintenance activities and projects with the potential to cause sub-surface disturbance are being reviewed by the DCR archaeologist for potential impacts to archaeological resources.	No
Cultural Resources	2. All maintenance activities and projects affecting historic properties (buildings, structures, and landscapes over 50-years-old) are being reviewed by the Office of Cultural Resources to avoid adverse impacts.	Yes
Cultural Resources	3. Historic buildings, structures, and landscapes are being used, maintained, and repaired in a manner that preserves their cultural integrity and conveys their historic significance to park visitors.	Yes
Cultural Resources	4. Recreational activities such as hiking, biking, and boating are not eroding cultural properties such as archaeological sites or historic landscapes through creation of desire lines, rutting in the landscape, damage to historic built features, or excessive scouring (erosion) of coastal and shoreline areas.	No
Cultural Resources	5. Geocaches, letterboxes, and other discovery destinations are located away from sensitive cultural resources, and their locations have been reviewed and approved by park personnel.	No
Cultural Resources	6. Historic buildings, structures, landscapes, archaeological sites, and concentrations of historic resources are located outside of areas predicted to be subject to flooding, storm surge, or sea-level rise.	N/A
Recreation	1. Types of recreation, levels of recreational use, and types and extent of recreation infrastructure are consistent with the park's identity statement.	Yes

Category	Metric	Status
Recreation	2. Trail density is consistent with the park's Landscape Designation(s). (See Trails Guidelines and Best Practices Manual (DCR 2019) for density thresholds.)	Yes
Recreation	3. All authorized trail construction was performed in accordance with an approved Trail Proposal Form.	Yes
Recreation	4. Over 90% of the park's official trails network is classified as being in Fair or better condition.	Yes
Recreation	5. Recurring use by OHVs is restricted to authorized trails. (As assessed by property manager.)	No
Recreation	6. There is a high level of compliance with dog leash regulations and policies. (As assessed by property manager.)	Yes
Recreation	7. Athletic fields are free of recreation-caused impacts (e.g., bare spots) to turf. (As assessed by property manager.)	N/A
Recreation	8. Water-based recreation is consistent with "Uses Attained" designation as identified by the MassDEP in its most current integrated list of waters (e.g., MassDEP 2023); DPH fish consumption advisories; and/or water quality testing at waterfront areas.	Yes
Recreation	9. Recreation facilities are located outside of areas subject to flooding, storm surge, or sea-level rise.	No
Sustainable Forest Management	1. Forestry activities are consistent with Landscape Designation and associated forestry guidelines.	N/A
Sustainable Forest Management	2. Forestry activities are consistent with current Forest Resource Management Plan.	N/A
Sustainable Forest Management	3. Tree cutting is performed in accordance with an approved cutting plan, if required under the Massachusetts Forest Cutting Practices Act (M.G.L. c. 132, §§ 40–46).	N/A

Table 19. Priority Recommendations for Hubbardston State Forest. All recommendations are of equal importance. When multiple agency parties are responsible for implementing a recommendation, the lead party, or parties, are identified parenthetically in the Implementation column. Property managers should enter these recommendations as work orders in CAMIS to ensure their tracking and implementation.

Category	Recommendation	Implementation
Natural Resources	Apply Landscape Designations to those portions of the Forest currently lacking such designations.	Management Forestry (Lead), GIS Program
Natural Resources	Conduct a conditions assessment of trail stream/wetland crossings and culverts.	Management Forestry, Office of Natural Resources, Park Operations (Lead)
Natural Resources	Following appropriate review and permitting, construct bridges or boardwalks at stream crossings and/or wetlands on the Laurel, Link, and Mill Pond Trails. Where applicable, use standards for crossing design from the Massachusetts Stream Crossings Handbook (Division of Ecological Restoration 2012).	Management Forestry, Office of Natural Resources, Park Operations (Co-Lead), Trails and Greenways Section (Co-Lead)
Natural Resources	Look for opportunities to expand the Forest to further protect Massachusetts Endangered Species Act (MESA)-listed species and their habitat.	Land Acquisition and Protection Program (Lead), Office of Natural Resources
Natural Resources	Survey, document, and submit documentation to certify potential vernal pools, in accordance with DCR (n.d.) and MassWildlife (2009), as warranted.	Office of Natural Resources (Lead), Volunteers
Cultural Resources	In accordance with DCR Best Management Practices, clear vegetation from cellar holes and other archaeological sites. Limit damage to these resources from trail use and erosion by rerouting trails around the resources or by installing erosion control measures, as necessary.	Office of Cultural Resources, Park Operations (Lead), Trails and Greenways Section, Volunteers
Cultural Resources	Conduct an archaeological reconnaissance survey (950 CMR 70) for the Forest in cooperation w/ Tribal, municipal, and regional conservation partners. Complete appropriate Massachusetts Historical Commission archaeological site forms for identified archaeological resources.	Contractor, Office of Cultural Resources (Lead), Partners

Category	Recommendation	Implementation
Recreation	Identify the responsible party for an open monitoring well located on the east side of Mount Jefferson Road (adjacent to wetland). Work with this party to decommission the well.	Park Operations
Recreation	Resolve trail-related threats and opportunities identified in this RMP, in accordance with Trails Guidelines and Best Practices (DCR 2019, or update), through the following actions: • Maintain authorized trails, as identified in the DCR Trail Data Layer provided to the Natural Heritage and Endangered Species Program in 2021, and in accordance with the Recreational Trail Maintenance and Biodiversity Conservation 2021 update. • Evaluate trail segments for discontinuation or active closure, including those that are: unauthorized, unsafe, connecting to privately-owned property, located in environmentally or culturally sensitive areas, or otherwise inconsistent with DCR Trails Guidelines and Best Practices. Provide an updated trail data layer to the Natural Heritage and Endangered Species Program. • Establish new trails, as warranted, following regulatory review. Provide an updated trail data layer to the Natural Heritage and Endangered Species Program.	Management Forestry, Office of Cultural Resources, Office of Natural Resources, Park Operations (Co-Lead), Partners, Trails and Greenways Section (Co-Lead)
Recreation	Conduct visitation study of the Forest's Main Tract to determine the number of annual visitors and their favored access locations.	Design & Project Management (Lead), Facilities Engineering, Interpretive Services, Park Operations
Recreation	Using data from the visitation study, design, program funds for, and construct a Forest Gateway at the Old Cross Road Trailhead (or another location, if the Old Cross Road Trailhead is found to be unsuitable) by creating a small parking area and installing an Identification Sign, Welcome Wayside, and kiosk.	Design & Project Management (Lead), Facilities Engineering, Interpretive Services, Park Operations

Category	Recommendation	Implementation
Recreation	Establish a DCR web page for Hubbardston State Forest.	Interpretive Services, Regional Staff (Lead), State Parks Operations, Web Content Creator
Recreation	Create a Forest trail map.	GIS Program, Interpretive Services, Trails and Greenways Section (Lead)
Recreation	If appropriate based on results of the archaeological survey, install an interpretive panel at the copperas mine.	Interpretive Services (Co-Lead), Office of Cultural Resources (Co-Lead), Park Operations (Co-Lead)
Recreation	Work with the geocaching community to ensure that caches located in sensitive natural and cultural resources are relocated out of those areas and that locations of any new geocaches are placed outside of sensitive and with the approval of the property manager.	Office of Cultural Resources, Office of Natural Resources, Park Operations (Lead)

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