dcr
Massachusetts

Resource Management Plan
Royalston 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

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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 peoples 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.

Royalston State Forest

1. Property Overview

Characteristic	Value
Date Established	1933
Location	Royalston
Ecoregion	Worcester Plateau
Watershed	Millers
DCR Region	Central
DCR District	Central Highlands
DCR Complex	Otter River
Management Forestry District	Mid-State
Fire Control District	North Worcester
Size (acres)	857.2
Boundary Length (miles)	15.3
Elevation - Minimum (feet)	662.4
Elevation - Maximum (feet)	1,115.7
Environmental Justice (acres)	0.0
Estimated Annual Attendance (2023)	Unknown
Interpretive Programs (# programs, 2023)	0
Interpretive Programs (# attendees, 2023)	0

2. Landscape Designations

Designation	Acres
Parkland	7.2
Reserve	0.0
Woodland	847.3
No Designation	2.7

3. Regulatory Designations

Designation	Acres
Priority Habitat (MESA)	57.9

4. Long-Term Agreements

Agreement	Expiration Year
None Identified	N/A

5. Concessions

Concession Type
None

6. Partners & Friends

Group(s)
None

7. Features of Interest

Feature
Falls Brook
Long Pond
Tully Brook and River
Tully Trail

8. Natural Resources

Resource	Value
Tree Canopy (acres)	809.5
Rivers and Streams (miles)	3.7
Open Water (acres)	0.0
Wetlands (acres)	98.8
Certified Vernal Pools (#)	0
Potential Vernal Pools (#)	1
State-Listed Species (# Regulatory)	3
State-Listed Species (# Non-Regulatory)	2
Federally Listed Species (#)	0
Aquatic Invasive Plants (# known species)	0
Terrestrial Invasive Plants (# known species)	3

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. Natural Hazards

Hazard Type	Acres
Flood (1.0%-chance)	96.9
Flood (0.2%-chance)	96.9
Hurricane Inundation (Cat. 1)	N/A
Hurricane Inundation (Cat. 4)	N/A

12. 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

13. Cultural Resources

Resource Type	#
Archaeological	2
Historic - Total MACRIS Listed	0
Historic - National Register Listed	0
Historic - National Historic Landmark	0

14. Recreation Resources

Resource	#
Trail Network	1

15. Recreation Activities

Activity
Dog walking, on-leash
Hiking/Walking
Horseback riding
Snowshoeing

16. Roads and Trails

Metric	Value
Roads - Unpaved (miles)	0.6
Roads - Paved (miles)	0.5
Forest Roads - Unpaved (miles)	2.1
Forest Roads - Paved (miles)	0.0
Trails - Unpaved (miles)	2.1
Trails - Paved (miles)	0.0
Trails - Unauthorized (miles)	0.0
Trail Density (miles/acre)	0.005
Area of Impact (acres)	290.7

17. Parking

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

INTRODUCTION

Royalston State Forest (Royalston or the Forest) is in the Town of Royalston (the Town), approximately 38 miles northwest of Worcester and bordering the Massachusetts—New Hampshire state line. Warwick and Lawton State Forests are approximately 2.5 miles west and 5 miles south of the Forest, respectively. The Town of Royalston, although one of the largest towns in Worcester County by land area, is a sparsely populated rural and exurban community (only 1,250 residents in the 2020 census). Approximately 41% of the Town (11,049 acres) is permanently protected as open space, with an additional 26% (7,024 acres) managed under Massachusetts Chapter 61 (2010 figures) (Royalston Open Space and Recreation Committee 2010: 7). In addition to the Forest, there are multiple tracts of conserved land under Massachusetts Division of Fisheries & Wildlife (MassWildlife), U.S. Army Corps of Engineers (USACE), and private ownership that abut each of the Forest's tracts. Other, non-conserved, lands adjoining the Forest are either undeveloped or built up with low-density 19th- and 20th-century residential construction. Royalston State Forest is made up of four separate land tracts (see Land Stewardship Zoning Map on page 23). Moving southeast to northwest, they are:

- **Long Pond Tract.** This land is on a forested hillside between Warwick Road (Rt. 68) and Long Pond (part of the East Branch of the Tully River). It hosts a short segment of the Tully Trail, a 22-mile regional hiking trail that loops through private and public conserved lands, including Warwick State Forest. This tract is transected by an electrical transmission easement.
- **Athol-Richmond Road Tract.** This forested tract lies at the intersection of Athol-Richmond Road and Butterworth Road and has no trails, excepting an overgrown forest road.
- **Main Tract.** At approximately 544 acres, this is the largest land block in the Forest. It extends from Warwick Road at its southern end to the New Hampshire State line at its northern end. The tract hosts a forest road that serves as a segment of the Tully Trail, along with a portion of Falls Road and additional trails network segments. This segment of the Tully Trail provides an alternative access route to The Trustees' popular Royalston Falls reservation. The East Branch of the Tully River and multiple tributaries pass through and adjacent to the tract.
- **Off Bliss Hill Road Tract.** This small landlocked tract is covered with forest and wetlands (the headwaters of Fish Brook) and has no trails. It is surrounded by lands under conservation restriction.

The 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 Royalston State Forest. Groups and individuals, including Indigenous peoples known as the N'dakina (Abenaki or Abenaquis), Pennacook, and Wabanaki, are recorded in available documentation (Native Land Digital 2023) as having relationships to this place over seasons and generations. Due to the area's rugged terrain, Indigenous land use was likely seasonal and intermittent. Following Indigenous peoples' dispossession, the Massachusetts General Court (MGC) began making land grants in what would become the Town of Royalston in 1737 and incorporated the Town in 1765 (Tritsch 2004). By the early 20th century, the Town's declining Euro-American population and historical agriculture and land use had created the cut-over and economically unproductive lands that were typically targeted by the Commonwealth's forestry programs. In 1922, the Commonwealth purchased two "reforestation" lots in the Town (now the easterly and southerly portions of Athol-Richmond Road Tract). Under Chapter 478 of the Acts of 1908, the State Forester was authorized to purchase land and manage it for forest growth, water protection, and examples of scientific forestry with a 10-year option for reacquisition by the

previous landowner (MGC 1908). Reforestation lots that were not reacquired by the previous landowner, such as those in Royalston, were incorporated into the state forest system. In 1931, the MGC designated all remaining Commonwealth-owned lands from this program as state forests, but Royalston State Forest does not appear as such in annual reports until 1933 (Anon. 1933: n.p.; MGC 1931). By 1936, acquisitions had brought the Forest to over 840 acres. Minimal or no Civilian Conservation Corps work occurred in the Forest. The most recent land acquisitions occurred in 2002. Since 1997, the Forest has been managed under the former Department of Environmental Management's (DEM) Guidelines for Operations and Land Stewardship (i.e., GOALS Plan): State Forests & Parks in the Northeastern Connecticut Valley Region (DEM 1997).

Royalston's tracts are concentrated in the westerly half of the Town and range from approximately 14 to 544 acres in area. The Forest's natural resources are typical of the Worcester Plateau ecoregion, consisting of mixed transition and northern hardwoods that undulate over gneiss bedrock and generally thin, acidic soils. There are noteworthy stands of hemlock, as well as a number of forested wetlands and a large deep marsh within the Forest. Ridges and streams are generally oriented north-south, and the Forest protects sections of Fish Brook, Falls Brook, and Tully Brook (see cover photo). The latter two brooks cascade down rocky channels into the East Branch of the Tully River and extensive wetlands. Forest lands are situated exclusively on hillsides and in lowlands, with no summits and little in the way of vistas. Scattered cellar holes, stone walls, and old roads testify to historic-period settlement of the area. With its rugged terrain and extensive lowlands, Royalston offers visitors a pleasant place for a short hike or hunting excursion.

PARK IDENTITY

Royalston State Forest preserves valuable open space and affords important regional trail connections in northwest Worcester County and contributes to the broader network of conserved lands in the area. It is strongly associated with its relationship to the Tully Trail, which is the focal point for most of the Forest's visitors. Additional resources that characterize the Forest's identity are its location in a sparsely populated, heavily forested portion (both historically and currently) of the Commonwealth. All future activities and improvements in the Forest should provide for responsible forest management and passive recreation opportunities that are in alignment with the property's Woodland designation while protecting the significant species habitat, natural communities, and water resources.

DEFINING RESOURCES AND VALUES

Resources and values that define the Forest are related to its location in a remote portion of Worcester Plateau ecoregion. They include:

- Contributions to landscape-scale protected open spaces. The Forest, in conjunction with permanent open space held by other governmental and private entities, provides an open space and recreational corridor that extends approximately 7.5 miles from Athol to the New Hampshire border. Forest lands represent approximately 8% of permanently conserved lands in the Town.
- Priority Habitat for three Massachusetts Endangered Species Act (MESA)-listed species designated by the Natural Heritage & Endangered Species Program (NHESP) as Species of Special Concern.
- An Alluvial Hardwood Flat Community, an NHESP Priority Natural Community type that is ranked as vulnerable in the Commonwealth (Swain 2020).

- Management of the Forest's mixed transition and northern hardwood forest, including hemlock, using sustainable silvicultural forest management systems.
- Tully Brook and Falls Brook. These waterways and associated wetlands are an important natural and scenic resource around which recreational use of the Main Tract of the Forest is organized.
- Historical archaeological features and landscapes that demonstrate former agricultural uses of the land.
- Nearly 2 miles (in two segments) of Tully Trail and adjacent viewsheds. This trail is a significant regional recreational asset, as well as a heritage landscape for the Town (DCR, Central Massachusetts Regional Planning Commission, and North Quabbin Regional Landscape Partnership 2008: 12, 31).

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 society's 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 Royalston 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 more ecosystem services such as carbon sequestration and storage, diverse wildlife habitats, forest resiliency, safety, and water quality.
- The Massachusetts State Forest system was founded on the principles of scientific forest management. These practices contrasted with ongoing un-managed destructive practices throughout the country. This effort focused on the long-term cultivation of forests to achieve a sustainable harvest. Foresters worked to maximize production and provide a sustained yield over time, aiming for long-term stewardship over short term profits. The State Forests were also meant to serve as a model for private landowners, who the state foresters assisted in this endeavor.
- Unique to Massachusetts, the reforestation lot program let landowners turn over land to the state for reforestation; within 10 years they could then buy back the land. 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 Royalston State Forest is:

Forest management treats land as a community of interacting and independent parts.

VISITOR EXPERIENCE

Royalston State Forest provides a variety of visitor experiences, including the following:

- **Virtual Experience.** Potential visitors will find little information about Royalston 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 Otter River State Forest web page does not list Royalston as being one of its "related parks."
- **Entering the Park.** The Main Tract is likely the most popular portion of the Forest because it hosts the Tully Trail and provides access to Royalston Falls from Route 68. However, there is no formal gateway to this or any other Forest tract. Visitors entering the Forest at this location park in an unmarked gravel lot on land owned by the USACE. To access the Tully Trail and the Forest, visitors walk northwest approximately 800 feet along the shoulder of Route 68 to the unmarked trailhead on DCR property. Other tracts of the Forest with road frontage are accessed via unmarked trailheads and/or forest roads that lack parking.
- **Trail-based Passive Recreation.** Visitors may access a modest trail network through wooded forest parcels or embark on longer hikes via Tully Trail connections.

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 27).

Natural Resources

Threats

- Some of the property boundaries of the Forest require instrument survey for confirmation. Lack of knowledge concerning DCR's physical property boundaries threatens effective management of natural and cultural resources and recreation activities.

- Undeveloped open space in New Hampshire that is adjacent to the Main Tract of the Forest and within the Tully Brook watershed is not protected. Development of this open space, some of which is designated as Highest Ranked Habitat in the State of New Hampshire's Wildlife Action Plan, would threaten water quality, habitats, natural communities, and habitat for MESA-listed species in the Forest (University of New Hampshire 2022).
- The New England Power Co. (NEPCo) is proposing the A1/B2 Asset Condition Refurbishment Project, an electrical transmission line upgrade, in the Forest (Card 2022). This project, under DCR and Massachusetts Environmental Protection Act (MEPA) review (Executive Office of Energy and Environmental Affairs (EEA) No. 16607) as of August 2025, may require permanent easements under Article 97 of the Amendments to the Massachusetts Constitution and result in yet-to be-determined tree clearing/loss of forest habitat and negative impacts to sensitive natural resources. The project may also result in increased unauthorized off-highway vehicle (OHV) access to the Forest that could damage sensitive natural resources in the future (Rice 2022). The NHESP has observed that the Pink Sallow Moth (a Species of Special Concern protected under MESA) is supported by lowbush blueberry in the transmission line corridor, although there is no Priority Habitat or Nonregulatory Habitat associated with the species at this location (Leddick 2024). The Long Pond Tract is subject to an easement held by NEPCo for installation, maintenance, and access relating to its electric transmission lines (Worcester County Registry of Deeds (WCRD), Book 26956, Page 228; Book 3148, Page 458; Plan Book 782, Plan 108).
- A residential abutter has run a plastic utility line for spring water across the Long Pond Tract's street frontage. This usage is permitted under rights running with the deed, as follows: "the privilege of entering upon said…land to re-lay and to maintain the pipe leading from said spring" (WCRD Book 18846, Page 208). Attempts to lay larger or more permanent water lines could threaten the conservation values or recreational use of the Forest. Any future DCR or DCR permittee access to the parcel with heavy machinery will necessitate protection of this water line.
- Although the Forest's natural communities have not been systematically surveyed, one Priority Natural Community has been identified. This community, and existing and potential threats to its ecological integrity and continued persistence in the Forest are identified below:
    - Alluvial Hardwood Flats (S3 – Vulnerable). Two small patches of this community type are located along the east Branch of the Tully River, on the edge of the Main Tract. This community type is vulnerable to invasive plants and plant succession (Swain 2020).
- The forest road used by the Tully Trail on the Main Tract has multiple blocked forest road culverts. The consequent diversion of water over the forest road is resulting in erosion that threatens water quality and aquatic habitats and environments.
- Tully Brook passes through a culvert below Falls Road (a Town of Royalston road) in the Main Tract. The culvert approaches have washed out, creating multiple flood channels and eroding soils into the Forest. OHV and/or four-wheel-drive users are exacerbating this erosion and increasing it by driving into adjacent sections of Forest. This activity threatens an identified Alluvial Hardwood Flat Community and Non-Regulatory habitat for a MESA-listed species that are in proximity to the road. (Non-Regulatory habitat is based on the presence of suitable habitat for state-listed species; there is no associated mapped Priority Habitat. On state lands, both are protected under MESA (321 CMR 10.00).)

- The following three Invasive Species have been identified at Royalston through a partial survey of the Forest: autumn olive, glossy buckthorn, and Oriental bittersweet (BSC Group 2017; Massachusetts Invasive Plant Advisory Group (MIPAG) n.d.). Invasive species may negatively impact both the ecological integrity and biodiversity of the Forest.
- There is limited information on the presence or distribution of invasives in Royalston. Such information is needed to determine if any sensitive resources are being impacted by invasive plants.
- There is evidence of past dumping on the Long Pond Tract in the form of plastic bottles and a large appliance. Unauthorized dumping threatens conservation values and the visitor experience of the Forest.
- There are multiple unapproved geocaches in the Forest. Inappropriately located geocaches may threaten sensitive natural resources.

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 DCR's and Q2C's mutual conservation and recreation goals (Q2C 2023).
- Much of the Town of Royalston remains undeveloped and its open space unprotected. The existence of such lands in proximity to the Forest creates opportunities to expand protected open space and further protect natural resources.
- There is an opportunity to partner with the State of New Hampshire and/or private conservation trusts in New Hampshire to protect portions of the Forest's Tully Brook watershed that are located in New Hampshire, adjacent to Forest's Main Tract.
- Approximately 2.7 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 natural resources and ensure management consistent with DCR properties statewide.
- An approximately 7.2-acre parcel of Forest in the Off Bliss Hill Road Tract is designated as Parkland (DCR 2012). This landlocked parcel is surrounded by DCR Forest designated as Woodland and by privately owned open space that is subject to conservation restrictions. There may be an opportunity to redesignate this parcel as Woodland or Reserve (as appropriate) to better align its land management with surrounding DCR and non-DCR open space.
- There is an opportunity to protect water quality and aquatic habitats in the Forest by replacing culverts, or installing bridges or boardwalks, at blocked culvert locations within the Main Tract.
- There is an opportunity to protect water quality, Non-Regulatory habitat for MESA-listed species, and Priority Natural Communities in the Forest by partnering with the Town of Royalston on repairs to Falls Road where it crosses over Tully Brook in the Main Tract.
- Priority Habitat for an NHESP amphibian Species of Special Concern is present within the Forest. The Forest's one potential vernal pool may serve as an important habitat component for this species, as well as "support rich communities of vertebrates and invertebrates" (MassWildlife 2009). There is an opportunity to protect this amphibian and other wildlife that utilize vernal pools by identifying

and certifying (as appropriate) this and other potential vernal pools (DCR (n.d.) and MassWildlife (2009)), as well as shrub swamps, that may also be used for breeding. If any future forest management projects occur in this habitat, there may be a further opportunity to protect habitat by following NHESP Forestry Conservation Management Practices for preservation and maintenance of forest conditions around these breeding wetlands.

- Priority Habitat for an NHESP reptile Species of Special Concern is present in the Forest. If any future forest management projects occur in this habitat, there may be an opportunity to protect this habitat by implementing NHESP guidelines and practices, as appropriate.
- Habitat for one NHESP insect Species of Special Concern is present in the Forest. In addition to Priority Habitat (i.e., Regulatory Habitat), there is also Non-Regulatory habitat for two additional MESA-protected insect species in the Forest. 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 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 the MESA. Additionally, ensuring continued water quality through measures such as culvert replacements and bridge installations on trails and forest roads will help to protect the habitat for all three species.
- There may be opportunities to protect habitat for multiple MESA-protected species by partnering with neighboring landowners such as the USACE and The Trustees on habitat management initiatives. In particular, MassWildlife has been discussing potential barrens restoration with the USACE on flood control property that abuts the Forest and could potentially be extended into the Forest for landscape-scale work (Leddick 2024).

Cultural Resources

Threats

- There is a lack of information regarding the history of land use and consequent cultural resources in the Forest.
- Erosion due to natural weather events and human recreational activities (hiking, mountain biking, OHV use, etc.) may threaten archaeological resources in the Forest.
- NEPCo is proposing the A1/B2 Asset Condition Refurbishment Project, an electrical transmission line upgrade, in the Forest (Card 2022). This project, under DCR and MEPA review (EEA No. 16607) at the time this report was authored, may result in yet-to-be-determined negative impacts to sensitive cultural resources. The project may also result in increased unauthorized OHV access to the Forest that could damage sensitive cultural resources in the future (Rice 2022).
- There are multiple (at least seven) unapproved geocaches in the Forest. Inappropriately located geocaches may threaten sensitive natural resources.

Opportunities

- Conducting a reconnaissance archaeological and cultural resources survey of the Forest in partnership with neighboring open space landowners and in consultation with Town and Indigenous tribal partners could improve DCR's knowledge and protection of cultural resources.
- Increased knowledge of cultural resources and landscapes in the Forest would create opportunities for public interpretation of the area's history and conservation values.
- There is an opportunity to preserve cultural values in the Forest by partnering with the Town of Royalston on a historically appropriate restoration of the Tully Brook culvert and associated Falls Road roadway approaches in the Main Tract.
- The Forest is located approximately 9 miles east of the Turners Falls Sacred Ceremonial Hill Site, a "highly significant Indigenous "prayer hill" containing stone features" (Matthews 2008). This property has been determined to be eligible for listing on the National Register (Matthews 2008). The "site is considered by Tribal authorities to be part of a ceremonial district" (Shutesbury Historical Commission (SHC) 2021). Although the boundaries of this district "are presently undetermined," its approximate boundary is "a 16-mile radius around the Turners Falls Site" (SHC 2021). Because of the Forest's location within the potential district, there is a possibility that Indigenous features occur within the Forest.
- Approximately 2.7 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.

Recreation

Threats

- There is limited official information available on Royalston State Forest. DCR's webpage does not include information on the Forest, making it difficult for potential visitors to become aware of the property and its recreational opportunities. The Forest is not included in the Alphabetical List of Massachusetts State Parks, List of State Parks by Region, or Search for Parks, by City, Town, or ZIP Code.
- There is no official trail map, making it challenging to navigate the Forest's trail network.
- Some extant trails and forest roads, including the Tully Trail, are not mapped on the Long Pond Tract. A lack of GIS trails data limits effective management of recreational infrastructure in the Forest.
- Neither the USACE trailhead parking lot nor the DCR trailhead at the Main Tract are marked with signs of any kind.
- Access to the Tully Trail at the Main Tract creates a difficult to navigate and potentially hazardous condition for visitors. Trail users who park on the adjacent USACE property must walk approximately 0.2 miles along the narrow, curving shoulder of Route 68 (Warwick Road) to access the trail. Tully Trail through-hikers coming from adjacent USACE must walk a shorter distance along this same stretch of road. There are no warning signs to alert motorists to the possible presence of hikers.
- There is a lack of parking for the Falls Road section of the Forest, which threatens visitor access to this parcel. (Falls Road, a Town of Royalston Road, is only accessible by four-wheel drive vehicle.)

- Old metal culvert pipes have been removed from the Tully Trail treadway on the Main Tract and left next to the trail, creating an unappealing visitor experience and perception of DCR for Forest visitors.
- There is an informal fire pit on Falls Road in the Main Tract, partially within the Forest. Use of this remote section of the Forest by after-hours visitors may result in depreciative behaviors that threaten wildlife and natural communities.

Opportunities

- Adding a Royalston State Forest web page that incorporates information concerning the Tully Trail to DCR's website would allow potential visitors to become aware of the Forest, its resources, and associated recreation opportunities, including the access that the Forest provides to Royalston Falls.
- Tully Trail and its use as an important means of access for Royalston Falls can be an opportunity for DCR to increase visibility for the agency and the state park and forest system.
- There is an opportunity to improve trail visibility and visitor access to the Main Tract and Tully Trail by collaborating with the USACE to install identification signs, lead-in signs, a welcome wayside, and internal park information signs.
- There is an opportunity to increase visitor safety at the Main Tract by partnering with the Town, USACE, and/or Massachusetts Department of Transportation (MassDOT) to implement road markings, signage, and/or other improvements along Route 68 between the USACE parking area and the Tully Trail trailhead.
- The DCR has no partnership with an outside organization for management of the Tully Trail. There is an opportunity to improve the maintenance and upkeep of the trail by creating such a partnership.
- The Tully Trail is not mapped in Commonwealth of Massachusetts GIS data layers for Hiking and Wilderness Trails. There is an opportunity to improve awareness of the trail and make navigation of this trail more convenient for hikers by adding the trail data to these to GIS layers.
- There is an easement on the Main Tract held by the private owner(s) and successors of a neighboring tract to the west (WCRD Book 21610, Page 296 and Plan Book 743, Plan 96. This easement affords the abutter rights to a 12-foot-wide right-of-way (ROW) for "forestry and logging purposes only", and improvement of the ROW for such passage. This ROW is the same alignment as the Tully Trail on the tract and therefore may provide a future opportunity for improvement of the trail by a private party.
- As any future trail improvements are planned, there is an opportunity to identify possibilities for accessible trails at the Forest.

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 (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 Massachusetts Natural Heritage and Endangered Species Program 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 Tully Brook and the East Branch of the Tully River, for the entire length of the streams in 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 (Massachusetts Bureau of Geographic Information 2021).

Habitat exists in the Forest for two species that have been identified as being particularly sensitive to the impacts of climate change: the Eastern newt and an amphibian Species of Special Concern.

Climate change may cause some vernal pools to dry earlier in the season than they have historically, potentially interfering with amphibian life cycles and negatively impacting associated wildlife (Cartwright et al. 2022). Similar impacts may occur at the Forest's potential vernal pools, if it functions as a vernal pool.

Responses of Massachusetts' invasive plants (i.e., those categorized as Invasive by MIPAG (n.d.)) to a changing climate are largely unknown. However, sufficient information exists to project the likely future trend of 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 Royalston State Forest.

Cultural Resources—General Impacts

Climate change may negatively affect cultural resources, their preservation, and maintenance (EEA 2022; 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., snowshoeing). Other recreation activities, such as horseback riding, may see increased participation during the winter and shoulder months due to the anticipated increase in temperature (i.e., more than 30 additional days with temperatures over 90° F; Table 12).

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 but 7.15 acres Royalston State Forest was designated Woodland; the

remainder is Parkland. Identification of Land Stewardship Zones within Royalston was performed in the context of these two Landscape Designations.

The following Land Stewardship Zoning is recommended to guide management and any future development. (See Figure 1. Land Stewardship Zoning Map, page 23, 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 Royalston have been designated Zone 1.

- No areas within the Forest have been designated Zone 1.

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 Royalston have been designated Zone 2.

- The entirety of the Forest.

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 Royalston are currently developed, appropriate for potential future development, or intensively used for recreation. They have been designated Zone 3.

- No areas within the Forest have been designated Zone 3.

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 Royalston.

- No Significant Feature Overlays were developed for this Forest.

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 Best Management Practices (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 24.)

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

Twenty-one priority management recommendations were developed for this property. They are presented in Table 19, page 27. 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 27) 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.

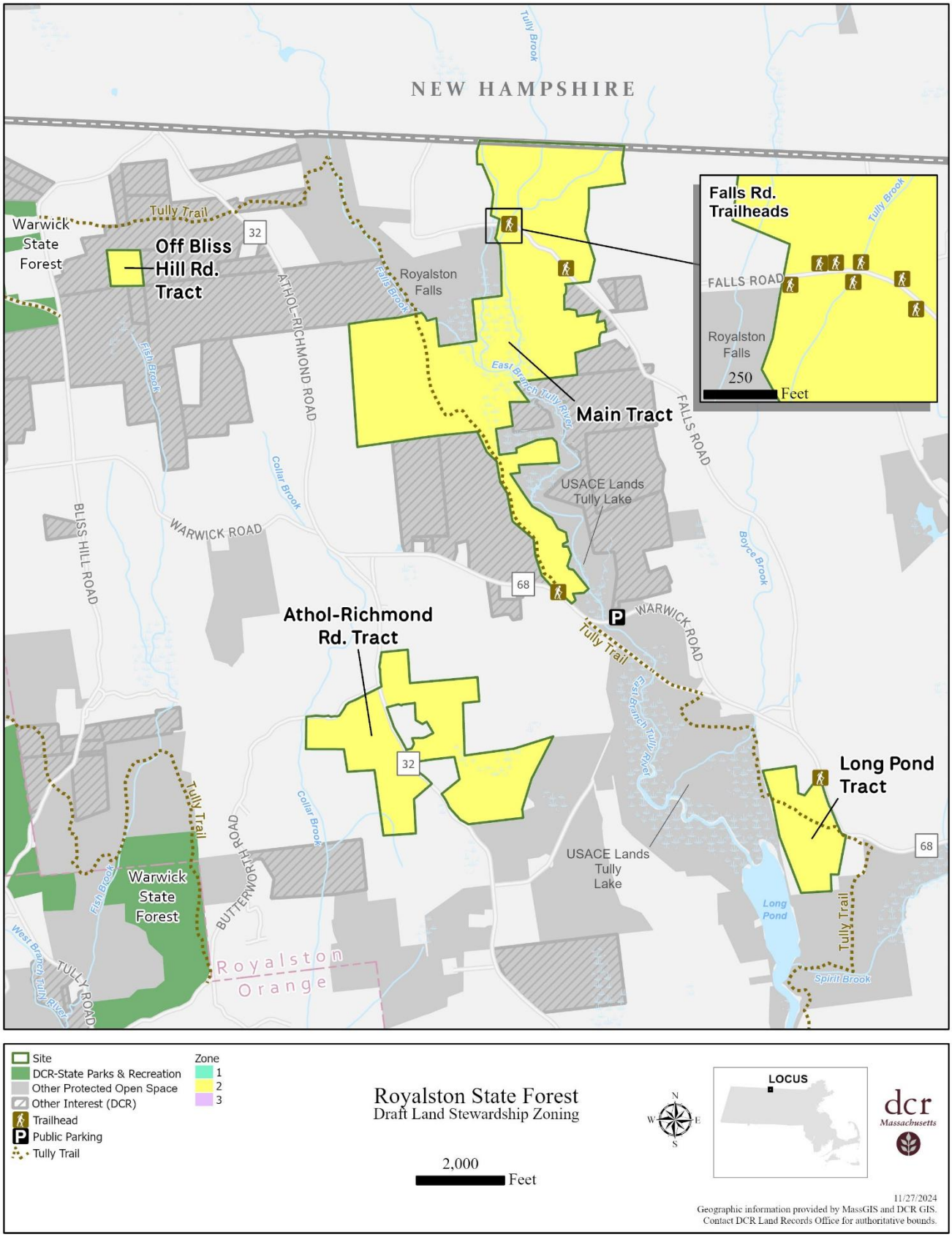

Figure 1. Land Stewardship Zoning Map.

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.	Yes
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.	Yes
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.	Yes
Natural Resources	4. Aquatic areas adjacent to beaches, boat ramps and launches, roads, and hiking trails are free of eroded sediments.	No
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.	N/A
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.	No
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.	Unknown
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 Massachusetts Department of Environmental Protection (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.	Yes
Sustainable Forest Management	1. Forestry activities are consistent with Landscape Designation and associated forestry guidelines.	NA
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 Royalston 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	Survey parcels where boundaries cannot currently be verified and install boundary markers.	Contractor, Management Forestry (Lead)
Natural Resources	As appropriate, examine and act on opportunities for land acquisition for the Forest in alignment with general Forest management goals or those of the Quabbin-to- Cardigan partnership.	Land Protection Program (Lead), Partners
Natural Resources	Partner with the State of New Hampshire and/or regional land protection groups to conserve open space in New Hampshire that is adjacent to the Main Tract of the Forest and within the Tully Brook watershed.	Land Protection Program (Lead), Partners
Natural Resources	Continue Massachusetts Environmental Policy Act (MEPA) review of New England Power Company's (NEPCo) A1/B2 Asset Condition Refurbishment Project to identify and avoid, minimize, or mitigate negative impacts to natural and cultural resources.	Office of Cultural Resources, Office of Natural Resources (Lead)
Natural Resources	Protect wetlands (and enhance user experience) by replacing or cleaning culverts on Tully Trail on the Main Tract, or replacing with boardwalks or footbridges, following appropriate internal and regulatory reviews.	Forest Fire Control, Park Operations (Lead), Trails and Greenways Section
Natural Resources	Partner with Town of Royalston to repair/replace Falls Road culvert at Tully Brook in the Main Tract. Block off-highway vehicle (OHV) access into the Forest adjacent to culvert.	Contractor, Office of Cultural Resources, Office of Natural Resources, Partner, Structural Engineering, Trails and Greenways Section (Lead)

Category	Recommendation	Implementation
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
Natural Resources	Following appropriate review and permitting, implement the Invasive Plant Management Plan: Central Region (BSC Group 2017) for aquatic and terrestrial invasive plants. Maintain actions as needed.	Management Forestry, Office of Natural Resources (Lead), Park Operations, Partner
Cultural Resources	Conduct reconnaissance archaeological survey (950 CMR 70) of the Forest in partnership with the Town of Royalston, The Trustees, and USACE as part of broader survey of Tully River and Millers River watersheds. Complete appropriate Massachusetts Historical Commission archaeological site forms for identified archaeological resources.	Office of Cultural Resources (Lead), Partners
Cultural Resources	Work with Indigenous partners to inventory, document, conserve, and interpret Indigenous resources and Indigenous history within the Forest.	Management Forestry, Office of Cultural Resources (Lead), Partner
Recreation	Establish a DCR web page for Royalston State Forest. Include information on connections to the Tully Trail and to the Trustees' Royalston Falls.	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	Update the DCR Roads and Trails GIS data with trail mapping on the Long Pond Tract.	Trails and Greenways Section
Recreation	Remove and properly dispose of the abandoned culvert pipes and pallet from Tully Trail within Forest's Main Tract.	Park Operations
Recreation	Partner with the Army Corps of Engineers (USACE) to plan, develop and install a combination of identification signs, lead-in signs, a kiosk with a Welcome Wayside sign, and internal park information signs, as appropriate, for the Main Tract in the vicinity of Tully Trail parking on Route 68.	Interpretive Services (Co-Lead), Park Operations, Partner, Trails and Greenways Section (Co-Lead)

Category	Recommendation	Implementation
Recreation	Partner with the Town of Royalston, Massachusetts Department of Transportation (MassDOT), and the Army Corps of Engineers (USACE) to create safe walking routes along the Tully Trail where it crosses and follows Route 68 to enter the Main Tract.	Park Operations, Partners, Traffic Engineering Section, Trails and Greenways Section (Lead)
Recreation	Install rules and regulations signs and Cantilevered Identification Signs at either end of Falls Road where it enters the Forest's Main Tract.	Park Operations
Recreation	Create formal partnership for maintenance of Tully Trail segments on DCR property.	Partner, Trails and Greenways Section (Lead)
Recreation	Add the Tully Trail to the state's GIS data layers for Hiking and Wilderness Trails.	Partner, Trails and Greenways Section (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 any new geocaches are placed outside of sensitive areas and with the approval of the property manager.	Park Operations

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