

FOREST MANAGEMENT PLAN

Submitted to: Massachusetts Department of Conservation and Recreation
For enrollment in CH61/61A/61B and/or Forest Stewardship Program



CHECK-OFFS					Administrative Box			
CH61 cert. <input type="checkbox"/>	CH61A cert. <input type="checkbox"/>	CH61B cert. <input type="checkbox"/>	STWSHP new <input checked="" type="checkbox"/>	C-S EEA <input type="checkbox"/>	Case No. _____	Orig. Case No. _____		
recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	renew <input type="checkbox"/>	Other <input type="checkbox"/>	Owner ID _____	Add. Case No. _____		
amend <input type="checkbox"/>	amend <input type="checkbox"/>	amend <input type="checkbox"/>	FSC <input type="checkbox"/>	Birds <input type="checkbox"/>	Date Rec'd _____	Ecoregion _____		
				Conservation Rest. <input type="checkbox"/>	Plan Period _____	Topo Name	Wrentham	
Plan Change: _____ to _____				CR Holder _____	Rare Sp. Hab. _____	River Basin	Charles	

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) Town of Wrentham – Birchwold Farm Conservation Area
 Mailing Address Town Hall-Room 211, 79 South Street, Wrentham, MA 02093 Phone (508) 384-3174
 Email Address latavares@wrentham.ma.us
 Property Location: Town(s) Wrentham Road(s) West Street

Plan Preparer Patrick Conlin Mass. Forester License # 437
 Mailing Address 69 Fourth Street, Turners Falls, MA 01374 Phone (413) 336-4745

RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A 61B Excluded Acres	Ch61/61A 61B Certified Acres	Stewshp Excluded Acres	Stewshp Acres
<u>F-01</u>	<u>01-05</u>	<u>6708</u>	<u>473</u>	<u>120.0</u>	<u>120.0</u>	<u>0.0</u>	<u>0.0</u>	<u>120.0</u>
TOTALS				<u>120.0</u>	<u>120.0</u>	<u>0.0</u>	<u>0.0</u>	<u>120.0</u>

Excluded Area Description(s) (if additional space needed, continue on separate paper)

No Exclusion

HISTORY Year acquired 1985 Year management began 2015

Are boundaries marked: Yes blazed/painted/flagged/signs posted (circle all that apply)? No Partially

What treatments have been prescribed, but not carried out (last 10 years if plan is a recert.)?

stand no. _____ treatment _____ reason _____

(if additional space needed, continue on separate page)

Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Acres	Date

Remarks: (if additional space needed, continue on separate page)



Property Overview, Regional Significance, and Management Summary

The town of Wrentham, which covers an area of about 22 square miles, is situated in the southwestern edge of Norfolk County. The town's southern boundary is also the state line between Massachusetts and Cumberland, Rhode Island. This region along the Interstate 495 corridor is densely populated by suburban development. The population of this town has grown considerably in the last 100 years from 1,700 people in 1910 to more than 109,000 in 2010 (census records). Today, roughly 16% of land in Wrentham is classified as protected open space. These open spaces serve as important ecological reserves and are all the more important as they are dispersed across the town as islands of natural areas.

The land around Massachusetts Bay was one of the earliest portions of the United States to be settled by European colonists. This area was originally sought after by livestock farmers in search of new pasture lands which they found in the large marshes and meadows. Abundant natural resources and the devastating effects of pathogens on indigenous peoples created nearly unobstructed land clearing and conversion of forested areas. As lots were cleared (at an average rate of 2 acres per year), stumps from felled trees were placed along boundaries to mark property lines and fence in livestock. These stump fences were eventually replaced by fieldstones that were removed from fields and placed in well-crafted walls that still persist today. Around the end of the 19th Century, agriculture in New England dramatically decreased as more fertile lands west of the Appalachian Mountains became available and machinery designed for level ground increased production. Many of these abandoned farms reverted back to forests for around 50 years until the end of World War 2. Returning veterans bought small parcels of former farm land to build homes and raise the 'baby boomer' generation. This explosion in the home buying market sped the subdivision of lots for the purpose of both residential and commercial development and this trend continues in part today.

The Birchwold Farm Conservation Area is town owned open space that features 120 acres of oak/pine woodlands, a mowed field, red maple swamp, and a powerline right-of-way. The property was acquired through eminent domain in 1985. It is located off of West Street in the southwestern end of town. The lower boundary of this property is also the state line, separating Massachusetts from Rhode Island. Parking and trail access is available off of West Street, south of Joe's Rock Conservation Area. Birchwold features numerous trails for recreational access. Many stone walls are found in and around the property, alluding to the past use of this land for grazing dairy livestock.

Glacial deposits of well-drained soils in upland portions of this property support the growth of overstory pine and oak. Five unique forest types were identified on this property. These types are white pine/hardwood, red maple, upland brush, white pine, and mixed oak. A significant feature lacking from these woodlands is the presence of shade-tolerant mid-story species like hemlock and beech. As a result, enough sunlight is made available to stimulate germination of pine and oak seed. The lack of an established mid-story however shows that there is not enough sunlight available to allow these young trees the opportunity to establish in the canopy. The species that compose the overstory include white pine, red oak, black oak, scarlet oak, white oak, and red maple. Occasionally there is a hickory, white ash, or sugar maple, but it occurs rather infrequently.

OBJECTIVE CODE: CH61 = stands classified under CH61/61A STEW= stands not classified under CH61/61A
STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Birchwold Farm Conservation Area Town(s) Wrentham



Property Overview, Regional Significance, and Management Summary

Wildlife in the region undoubtedly rely on Birchwold and the other areas of open space in this fragmented portion of the state. Additionally, the presence of oak on this site provides highly nutritious food in the form of acorns. Decaying oak tend to persist longer than most other species of trees and thus serve as valuable nest/denning sites for birds and mammals. Understory vegetation includes blueberries/huckleberries, greenbrier, and American hazelnut which add to on site food availability. Migratory birds such as wood duck, common yellowthroat, yellow-rumped warbler, and hermit thrush find suitable foraging and nesting habitat in these woodlands.

Forest health is fair on average at the Birchwold Farm. Invasive plants are present along forest edges, notably in the northwestern corner and along the powerline right-of-way. A seam of wet soils found south east of the parking area is also harboring invasive plants. Species observed include Japanese barberry, multiflora rose, Oriental bittersweet, common buckthorn, autumn olive, and bush honeysuckle. A population of swallowwort is being managed in the field (Stand 9) by local conservationists. Pathogens are few and insect damage is mostly limited to galls on oaks. These galls are not problematic in current numbers and are quite normal in the natural setting. The few white ash found in low lying wet areas in the south are threatened by the arrival of emerald ash borer (EAB). This Asiatic beetle has been killing ash trees emanating from its initial entry point in Michigan. It was detected in western Massachusetts in 2012 and has since been found in New Hampshire and eastern Massachusetts. These white ash will suffer a similar fate as the American chestnut which survives to this day as stump sprouts from century old root systems. The cause of chestnuts decline is chestnut blight, an introduced fungal pathogen that attacked American chestnuts in the early part of the 20th century.

This property contributes many facets to the town and surrounding communities. The aesthetic qualities of Birchwold attract visitors to hike and view wildlife. The variety of habitats supports a diverse array of species in an area where developed land fragments islands of open space. It is well-known as a popular dog walking and bird watching destination within the local community. Water from this portion of the town is utilized by the City of Pawtucket, which owns a property abutting Birchwold to the east. These benefits can be preserved and even improved through management practices that replicate natural systems to perpetuate healthy and resilient forests with emphasis on promoting diversity of species and vertical forest structure

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Owner(s) Birchwold Farm Conservation Area

Town(s) Wrentham

STAND DESCRIPTIONS

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	1	WH	10	9.3"	70	0.4 MBF 7.3 CDS	60 WP

This white pine/hardwood (WH) stand is found in the northern most portion of the property and surrounds the parking area adjacent to West Street. Overstory species include white pine, red maple, scarlet oak, and white oak. The mid-story is composed of red maple, red oak, and some white pine. Regeneration is composed of sassafras, black birch, and red maple. Some of the understory species found here include green brier, highbush blueberry, lowbush blueberry, and witch hazel.

The soils found in this stand are Hollis-Rock outcrop-Charlton complex, and Charlton-Hollis-Rock outcrop complex. These gently rolling soils are fairly well-drained and are productive for the growth of oaks and pine.

Forest health is fair in this stand. Multiflora rose, an invasive plant has colonized areas around the parking lot. Seed could potentially be vectored from these individuals both into and away from the conservation area by vehicles.

Wildlife benefit from the larger white pine and acorn producing oak found here. The larger trees offer sites for insect foraging and observation for birds like the great-crested flycatcher and red-tailed hawks. Acorn crops that are produced in varying abundance every fall are some of the most plentiful and protein rich wild foods in the north east. Species from black bear to voles readily feed and cache this crop.

In the future, it would be desirable to see a reduction in invasive plants, however, this stand should be left to be shaped by natural processes. This is due to the poor quality of trees, as well as the proximity to West Street and the parking area.

STEW	2	WH	12	8.1"	80	0.8 MBF 9.2 CDS	60 WP
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Stand 2 is another white pine/hardwood (WH) type found in the northwestern corner of the property, extending down the western boundary to the powerline right-of-way (Stand 4). It is bordered to the east by the meadow (Stand 9). The overstory is composed of white pine, red oak, white oak, red maple, and grey birch. Regeneration is non-existent due to the young and dense configuration of stems. The understory is sparse with occasional high bush blueberry.

The soils found in this stand include Montauk fine sandy loam, and Scituate fine sandy loam. These soils are moderately well-drained and excellent for growing pine and oak. The terrain is gently sloping with few surface stones evident. The stand acts as a buffer between the meadow to the east, and residential development to the west. This stand is accessible via the Main Loop trail, which originates from the parking area.

Forest health is threatened by the presence of invasive plants. Species observed include Japanese barberry, multiflora rose, Oriental bittersweet, and common buckthorn. The climbing bittersweet and rose have managed to pull down some younger trees opening up pockets of sunlight in which the invasives flourish. It can be expected that this trend will continue without intervention. Populations of these invasives are dense but localized in a few pockets.

Wildlife benefit from the larger white pine and acorn producing oak found here. The larger trees offer sites for insect foraging and observation for birds like the great-crested flycatcher and red-tailed hawks. Acorn crops that are produced in varying abundance every fall are some of the most plentiful and protein rich wild

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Owner(s) Town of Wrentham – Birchwold Farm

Town(s) Wrentham

STAND DESCRIPTIONS

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	2	WH	12	8.1"	80	0.8 MBF 9.2 CDS	60 WP

foods in the north east. Species from black bear to voles readily feed and cache this crop.

In the future, it would be desirable to allow this young stand to mature while reducing the population of invasive plants that threaten the long-term health and ecological functions this stand offers.

STEW	3	RM	13	12.9"	90	2.9 MBF 14.0 CDS	55 RM
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This red maple (RM) stand is found to the south of Stand 1, with the meadow (Stand 9) to the west and the right-of-way (Stand 4) to the south. Red maple is the dominant species in the overstory, with associated sugar maple, white oak, yellow birch, and white ash. Regeneration levels are low, consisting mostly of red maple along with occasional yellow birch, elm, and sugar maple. Green briar, high bush blueberry, and a variety of ferns and mosses can be found in this moderately stocked understory.

The soil found in this stand is Whitman loam. This poorly-drained soil is rocky and holds moisture throughout the year. Red maples have a shallow root system that allows this species to occupy this area despite a high water table. A stream flows southerly down the center of the stand, continuing across the property and into Rhode Island. This stand is accessible via a loop trail that originates from the powerline right-of-way.

Forest health is good in this stand. Japanese barberry is present in moderate density and well dispersed throughout this stand. White ash in this stand are threatened by emerald ash borer, an Asiatic beetle which spends its larval life feeding on vascular tissue of host trees. Infested ash trees may succumb to emerald ash borer in as few as three years after initial colonization. Fortunately, ash is a very minor component of this forest and the loss of this species, although significant, will not outwardly impact the structure of this stand.

Wildlife benefit from the diversity this stand provides in an otherwise oak/pine dominated woodland. The water features found here are utilized by insects, amphibians, and reptiles for breeding and foraging. Migratory wood warblers are attracted to such sites when returning from migration to feed on the abundance of insect protein available.

In the future, it would be desirable to allow this stand to carry out the function of protecting the water resource it surrounds. A reduction of the invasive plant population would allow native species to thrive in the understory.

STEW	4	BR	7	0.0"	0	0.0 MBF 0.0 CDS	N/A
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Stand 4 is the area occupied by the powerline right-of-way. It is classified as upland brush (BR) due to the lack of overstory species. The shrub layer is thick and is composed of a variety of woody plants found nowhere else on the property. Species observed include common juniper, sweet fern, red cedar, dewberry, nannyberry viburnum, winterberry holly, clethra, green briar, and white pine seedlings.

The soils found here include Charlton-Hollis-Rock outcrop complex, Hollis-Rock outcrop-Charlton complex, and Whitman loam. Other than Whitman, these soils are moderately drained. All of these soils are rocky with a brook flowing southerly in the western portion and a wetland in the eastern. This stand is

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Town(s) Wrentham

STAND DESCRIPTIONS

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	4	BR	7	0.0"	0	0.0 MBF 0.0 CDS	N/A

accessed via the Main Loop trail or by cutting through the meadow and connecting with a trail that runs south along the western boundary.

Forest health is good here although there were some light occurrences of barberry. Regular management to suppress overstory trees maintains this stand in a brushy state. Wildlife utilize these right-of-way corridors to move from one parcel of open space to another. Migratory birds such as the indigo bunting and brown thrasher prefer habitat similar to that found along right-of-ways adding to the wildlife this land can support.

In the future, this area will continue to be maintained by the power company as long as the transmission lines remain active. Control of invasives would be beneficial, and perhaps this could be included with current management carried out by the power company.

STEW	5	WP	1.5	8.1"	70	0.0 MBF 15.9 CDS	60 RO
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Stand 5 is a young white pine (WP) stand located east of Stand 3 and north of the powerline right-of-way. Overstory species found here include white pine, bigtooth aspen, white oak, and white ash. No regeneration exists in this even-aged stand. Common juniper and highbush blueberry were observed in the understory.

The soil found here is Hollis-Rock outcrop-Charlton complex. This soil is well-drained and good growing medium for pine and oak. The terrain here is flat with hiking access gained through a trail that loops through Stands 3-6. The dense young pines here create excellent cover for deer and woodcock.

Forest health is seriously threatened by invasive plants in this stand. Species observed include autumn olive, Japanese barberry, Oriental bittersweet, and common buckthorn. Bittersweet vines are climbing into the canopy and tearing down trees creating sunny openings that spur the growth of the other invasive plants below.

In the future, it would be desirable to encourage healthy pine and hardwoods as this stand matures. In order to ensure that future generations of trees and native understory communities are able to establish, controlling invasive plants is necessary.

STEW	6	OM	11	7.4"	80	1.3 MBF 12.0 CDS	55 WO
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This mixed oak (OM) stand is found to the east of Strands 3 and 5 and north of the right-of-way. Overstory species found here include black/white/scarlet/chestnut oak, white pine, and red maple. Regeneration is low to moderately stocked with white pine, white/scarlet/chestnut oak saplings. The understory is moderately stocked and features sassafras, nannyberry viburnum, huckleberry, and lowbush blueberry.

The soils found here are Hollis-Rock outcrop-Charlton complex, and Whitman loam. This stand is mostly well drained over level or slightly sloping terrain. A wetland is situated along the eastern edge of this stand. Trails provide foot access to this stand

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Town(s) Wrentham

STAND DESCRIPTIONS

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	6	OM	11	7.4"	80	1.3 MBF 12.0 CDS	55 WO

Forest health is excellent in this stand. No serious problems were observed during the field visit. The presence of both white oak and chestnut oak make this stand very desirable to wildlife. Acorns across all oak species are highly nutritious, but those from the white oak (which includes white, chestnut, English, and live oaks) have considerably less tannin, making the nut flesh more palatable.

In the future, it would be desirable to allow this stand to mature. In order to foster efficient growth and ensure long term health and resiliency, it will be necessary to remove poorer stems at some point. This is especially true with oaks, as they tend to decline when in competition with other oaks for resources.

STEW	7	OM	40	8.5"	98	0.9 MBF 14.0 CDS	60 WO
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Stand 7 is another mixed oak (OM) type found south of the powerline right-of-way. Overstory species found here include scarlet/red/white/black/chestnut oak, red maple, white pine, white ash, yellow birch, and sugar maple. Regeneration levels are moderate on average and consist of white pine, white/chestnut/scarlet oak, red maple, beech, and sugar maple.

The soils found in this stand are Hollis-Rock outcrop-Charlton complex, Whitman loam, Charlton-Hollis-Rock outcrop complex, and Freetown muck. With the exception of Freetown and Whitman, these soils are well drained and suitable for growing pine and oak. The other two soils are associated with wetland areas located in both the southwestern and northeastern corners of this stand. In addition to these wet areas, a stream flows southerly along the western property boundary around which more diversity in hardwood species can be seen. The terrain features moderate slopes with some ledge around the high points in the center of the stand. Hiking trails make all portions of this stand accessible

Forest health is excellent in this stand. Invasive plants do exist in the right-of-way to the immediate north and it is very likely that some exist in this stand in low density. None were observed however, but due to the likelihood that this area could become infested, it warrants the need to monitor and take early measures to protect the ecological functions in place here.

This stand contributes many benefits to local wildlife. The majority of overstory stems are oaks which produce acorns, a valuable food for deer and turkey. Oak are also more rot resistant than hardwoods like ash and maple, allowing them to persist longer as standing dead trees or live trees with cavities. Healthy oaks can have a long, enduring impact on the landscape.

In the future, it would be desirable to manage this stand so that well-formed healthy oaks are allowed to expand and grow through the removal of lower potential stems. The overstory should retain a diverse array of species but management that encourages regeneration will add to vertical structure.

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Town(s) Wrentham

STAND DESCRIPTIONS

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	8	WH	12	11.1"	85	3.9 MBF 8.7 CDS	55 WP

Stand 8 is a white pine/hardwoods (WH) type found in the southeastern portion of the property. Overstory species found here include white pine, chestnut oak, black oak, red maple, and black birch. Regeneration is low to moderate and is composed of white pine, chestnut oak, and some red maple. The understory has a moderate to low stocking level and consists of witch hazel, huckleberry, lowbush blueberry, and wintergreen.

The soil found here is Charlton-Hollis-Rock outcrop complex/Rock outcrop-Hollis complex. The terrain here features some moderate to steep slopes with the highest point being a ridgeline that runs north to south through the center of the stand. To the west is a stream with associated wet soils which divides this stand with Stand 7. At this division, field stone foundations of an old mill along with numerous stone walls provide evidence of the past uses of this property. To the east of this stand is a discontinued road and land conserved by the City of Pawtucket, RI as watershed property.

Forest health in this stand is excellent. No serious pest, pathogens, or invasive plants were observed.

Deer, turkey, and migratory birds like our wood warblers are attracted to the features of this stand. Oaks provide acorn crops and the understory supports berry producing shrubs as well as witch hazel which is browsed upon in winter.

The future condition of this stand should be shaped by natural processes in order to enable it to serve as a benefit to local wildlife.

STEW	9	GF	13.5	0.0"	0	0.0 MBF 0.0 CDS	N/A
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A meadow consisting of grasses and forbes (GF) is found just south of the parking area. A variety of herbaceous flora can be found growing here along the occasional apple and red cedar. Periodic mowing keeps this area in an early successional state. Eastern bluebirds and woodcock utilize this open area for foraging and mating displays. Many foot paths crisscross this stand and connect to wooded trails located around the periphery

Soils found here include Hollis-Rock outcrop-Charlton complex, and Scituate fine sandy loam. These soils are moderately well-drained over level terrain. Some invasive plants are found in this stand, including multiflora rose, barberry, and black swallowwort. Mowing and spot applications of herbicide have knocked down populations and given a competitive edge to natives. It is recommended that these practices be continued to prevent the reestablishment of these voracious plants.

It would be desirable to maintain this stand in its current state while applying control efforts to suppress the invasive plant presence.

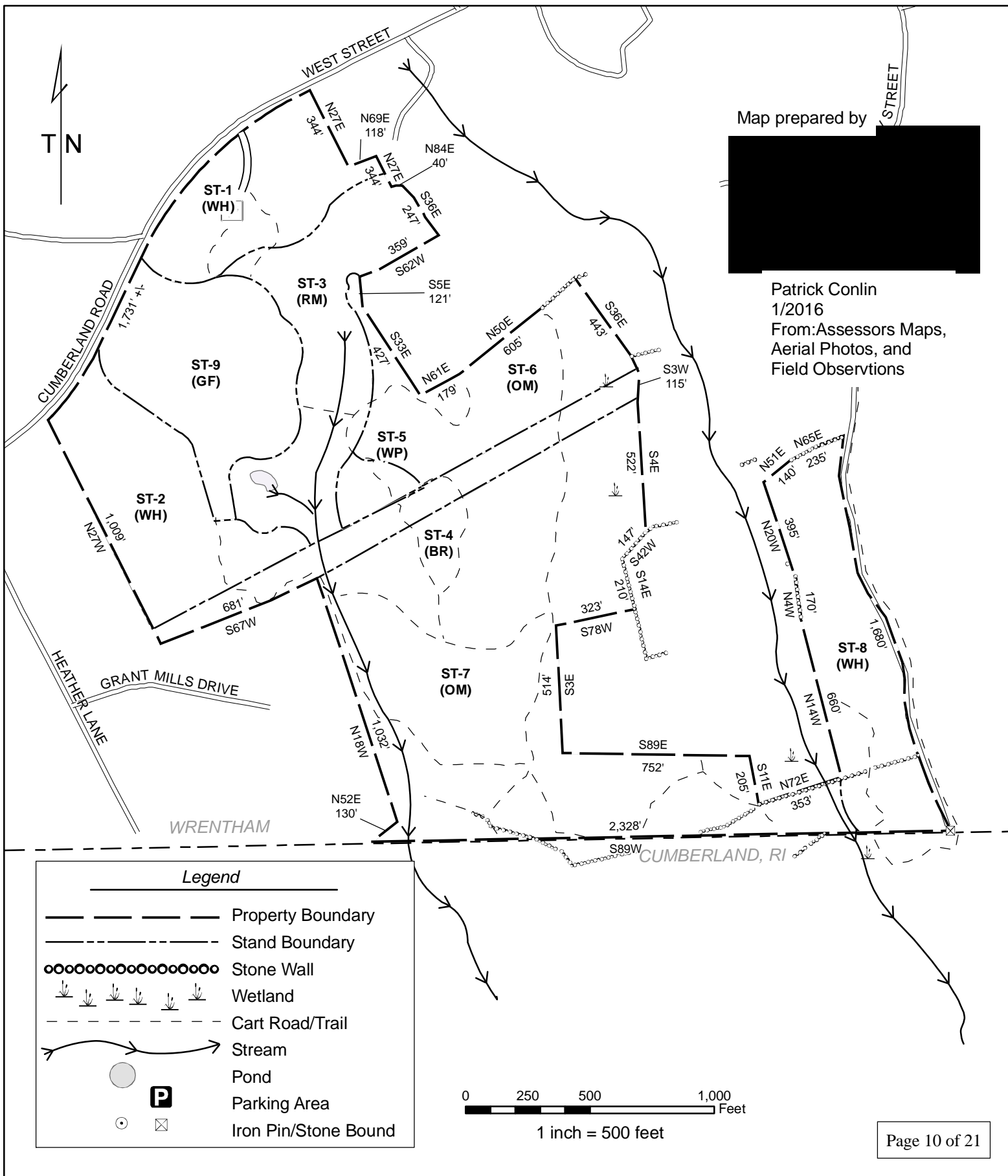
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Town(s) Wrentham

Forest Stewardship Stand Map

Birchwood Farm Conservation Area
 Located off of West Street,
 Wrentham, Massachusetts 02093

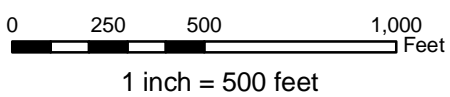


Map prepared by [Redacted]

Patrick Conlin
 1/2016
 From: Assessors Maps,
 Aerial Photos, and
 Field Observations

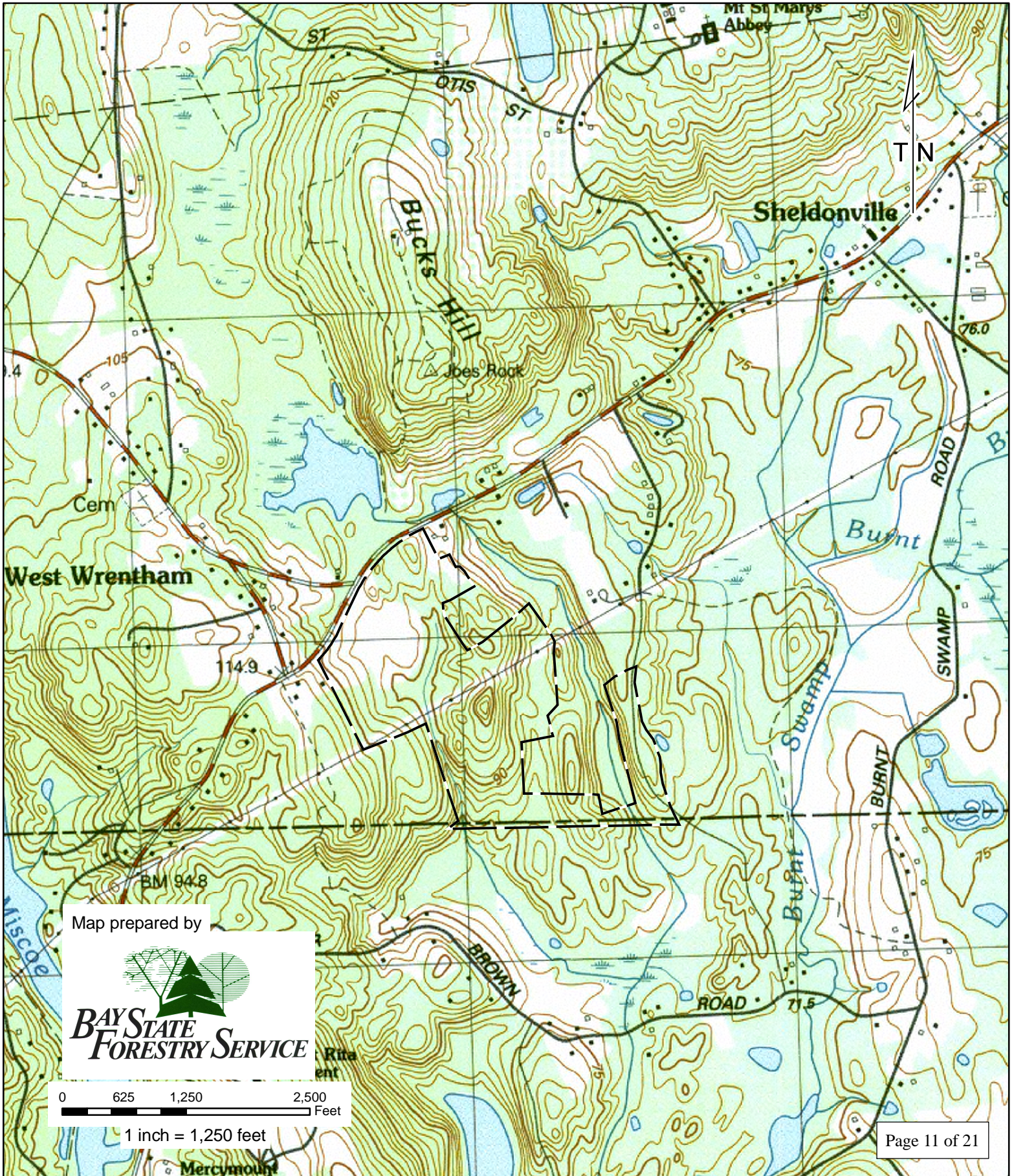
Legend

- Property Boundary
- Stand Boundary
- Stone Wall
- Wetland
- Cart Road/Trail
- Stream
- Pond
- Parking Area
- Iron Pin/Stone Bound



Forest Stewardship Locus Map

Birchwold Farm Conservation Area
Wrentham Town Property
Located on West Street, Wrentham, Massachusetts



Forest Stewardship Ortho Map

Birchwold Farm Conservation Area
Wrentham Town Property
Located on West Street, Wrentham, Massachusetts



MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
STEW	ALL		Invasive Plant Control	10	N/A	N/A	2016-19

Invasive plants exist in low to moderate levels in several portions of the property. By applying control strategies now, efforts will be minimized while maintaining effective control. As these plants become more established, they become harder to kill and have produced many seasons worth of seed that can lay dormant in the soil for many years. Non-chemical measures may be appropriate with such mild infestations. Group weed pulling events could be utilized to use volunteers for important conservation work and education on the importance of native plants.

STEW	ALL	Boundary Marking	ALL	N/A	N/A	2016/25
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The Forest Stewardship Program recommends keeping property boundaries visibly painted. Well-marked boundaries help to prevent trespass issues and allow for more efficient implementation of management activities. The boundaries on this property are marked in some locations by the abutters, but are not marked in other locations. The boundaries will be marked by painting or other form of marking of trees on both sides of property lines, prior to conducting other management activities in this plan. The status of the boundaries will be re-examined at the end of this management planning period to determine additional maintenance necessary.

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Note: The following 7 pages are educational materials supplied by the MA Forest Stewardship Program

Stewardship Issues

Massachusetts is a small state, but it contains a tremendous variety of ecosystems, plant and animal species, management challenges, and opportunities. This section of your plan will provide background information about the Massachusetts forest landscape as well as issues that might affect your land. **The Stand Descriptions and Management Practices sections of your plan will give more detailed property specific information** on these subjects tailored to your management goals.

Biodiversity: Biological diversity is, in part, a measure of the variety of plants and animals, the communities they form, and the ecological processes (such as water and nutrient cycling) that sustain them. With the recognition that each species has value, individually and as part of its natural community, maintaining biodiversity has become an important resource management goal.

While the biggest threat to biodiversity in Massachusetts is the loss of habitat to development, another threat is the introduction and spread of invasive non-native plants. Non-native invasives like European Buckthorn, Asiatic Bittersweet, and Japanese Honeysuckle spread quickly, crowding out or smothering native species and upsetting and dramatically altering ecosystem structure and function. Once established, invasives are difficult to control and even harder to eradicate. Therefore, vigilance and early intervention are paramount.

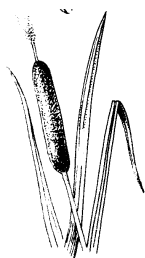
Another factor influencing biodiversity in Massachusetts concerns the amount and distribution of forest growth stages. Wildlife biologists have recommended that, for optimal wildlife habitat on a landscape scale, 5-15% of the forest should be in the seedling stage (less than 1" in diameter). Yet we currently have no more than 2-3% early successional stage seedling forest across the state. There is also a shortage of forest with large diameter trees (greater than 20"). See more about how you can manage your land with biodiversity in mind in the "Wildlife" section below. (Also refer to *Managing Forests to Enhance Wildlife Diversity in Massachusetts* and *A Guide to Invasive Plants in Massachusetts* in the binder pockets.)



Rare Species: Rare species include those that are **threatened** (abundant in parts of its range but declining in total numbers, those of **special concern** (any species that has suffered a decline that could threaten the species if left unchecked), and **endangered** (at immediate risk of extinction and probably cannot survive without direct human intervention). Some species are threatened or endangered globally, while others are common globally but rare in Massachusetts.

Of the 2,040 plant and animal species (not including insects) in Massachusetts, 424 are considered rare. About 100 of these rare species are known to occur in woodlands. Most of these are found in wooded wetlands, especially vernal pools. These temporary shallow pools dry up by late summer, but provide crucial breeding habitat for rare salamanders and a host of other unusual forest dwelling invertebrates. Although many species in Massachusetts are adapted

species maps and the result indicated on the upper right corner of the front page of the plan. Prior to any regulated timber harvest, if an occurrence does show on the map, the NHESP will recommend protective measures. Possible measures include restricting logging operations to frozen periods of the year, or keeping logging equipment out of sensitive areas. You might also use information from NHESP to consider implementing management activities to improve the habitat for these special species.



Riparian and Wetlands Areas: Riparian and wetland areas are transition areas between open water features (lakes, ponds, streams, and rivers) and the drier terrestrial ecosystems. More specifically, a **wetland** is an area that has hydric (wet) soils and a unique community of plants that are adapted to live in these wet soils. Wetlands may be adjacent to streams or ponds, or a wetland may be found isolated in an otherwise drier landscape. A **riparian area** is the transition zone between an open water feature and the uplands (see Figure 1). A riparian zone may contain wetlands, but also includes areas with somewhat better drained soils. It is easiest to think of riparian areas as the places where land and water meet.

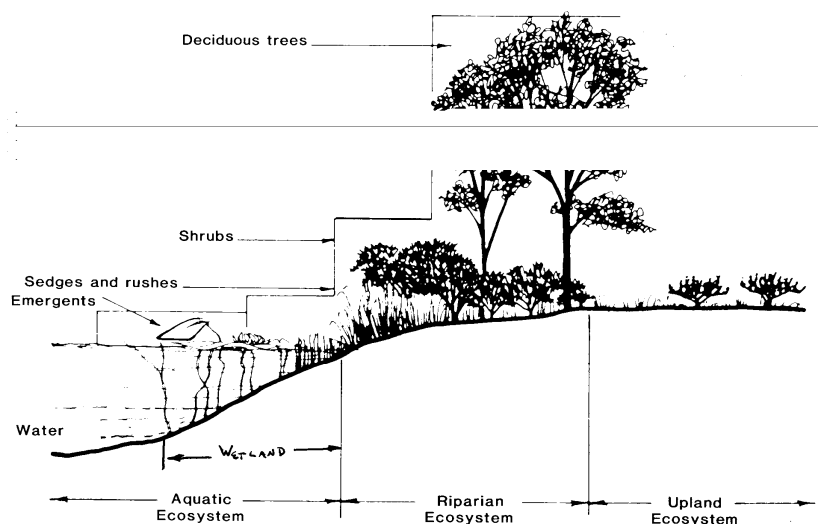


Figure 1: Example of a riparian zone.

The presence of water in riparian and wetland areas make these special places very important. Some of the functions and values that these areas provide are described below:

Filtration: Riparian zones capture and filter out sediment, chemicals and debris before they reach streams, rivers, lakes and drinking water supplies. This helps to keep our drinking water cleaner, and saves communities money by making the need for costly filtration much less likely.

Flood control: By storing water after rainstorms, these areas reduce downstream flooding. Like a sponge, wetland and riparian areas absorb stormwater, then release it slowly over time instead of in one flush.

Critical wildlife habitat: Many birds and mammals need riparian and wetland areas for all or part of their life cycles. These areas provide food and water, cover, and travel corridors. They are often the most important habitat feature in Massachusetts' forests.

Recreational opportunities: Our lakes, rivers, streams, and ponds are often focal points for recreation. We enjoy them when we boat, fish, swim, or just sit and enjoy the view.

In order to protect wetlands and riparian areas and to prevent soil erosion during timber harvesting activities, Massachusetts promotes the use of "Best Management Practices" or BMPs. Maintaining or reestablishing the protective vegetative layer and protecting critical areas are the two rules that underlie these common sense measures. DCR's Massachusetts Forestry Best Practices Manual (included with this plan) details both the legally required and voluntary specifications for log landings, skid trails, water bars, buffer strips, filter strips, harvest timing, and much more.

The two Massachusetts laws that regulate timber harvesting in and around wetlands and riparian areas are the Massachusetts Wetlands Protection Act (CH 131), and the Forest Cutting Practices Act (CH132). Among other things, CH132 requires the filing of a cutting plan and on-site inspection of a harvest operation by a DCR Service Forester to ensure that required BMPs are being followed when a commercial harvest exceeds 25,000 board feet or 50 cords (or combination thereof).



Soil and Water Quality: Forests provide a very effective natural buffer that holds soil in place and protects the purity of our water. The trees, understory vegetation, and the organic material on the forest floor reduce the impact of falling rain, and help to insure that soil will not be carried into our streams and waterways.

To maintain a supply of clean water, forests must be kept as healthy as possible. Forests with a diverse mixture of vigorous trees of different ages and species can better cope with periodic and unpredictable stress such as insect attacks or windstorms.

Timber harvesting must be conducted with the utmost care to ensure that erosion is minimized and that sediment does not enter streams or wetlands. Sediment causes turbidity which degrades water quality and can harm fish and other aquatic life. As long as Best Management Practices (BMPs) are implemented correctly, it is possible to undertake active forest management without harming water quality.



Forest Health: Like individual organisms, forests vary in their overall health. The health of a forest is affected by many factors including weather, soil, insects, diseases, air quality, and human activity. Forest owners do not usually focus on the health of a single tree, but are concerned about catastrophic events such as insect or disease outbreaks that affect so many individual trees that the whole forest community is impacted.

Like our own health, it is easier to prevent forest health problems than to cure them. This preventative approach usually involves two steps. First, it is desirable to maintain or encourage a wide diversity of tree species and age classes within the forest. This diversity makes a forest less susceptible to a single devastating health threat. Second, by thinning out weaker and less desirable trees, well-spaced healthy

individual trees are assured enough water and light to thrive. These two steps will result in a forest of vigorously growing trees that is more resistant to environmental stress.



Fire: Most forests in Massachusetts are relatively resistant to catastrophic fire. Historically, Native Americans commonly burned certain forests to improve hunting grounds. In modern times, fires most often result from careless human actions. The risk of an unintentional and damaging fire in your woods could increase as a result of logging activity if the slash (tree tops, branches, and debris) is not treated correctly.

Adherence to the Massachusetts slash law minimizes this risk. Under the law, slash is to be removed from buffer areas near roads, boundaries, and critical areas and lopped close to the ground to speed decay. Well-maintained woods roads are always desirable to provide access should a fire occur.

Depending on the type of fire and the goals of the landowner, fire can also be considered as a management tool to favor certain species of plants and animals. Today the use of prescribed burning is largely restricted to the coast and islands, where it is used to maintain unique natural communities such as sandplain grasslands and pitch pine/scrub oak barrens. However, state land managers are also attempting to bring fire back to many of the fire-adapted communities found elsewhere around the state.



Wildlife Management: Enhancing the wildlife potential of a forested property is a common and important goal for many woodland owners. Sometimes actions can be taken to benefit a particular species of interest (e.g., put up Wood Duck nest boxes). In most cases, recommended management practices can benefit many species, and fall into one of three broad strategies. These are **managing for diversity, protecting existing habitat, and enhancing existing habitat.**

Managing for Diversity – Many species of wildlife need a variety of plant communities to meet their lifecycle requirements. In general, a property that contains a diversity of habitats will support a more varied wildlife population. A thick area of brush and young trees might provide food and cover for grouse and cedar waxwing; a mature stand of oaks provides acorns for foraging deer and turkey; while an open field provides the right food and cover for cottontail rabbits and red fox. It is often possible to create these different habitats on your property through active management. The appropriate mix of habitat types will primarily depend on the composition of the surrounding landscape and your objectives. It may be a good idea to create a brushy area where early successional habitats are rare, but the same practice may be inappropriate in the area's last block of mature forest.

Protecting Existing Habitat – This strategy is commonly associated with managing for rare species or those species that require unique habitat features. These habitat features include vernal pools, springs and seeps, forested wetlands, rock outcrops, snags, den trees, and large blocks of unbroken forest. Some of these features are rare, and they provide the right mix of food, water, and shelter for a particular species or specialized community of wildlife. It is important to recognize their value and protect their function. This usually means not altering the feature and buffering the resource area from potential impacts.

Enhancing Existing Habitat – This strategy falls somewhere between the previous two. One way the wildlife value of a forest can be enhanced is by modifying its structure (number of canopy layers, average tree size, density). Thinning out undesirable trees from around large crowned mast (nut and fruit) trees will allow these trees to grow faster and produce more food. The faster growth will also accelerate the development of a more mature forest structure, which is important for some species. Creating small gaps or forest openings generates groups of seedlings and saplings that provide an additional layer of cover, food, and perch sites.

Each of these three strategies can be applied on a single property. For example, a landowner might want to increase the habitat diversity by reclaiming an old abandoned field. Elsewhere on the property, a stand of young hardwoods might be thinned to reduce competition, while a “no cut” buffer is set up around a vernal pool or other habitat feature. The overview, stand description and management practice sections of this plan will help you understand your woodland within the context of the surrounding landscape and the potential to diversify, protect or enhance wildlife habitat.



Wood Products: If managed wisely, forests can produce a periodic flow of wood products on a sustained basis. Stewardship encompasses finding ways to meet your current needs while protecting the forest’s ecological integrity. In this way, you can harvest timber and generate income without compromising the opportunities of future generations.

Massachusetts forests grow many highly valued species (white pine, red oak, sugar maple, white ash, and black cherry) whose lumber is sold throughout the world. Other lower valued species (hemlock, birch, beech, red maple) are marketed locally or regionally, and become products like pallets, pulpwood, firewood, and lumber. These products and their associated value-added industries contribute between 200 and 300 million dollars annually to the Massachusetts economy.

By growing and selling wood products in a responsible way you are helping to our society’s demand for these goods. Harvesting from sustainably managed woodlands – rather than from unmanaged or poorly managed forest – benefits the public in a multitude of ways. The sale of timber, pulpwood, and firewood also provides periodic income that you can reinvest in the property, increasing its value and helping you meet your long-term goals. Producing wood products helps defray the costs of owning woodland, and helps private landowners keep their forestland undeveloped.



Cultural Resources: Cultural resources are the places containing evidence of people who once lived in the area. Whether a Native American village from 1,700 years ago, or the remains of a farmstead from the 1800’s, these features all tell important and interesting stories about the landscape, and should be protected from damage or loss.

Massachusetts has a long and diverse history of human habitation and use. Native American tribes first took advantage of the natural bounty of this area over 10,000 years ago. Many of these villages were located along the coasts and rivers of the state. The interior woodlands were also used for hunting, traveling, and temporary camps. Signs of these activities are difficult to find in today’s forests. They were obscured by the dramatic landscape impacts brought by European settlers as they swept over the area in the 17th and 18th centuries.

By the middle 1800's, more than 70% of the forests of Massachusetts had been cleared for crops and pastureland. Houses, barns, wells, fences, mills, and roads were all constructed as woodlands were converted for agricultural production. But when the Erie Canal connected the Midwest with the eastern cities, New England farms were abandoned for the more productive land in the Ohio River valley, and the landscape began to revert to forest. Many of the abandoned buildings were disassembled and moved, but the supporting stonework and other changes to the landscape can be easily seen today.

One particularly ubiquitous legacy of this period is stone walls. Most were constructed between 1810 and 1840 as stone fences (wooden fence rails had become scarce) to enclose sheep within pastures, or to exclude them from croplands and hayfields. Clues to their purpose are found in their construction. Walls that surrounded pasture areas were comprised mostly of large stones, while walls abutting former cropland accumulated many small stones as farmers cleared rocks turned up by their plows. Other cultural features to look for include cellar holes, wells, old roads and even old trash dumps.



Recreation and Aesthetic Considerations: Recreational opportunities and aesthetic quality are the most important values for many forest landowners, and represent valid goals in and of themselves. Removing interfering vegetation can open a vista or highlight a beautiful tree, for example. When a landowner's goals include timber, thoughtful forest management can be used to accomplish silvicultural objectives while also reaching recreational and/or aesthetic objectives. For example, logging trails might be designed to provide a network of cross-country ski trails that lead through a variety of habitats and reveal points of interest.

If aesthetics is a concern and you are planning a timber harvest, obtain a copy of this excellent booklet: *A Guide to Logging Aesthetics: Practical Tips for Loggers, Foresters & Landowners*, by Geoffrey T. Jones, 1993. (Available from the Northeast Regional Agricultural Engineering Service, (607) 255-7654, for \$7). Work closely with your consultant to make sure the aesthetic standards you want are included in the contract and that the logger selected to do the job executes it properly. The time you take to plan ahead of the job will reward you and your family many times over with a fuller enjoyment of your forest, now and well into the future.



Invasive Species Management: Invasive species pose immediate and long-term threats to the woodlands of MA. Defined as a non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human, animal, or plant health, invasives are well-adapted to a variety of environmental conditions, out-compete more desirable native species, and often create monocultures devoid of biological diversity. The websites of the Invasive Plant Atlas of New England, www.nbii-nin.ciesin.columbia.edu/ipane, and the New England Wildflower Society, www.newfs.org are excellent sources of information regarding the identification and management of invasive plants. Some of the common invasive plants found in MA are listed below.

- Oriental Bittersweet (*Celastrus orbiculata*)
- Glossy Buckthorn (*Frangula alnus*)
- Multiflora Rose (*Rosa multiflora*)

- Japanese Barberry (*Berberis thunbergii*)
- Japanese Knotweed (*Fallopia japonica*)
- Autumn Olive (*Eleaagnus umbellata*)

Early detection and the initiation of control methods soon after detection are critical to suppressing the spread of invasive species. Selective application of the proper herbicide is often the most effective control method. See the next section for information on the use of chemicals in forest management activities.



Pesticide Use

Pesticides such as herbicides, insecticides, fungicides, and rodenticides are used to control “pests”. A pest is any mammal, bird, invertebrate, plant, fungi, bacteria or virus deemed injurious to humans and/or other mammals, birds, plants, etc. The most common forest management use of a pesticide by woodland owners is the application of herbicide to combat invasive species. MA DCR suggests using a management system(s) that promotes the development and adoption of an environmentally friendly Integrated Pest Management (IPM) method of pest management that strives to minimize the use of chemical pesticides and minimize impact to desirable native species. If chemicals are used, proper equipment and training should be utilized to minimize health and environmental risks. In Massachusetts, the application of pesticides is regulated by the MA Pesticide Control Board. For more information, contact MA Department of Agricultural Resources (MDAR), Pesticide Bureau at (617) 626-1776

On MA Private Lands Group Certification member properties, no chemicals listed in CHEMICAL PESTICIDES IN CERTIFIED FORESTS: INTERPRETATION OF THE FSC PRINCIPLES AND CRITERIA, Forest Stewardship Council, Revised and Approved, July 2002, may be used.

This is your Stewardship Plan. It is based on the goals that you have identified. The final success of your Stewardship Plan will be determined first, by how well you are able to identify and define your goals, and second, by the support you find and the resources you commit to implement each step.

It can be helpful and enjoyable to visit other properties to sample the range of management activities and see the accomplishments of others. This may help you visualize the outcome of alternative management decisions and can either stimulate new ideas or confirm your own personal philosophies. Don't hesitate to express your thoughts, concerns, and ideas. Keep asking questions! Please be involved and enjoy the fact that you are the steward of a very special place.

