*Woodland Management Services*
*Green Certified Resource Managers*


# MID-MAINE FORESTRY

**Barbara E. Brusila • Mitchell W. Kihn**
**Licensed Professional Foresters**

**1320 Western Road • Warren, Maine 04864**
**(207) 273-4046**

**email: midmaineforestry@gmail.com - Mitch**
**midmaineforestry2@gmail.com - Barrie**


## FOREST MANAGEMENT PLAN

Maine Organic Farmers and Gardeners Association

P.O. Box 170, Unity, Maine 04988
Map 9 Lots 21, 22, 28, 29; Map 12 Lots 66, 67, 67-1 in Unity
Map 4 Lots 10, 12, 12.01, 12.03, 12.04, 13 in Thorndike

Prepared by:

Maren Granstrom
Intern Forester FI4118

Barbara Brusila
Licensed Forester #590
TSP-13-9097

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*This plan meets specifications for NRCS cost-share assistance*

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Schedule of Activities

The property has excellent potential for maintaining healthy forest and wetland ecosystems while sustainably managing the forest and providing education opportunities.

| Summary of Recommended Management Activities, 2021-2031 | | | | |
|---|---|---|---|---|
| **Timeframe** | **Stand location** | **Extent** | **Activity Name** | **Estimated Cost/Income** |
| 2021-2022 | All bordering non-MOFGA property, especially 2, 3, 5/8, 12, 13, 14, and 15 | About 1.2 miles | Blaze and paint boundary lines, clarify and reestablish as needed. | ($600-2000, depending on how much work is done by volunteers) |
| 2021-2030 | 1 | 5 acres | *Thinning of white pine to release regeneration and favor better quality trees, Practice Code 666 | $481/acre |
| 2021-2030 | 2 | 15 acres | *Harvest of white pine, in single trees and small groups, to release white pine and red oak regeneration, Practice Code 666 | $481/acre |
| 2021-2023 | 2, 8, 14 | 12 acres | *Mechanical control of invasive plants, Practice Code 314 | $469/acre |
| 2021-2030 | 4 | 3 acres | *Crop tree release to favor high quality individuals of long-lived species, Practice code 666 | $328/acre |
| 2021-2030 | 6 | Two areas 12x12 ft or so | Set up two deer exclosures around areas with sugar maple and other desired seedling/saplings (contact forester for guidance) | ?? cost of fencing and 1-2 days labor |
| 2021-2030 | 7 | 4 acres | *Crop tree release/light-moderate improvement harvest, Practice Code 666 | $328/acre |
| 2021-2025 | 10 | 3 acres | *Precommercial thinning, spacing preferred species to 8x8ft or 10x10 ft | $366/acre |
| 2021-2030 | 5, 12, 13 | ½-1 mile | Create or improve walking trails | Minimal if done by volunteers |
| 2021-2024 | 14 | 3 acres | Thin red maple and other species to release pine regeneration | minimal |

| | | | | |
|---|---|---|---|---|
| 2031 | All | | Update Management Plan | ?? |

*Activities eligible for NRCS cost-share assistance. Income is based on 2021 cost-share rates.

## Introduction

This is the third management plan for MOFGA's woodlot, and is an update to the previous plans written in 1999 and 2010. It covers the period 2021-2031. Previous versions of the plan were written by Sam Brown and Barrie Brusila, and much of the content remains the same. Stand descriptions and recommendations have all been updated.

This updated plan will allow the continuation of the green certification status that the 1999 plan conferred, under the auspices of Mid Maine Forestry's Forest Stewardship Council (FSC) Resource Manager certification.

The past ten years have seen quite a bit of activity on the property. In addition to the usual annual forestry demonstrations and workshops, the following took place:

- MOFGA purchased several new parcels in Thorndike, including an approximately 8-acre forest stand along the eastern boundary of the fairground lot.
- MOFGA purchased a large parcel in Unity between Halfmoon Stream and Crosby Brook road, which contains the Maine Heritage Orchard and small forest stands along the river and north of the orchard.

And, the following activities received cost-share assistance from NRCS:

- In 2013, a forest trail approximately 1800 ft long in stands 2 and 3 was improved with road fabric and gravel, for easier equipment access.
- Light to moderate commercial thinning was applied in 21 acres of stands 1, 2, 3, and 12 which removed 144 cord equivalents in winter 2013-2014.
- Pruning was applied to 100 trees in stands 2 and 8 in 2014.
- Heavy precommercial thinning was applied in 2.9 acres of stand 10 in 2014, spacing preferred species to 8x8 ft for <3in dbh and 16x16 ft >3in dbh.
- A crop tree release was applied to 2 acres of stand 13 in 2014.

## Management Objectives

In the spring of 2020, 21 members of the Low Impact Forestry steering committee and others who have been heavily involved in MOFGA forestry responded to an online survey about management objectives. The major objectives, and therefore the trajectory for forest management for this property, is consistent with past plans.

The highest priority objectives were related to education, or the use of the MOFGA forest as a site for forestry demonstration and hands-on workshops. This is a demonstration forest where people can learn about forest management and stewardship, harvesting strategies and options, etc. Members of the educational "audience" include but are not limited to landowners, loggers, foresters, vocational logging students and teachers, apprentices, the public, and anyone interested in the woods. Public education will be concentrated intensely during the Common Ground Country Fair (CGCF) weekend, with other programs throughout the year. This demonstration forest can be a significant complement to the many educational programs and permanent exhibits already a part of the Common Ground.

Low Impact Forestry (LIF) will be showcased on this land. LIF is a long-term approach to forest management which has as its goal to yield high quality, high value wood products while leaving behind an ecologically complete forest. LIF includes any system of logging which reduces known impacts to soil, water, and plant life, retains a functional forest after logging, and is economically viable for the operator. It is not a specific method of logging, but rather an awareness of the consequences of today's actions on tomorrow's forest values.

Objectives in the "second tier" of importance to the LIF community include carbon sequestration and storage, increasing resilience of the forest to climate change, providing wildlife habitat, and soil and water conservation.

Objectives in the "third tier" include recreation, timber production for MOFGA use, and aesthetics. Timber production for outside sale was the lowest ranked possible objective. Lumber has been and will be produced for specific building projects on the Common Ground, such as livestock barns and educational classroom buildings, and others as deemed necessary by MOFGA Board of Directors.

The main property (Fairground Lot) was acquired by MOFGA to become a permanent educational site for promoting the skills of rural living. MOFGA's status as a non-profit educational organization, and its sponsorship of many annual public events (most notably the Common Ground Country Fair), focuses most of the daily management energy on the Fairgrounds and the operation of the many other interest areas besides forestry. MOFGA's Low Impact Forestry Steering Committee is specifically dedicated to developing the woodlot as an educational asset and demonstration forest.

## A Word about Stands, Acres, and Volumes

Practical forest management involves as much art as science. Estimates of area and volume and forest type are aided by numerical measuring, but they are not precise, and are subject to an individual forester's perspective. Some discrepancy exists at the time of writing this plan about the actual, legal acreage that MOFGA owns overall, which can be determined only by a full survey by a licensed surveyor. Forest acreages in this plan were estimated (by modern electronic mapping systems, from aerial photos, and from ground observations) to the nearest whole acre, which is enough precision for these management recommendations. Likewise, "typing" a stand of trees, to differentiate it from other stands for identification and management purposes, is an act of interpretation. Tree species, ground conditions, tree height, tree diameter, tree health, regeneration, crown density, acreage, and a host of other information are considered when trying to determine a stand "type" and its boundaries. And, finally, estimated volume figures are just that: computed estimates based on tallied observations, with accuracy as described in the Timber Resources heading below.

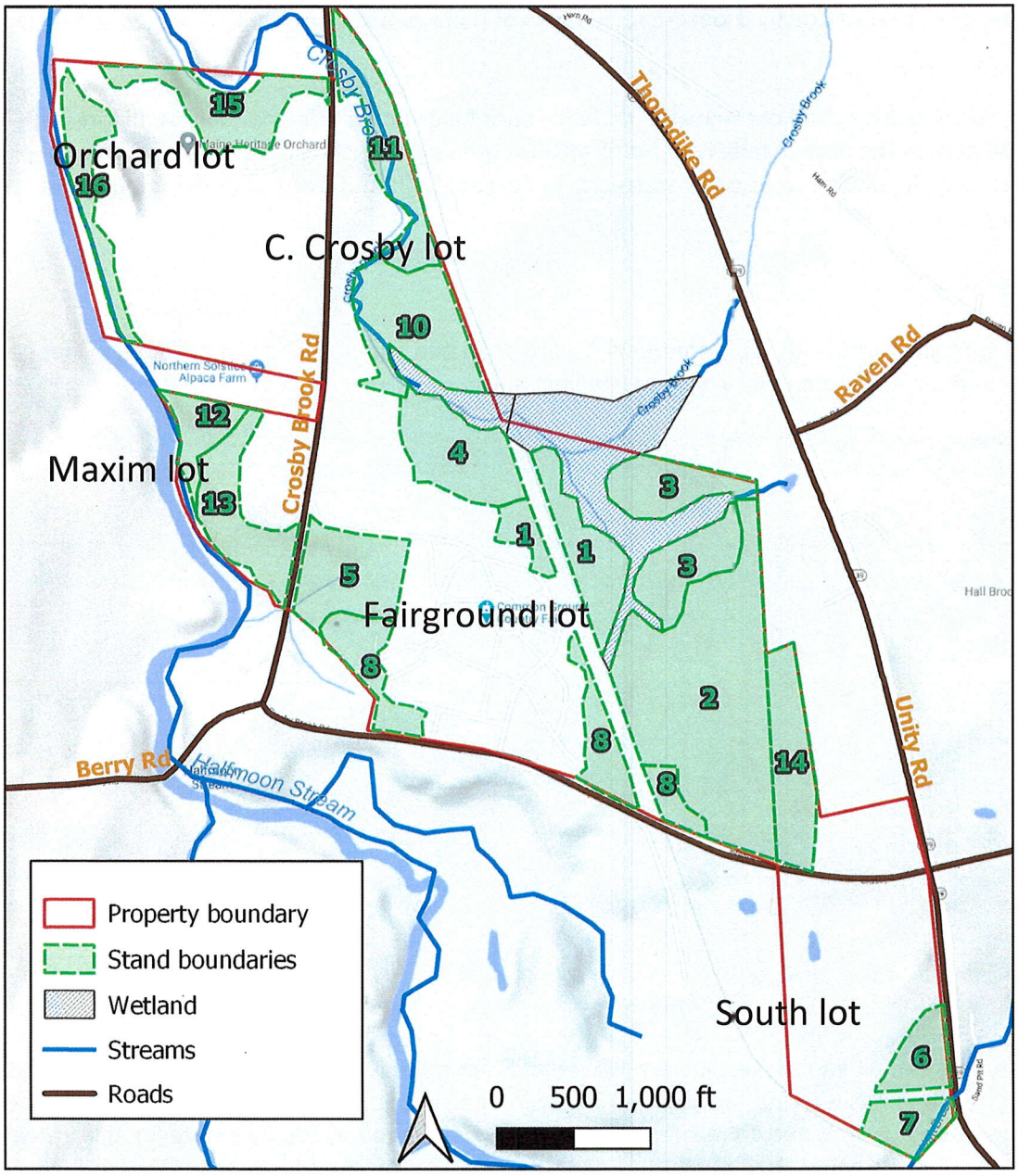
## Property Description and Land Use History

As of this date, MOFGA owns about 310 acres: about 260 in Unity and about 50 acres in Thorndike. Included are about 145 acres of woodland, about 150 acres of fields and other open lands, and about 15 acres of wetland. GIS mapping indicates that the acreages are likely greater, but only a full survey would provide definitive numbers. For MOFGA's forest management purposes, a survey is not needed at this time.

The Unity property is bisected by the Belfast & Moosehead Railroad Line tracks, along which also runs a Central Maine Power transmission line. For the ease of use of this plan, five distinct properties will be named:

**MOFGA Woodlot (Stand locations)**

Prepared by Maren Granstrom
November 2020




1. **Fairground lot**, which includes the original fields and forests purchased in 1997, the main block of property ( Unity Map 9 Lots 22,28,29, and recently purchased Thorndike Map 4 Lots 12, 12.01, 12.03 12.04, 13), about 150 acres in total.

2. **South lot**, the Thorndike acreage purchased in 1997 (Map 4 Lot 10), about 35 acres.

3. **Maxim lot,** the land west of Crosby Brook Road and east of Halfmoon Stream, purchased in 2006 (Unity Map 9 Lot 21), about 21 acres.

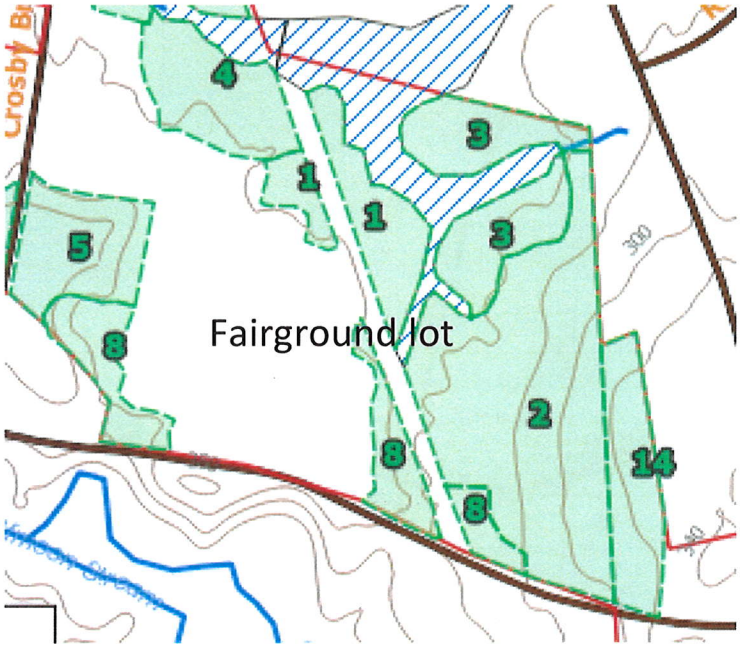
4. **C. Crosby lot**, the land east of Crosby Brook Road and west of the railroad tracks, purchased in 2009. (Unity Map 12 Lots 67 and 67-1), about 31 acres.

5. **Orchard lot**, purchased in 2012, west of Crosby Brook Road and east of Halfmoon stream (Unity Map 12 Lot 66), about 68 acres.

Nearly all of the properties, with the exception of the wetlands, were once fields or pastureland. Almost all forested stands have had trees removed over the past decades as part of MOFGA training workshops, commercial harvests, or stand improvement projects. Pruning of pine trees and construction of access trails and wetland crossings in Stands 1, 2 and 3 have also been accomplished.

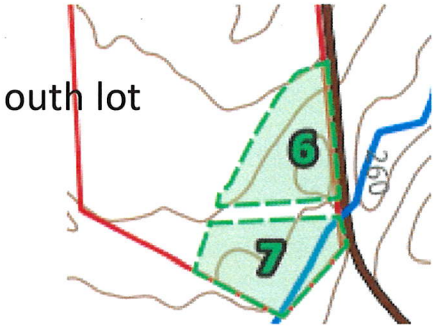
## Topography and Accessibility

The topography of the land contains some noticeable contrasts. The railroad bed and powerline rights of way offer good physical access, but may be impractical to use due to legal or liability issues.

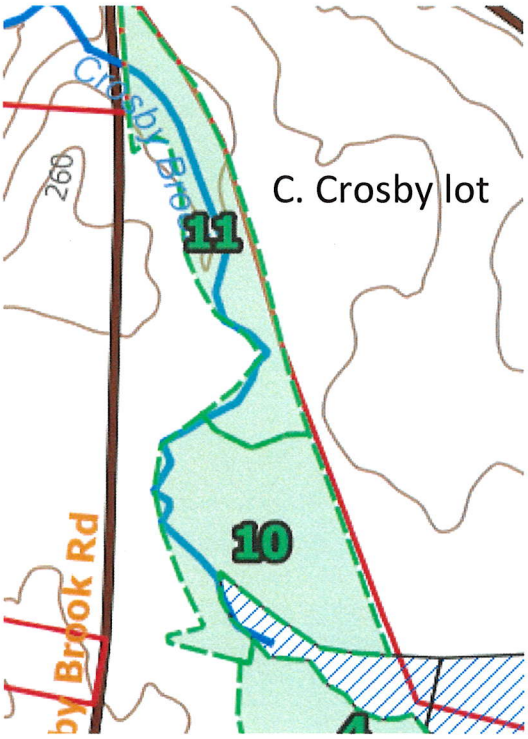



In the *Fairground lot* in Unity, the exhibit and parking areas and wetlands are quite flat. The northern section of Stand 1 is bounded by the railroad tracks and this wetland too, but a wooden crossing bridge was constructed in 2007 to allow harvest traffic into Stand 2. **Stands 1, 2, 3, 8, and 14** (eastern sections) are well served by the Pine Gate Road, a graveled, all-season trail suitable for trucking. A small stub road off this Road serves as a mill yard and concentration yard. Access trails have been established through most of these stands. **Stand 8** has a small lumberyard area near the Pine Gate entrance to the Fair. The land east of the railroad tracks slopes very gently down towards the wetlands. The wetland limits access to the northern part of **Stand 3. Stand 4** is accessible from the field.

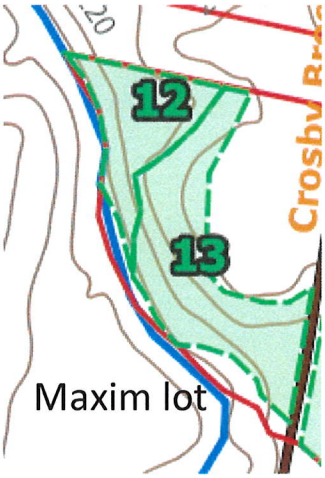
**Stands 5 and 8** (western section) are actually in a bowl-shaped area, with steep uphill slopes on three sides; a small wood yard could possibly be located near the northwest corner of the stand, where the toe of the slope intersects the Crosby Brook Road. An old gravel pit is located in **Stand 8**, just off the southwest corner of the exhibit area. There is no stand 9.



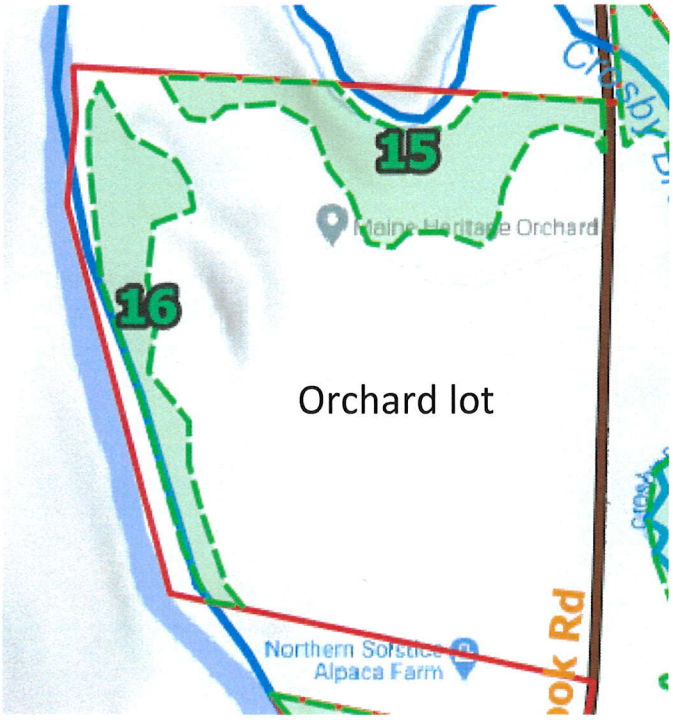

**Stands 6 and 7** in the *South* lot in Thorndike slope steadily to the south, with steep banks along Route 220 and Hall Brook, as well as steep banks from the field edges down into the woods. The power line right of way offers a possible route up to the field, but any access will be fighting gravity quite hard to get products to the field level.




Crosby Brook runs from East to Northwest through **Stands 10** and **11**, in the *C. Crosby* lot. It falls about forty feet in that span (twenty five feet over the last 1100), and transforms from a meandering flow above the wetlands to a concentrated stream in a deep and dark gully as it passes under Crosby Brook Road. Active beaver dams and lodges in the wetland inhibit human foot traffic from the south and west, but the railroad bed and power line allow good physical access otherwise




**Stands 12 and 13** in the *Maxim* lot border on Halfmoon Stream, with a *very* steep bluff along most of the shoreline. The land slopes gently west down to these bluffs from the flat field used for parking. A small gravel pit and access road lies to the south of **Stand 13.**




In the *Orchard* lot, **stand 15** slopes gently, then steeply north down to Crosby Brook. A series of gravel pits are in the northwest corner of the lot. Stand 16 is quite flat, and is in the shoreland zone around Halfmoon stream. The Hills to Sea trail runs through most of **stand 16.** The Maine Heritage Orchard is an amphitheater of sorts, surrounded by an 8-ft deer fence, established in order to grow and preserve many of Maine's historic and original apple tree varieties. It occupies much of the center of this lot and is accessible by a road.

## Boundaries

Halfmoon stream, Crosby Brook Road, the Belfast & Moosehead Railroad tracks, Central Maine Power power lines, and Unity Road, and field edges form many of the boundaries of the properties and stands and are thereby clear and evident.

The South lot's west line is a stone wall, which also happens to be the Town line, and the other boundaries are clearly formed by the railroad and Unity Road

The east line of the Fairground lot is now formed in part by the newest acquisition, which is fairly clear in the southern portion but less so once it is surrounded by forest, and should be clarified and marked. The North lines of the Fairground lot should be painted and blazed. They are currently flagged with a number of differently colored flaggings, and sections of the boundaries are indistinct.

The southern lines of both the Maxim lot (from Halfmoon Stream to Crosby Brook Road) and the Fairground lot (from the Crosby Brook Road east then south to the Road again) are unclear, and may be marked by sections of barbed wire fence and a road. These should be clarified with neighboring landowners and blazed. The northern boundary of the Maxim lot, where it meets the alpaca farm property in the woods near Halfmoon Stream, is unclear. It follows the same bearing all the way from the road to stream, and should be easy enough to relocate.

The northern boundary of the Orchard lot is indistinctly marked. There is some evidence of flagging and fence between Crosby Brook road and Crosby Brook stream, and western portions of the line are more clearly formed by field edges.

The 2010 plan recommended that about 6000 feet of boundary line be surveyed, brushed, and blazed that year. This has not been done, and it's a high priority. Depending on the amount of volunteer time involved, the cost for this operation could range from $600 to $2000. All lines should be inspected annually, and repainted every ten years.

## Soils

The soils information is from the Soil Survey of Waldo County, Maine, prepared by the USDA Natural Resource Conservation Service (NRCS). The following table lists the various productivity ratings and factors affecting management for the pertinent soil types as found on the soil map in the Appendix.

The most common soil found on the property is Madawaska fine sandy loam (about 50%). The soil is deep, moderately well-drained, and productive for both agricultural and forest products (see Appendix and Stand Descriptions below for more information on Madawaska and the other listed soil types).

| SOIL SERIES CODE | SOIL SERIES NAME | SITE QUALITY | | | FACTORS EFFECTING MANAGMENT | | | |
|---|---|---|---|---|---|---|---|---|
| | | **White Pine** | **Red Spruce** | **Red Oak** | **Erosion Hazard** | **Equipment Limitation** | **Seedling Mortality** | **Windthrow Potential** |
| **AdC, AcB** | Adams loamy sand | fair | poor | fair | slight | slight | moderate | slight |

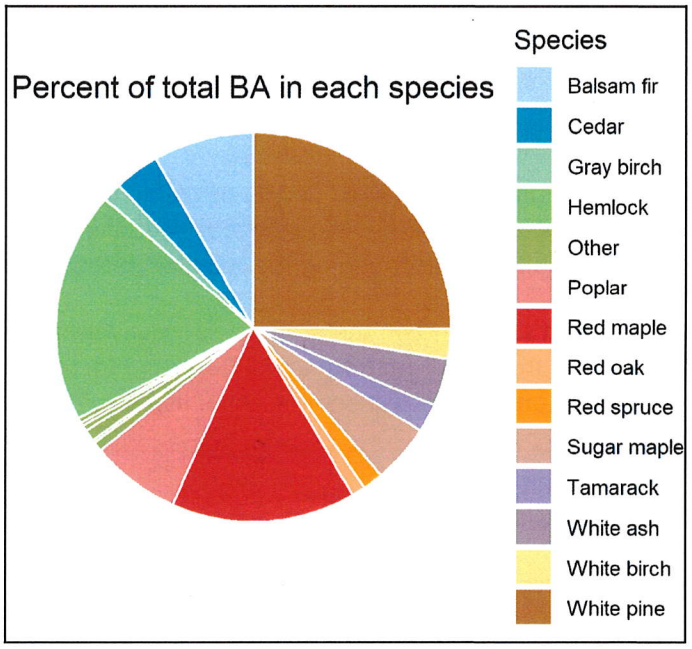
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **DxB, DyB** | Dixmont silt loam | excellent | good | excellent | slight | slight | slight | slight |
| **MaB** | Madawaska fine sandy loam | excellent | good | excellent | slight | slight | slight | slight |
| **MkC** | Masardis fine sandy loam | good | poor | good | slight | slight | moderate | slight |
| **ThB, ThC, ThD** | Thorndike-Winnecook complex | good | good | Not established | slight | slight | moderate | severe |
| **Se** | Searsport mucky peat | poor | Not established | poor | slight | severe | severe | severe |

## Timber Resource

For purposes of accurately describing the forest, and then setting management priorities, different forest types and stands were identified. These are described in the following table and associated maps:

| Stand | Type | Acres |
|---|---|---|
| 1 | S3B | 7 |
| 2 | S3B | 35 |
| 3 | S2/3B | 13 |
| 4 | M2A | 10 |
| 5 | M3A | 10 |
| 6 | H3A | 5 |
| 7 | H2/3A | 4 |
| 8 | M2/3B | 11 |
| 10 | M1A | 11 |
| 11 | S3B | 8 |
| 12 | S3B | 4 |
| 13 | M2/3B | 7 |
| 14 | M2C | 8 |
| 15 | S3A | 6 |
| 16 | H2B | 6 |
| **Total forested acres: 145** | | |

*S= 75%+ softwood; H=75%+ hardwood; M=mixedwood*
*1=0-30ft height; 2=30-60ft; 3=60+ft*
*A=70-100% crown cover; B=40-70%; C=15-40%*



A timber inventory was conducted from in June and July 2020 in all stands except 15 and 16. Inventory data were taken at 63 variable radius (prism) plots on parallel cruise lines approximately 330 feet apart, using a 15 Basal Area Factor prism. Trees greater than 1 inch diameter breast high (DBH) were tallied. Data was processed using the INVENT Forest Inventory Program from the University of New Hampshire. Overall total volume estimates are accurate within plus or minus 7% nine times out of ten; overall sawtimber estimate is accurate within plus or minus 17%, and pulpwood estimates plus or minus 9%, nine times out of ten. Error is greater for individual species, products, and values.

In the current inventory, 50% of the overall wood volume is white pine, followed by red maple (12%), hemlock (12%), aspen (6%) and balsam fir (5%). Sugar maple, tamarack, spruce, cedar, and white ash represent between 1 and 5% each, with cherry, yellow birch, gray birch, white birch, basswood, red oak and elm each less than 1% of the whole.

White pine is a quarter of total basal area but three-quarters of sawtimber by volume—50% of the overall sawlog volume is good white pine; 25% of the overall sawlog volume is lower quality 8' pallet-grade white pine sawlogs. Forty four percent of the overall pulpwood volume is white pine.

Seventeen percent of the overall timber volume on the property is sawlog grade (generally defined as straight, at least eight feet long, at least eight inches in small-end diameter, and with few if any branches). This percentage is considerably lower than that in the 2010 plan—this is in part due to the acquisition of land with little sawtimber, in part to some harvesting, and also due to chance difference in sampling locations and sampling error.

In addition to volume, grade of sawlogs can be improved as well by proper pruning techniques; nearly two hundred crop trees have been pruned from 13 to 25 feet since 2007, and many more stems remain to be pruned. Trees will not be harvested simply because they reach a certain minimum sawlog size,

Generally, these woodlots have very good potential for long term production of quality wood products (sawlogs, boltwood, etc.) while providing educational opportunities and maintaining an aesthetic appearance of the forest.

In 1999 the per acre stocking was 37.07 cord equivalents. In 2009 the per acre stocking was 34.65 cord equivalents, and in 2020 the stocking was. 33.4 cord equivalents. This reduction is in small part due to harvesting over the decades but much more due to the acquisition of low-volume acres, which lowers the overall per-acre average.

Productivity (growth rate), based on regional data, is estimated to be 0.6 cords/acre/year for softwood stands, 0.9 cords/acre/year in the mixedwood stands, and 0.8 cords/acre/year in the hardwood stands. These are averages, and may vary on a stand-by-stand basis depending on soils, stocking, etc.

## Forest Health

The following essay is intended to provide food for thought on the subject.

"Forest health" is an often used, and often abused and misunderstood concept. In terms of forest management, forest health is often defined as growing trees that are vigorous, free of insects and diseases, of good for, of desirable (a.k.a. commercially valuable) species, and at a spacing in the forest that allows them to grow as quickly as possible without compromising timber quality. This definition frames health in terms of human (economic) values for wood products. Forest health can also be defined on an ecological basis. Dead, diseased, old, and slow-growing trees of all species naturally occurring on the site are part of a healthy forest from a biodiversity perspective.

It's important to remember and acknowledge that we are most often discussing forest health in terms of human values. The forest doesn't care if a large veneer quality tree dies, rots, or burns. We humans often do. When viewed through a set of ecological values, the number of reasons to justify timber harvesting decrease noticeably. They might include:

- Infestation of an exotic, non-native insect or disease whose spread could be prevented or significantly reduced by harvesting.
- Improving wildlife habitat or maintaining habitat for species that are rare or declining.
- Significant mortality or blowdown resulting from exotic, non-native causes.
- Applying the principles of restoration forestry, as we are beginning to understand them. This might include, for example, addressing years of build-up of fuels due to past human interference with natural fire cycles. It might also include attempting to increase species diversity.

Silviculture is a practice by which we respectfully remove products from the forest for human use, employing methods that we believe most closely imitate and least impact the "natural" processes occurring there. It's important to acknowledge the distinction between our human and ecological definitions of forest health, and not to use the former to justify creating forests of diminished ecological value.

## Carbon and Climate Change Resilience

While much is still unknown about how forests will respond to changes in weather, precipitation, and other variables, much has been studied and discussed. Forests can play an important role in reducing the effects of climate change through sequestering (or accumulating) carbon through growth, and storing carbon in living and dead trees and other vegetation, and in the soil. Wood products can often store carbon when used in buildings and other long-lived products, and can be important substitutes for more carbon-intensive materials like steel and concrete.

Depending on the species present, tree size, site conditions, other management objectives, and so on, some stands may be best suited to sequestering carbon by management practices promoting fast growth and timber production, while other stands will serve a carbon storage efforts by being left unharvested to accumulate carbon in large living and dead trees.

Forests will be most successful in the future if they are able to adapt to coming changes in weather patterns, precipitation, etc. While some species are predicted to do better in future climates than others, much depends on local conditions. In general, encouraging many tree species with different traits and growth habits, and encouraging multi-aged structures, is likely to create a more resilient forest.

## Invasive Plants, Insects, and Diseases

Unfortunately, the increase in invasive plants, insects, and diseases is creating novel forest management challenges. Many diseases post a threat to large, overstory trees, while invasive understory plants can become so dense that they all but prevent native species from regenerating. These factors can change the kind of management that might otherwise be prescribed. For example, it would be nice to leave an area of dense, large hemlocks that is wonderful to walk in; but if the woolly adelgid is present many of those trees will die and fall over in the following decade, so preemptive harvesting might better suit recreation and aesthetic uses. On the other hand, a harvest might be postponed until any invasive plants in the understory are controlled, in order to regenerate trees and not just release the non-native shrubs when the canopy is thinned.

The most concerning finding on this property was the presence of invasive plants, especially in the southern portion of the Fairground lot. Steps can be taken to control some invasives, and to help the forest transition to more resilient

species. Plants like the non-native honeysuckle, bittersweet, multiflora rose, buckthorn, and barberry can be mechanically controlled, given enough determination and persistence. Be careful to identify the non-native species—some of these plants have native cousins.

The emerald ash borer (EAB) is a non-native insect that has killed many, many ash trees in other parts of the country, and recently arrived in Maine. Although it is not yet present on the property, entomologists say it is only a matter of time before EAB is throughout the state. White ash is found occasionally through the property near streams. No action is warranted now except keeping a watchful eye for the borer.

Diseases like emerald ash borer and hemlock woolly adelgid threaten to all but wipe out those trees from the forest. Once a pest or disease is affecting a given forest, or will be very soon, it may be wise to harvest some affected trees, in order to take advantage of the timber value in those individuals and accelerate the transition to other species. Some trees of targeted species should always be left to grow. They may survive and reproduce, and if not will become snags and downed deadwood, important for wildlife.

Both historic and current proof of pine mortality due to the white pine blister rust is evident. This exotic disease spends part of its life cycle on currant plants (*Ribes* sp.) and enters the tree through live branches. Once it reaches the main stem, it effectively girdles the trunk and eventually kills the tree. Control of this disease is difficult since the rust spores can travel long distances with the wind. Infected trees should be harvested.

The effects of the white pine weevil are evident in the crooked, mult-top form of some trees which were more open grown earlier in their lives. This insect will kill the top leader of the tree at a young age, whereupon one or more of the side branches becomes a new leader(s). This may happen repeatedly on a given tree, causing a crooked and multi-stem top. Although these trees, when larger, have value as a seed source and as "character trees," their value for timber is quite low. Regenerating pine in areas of partial shade can help minimize future damage by this insect.

No evidence of browntail moth was seen on the property, but it is rapidly spreading up the coast and into south-central Maine. It seems to prefer oak and apple trees. In addition to defoliating trees and occasionally causing mortality with repeated defoliation, the shed hairs of this non-native pest cause mild to severe rashes in humans. The hairs remain toxic for 1-3 years. It is of greatest concern in areas with lots of human use, and it will be important to monitor the area. The characteristic fist-sized nests are visible in the tips of branches, especially near the top of the crown, once leaves are off.

Hardwoods that are of poor quality often contain any one of many fungal infections that slowly rot the trees' wood. This is sometimes caused by overcrowding, which limits tree growth and vigor and makes them more susceptible to fungal infection. None, however, are significant; they are a normal component of the forest ecosystem.

The Maine Natural Areas Program has helpful guides to invasive plants:
https://www.maine.gov/dacf/mnap/features/invasive_plants/invasives_gallery.htm

The Maine Forest Service has Insect and Disease Fact Sheets:
https://www.maine.gov/dacf/mfs/forest_health/insect_disease_fact_sheets.html

## Wildlife

The property provides diverse habitat types for a variety of wildlife species. Habitat elements present include intermittent fresh water streams and wetlands, dense softwood growth, shrubby and sprout growth, large den (live

hollow) trees, and snags (dead standing) trees. During fieldwork in 2020, we saw several deer, startled a fox from its den in stand 2, and were loudly scolded by a broad-winged hawk in stand 3!

Many animals and birds feed on the seeds (hard mast) found on the softwoods. Few beech or oak were tallied during the inventory, although a few of these important nut trees are scattered about the property.

During any cutting, certain trees should be retained to benefit wildlife, even though they may not have sawtimber value. These include den trees, snags, and mast producers. Snags should not be cut unless they pose a safety hazard during logging. Recommendations vary as to how many trees per acre should be left. According to *Biodiversity in the Forests of Maine: Guidelines for Land Management*, recommended practices include retaining a minimum of four wildlife (den or snag) trees per acre, with one exceeding 24" DBH and three exceeding 14" DBH. Leaving downed woody material on site is important as well. Wildlife trees do not have to be evenly distributed on the property. They can be clumped in areas such as along the streams or forest edges. In addition to the existing wildlife trees, potential future ones should be identified and allowed to grow old and die naturally.

Any recommended cutting should avoid sensitive habitats and be timed to minimize disruption of important nesting and young rearing seasons in spring and early summer. Harvesting can help maintain and increase age and structural diversity (both horizontal and vertical) within the forest ecosystem, which will in turn create more varied habitats.

Any recommended cutting will need to avoid sensitive habitats such as vernal pools and be timed to minimize disruption of important nesting and young rearing seasons in spring and early summer. Harvesting will help maintain and increase age and structural diversity (both vertical and horizontal) within the forest ecosystem, which will in turn create more varied habitats.

Open areas resulting from any patch cuts increase available browse, as well as provide abundant cover and nesting sites for several species of songbirds and game birds. Seeding of log yards and roads after use with conservation mix (preferably of local plant species) will improve forage opportunities for many species.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) recommends "maintaining a 300-foot wide forested riparian management zone along the river, within which the first 50 feet from the water are retained as a no-cut and no-disturbance zone. Timber harvesting in the remainder of the riparian zone (50-300 feet) should maintain a minimum of 60-70% mature canopy cover. Construction of roads and log landings, or any other permanent land use conversion, should be avoided or minimized within the 300-foot management zone."

MDIFW recommends the same in the 100-ft zone around all perennial streams draining in or out of the Sheepscot River, which includes Crosby Brook as well. Within the 300-foot riparian management zone and the 100-foot tributary riparian management zone, MDIFW recommends that landowners "avoid active cutting operations and motorized vehicle access between April 15th and October 15th, build temporary bridges across all perennial streams prior to equipment crossing, harvest only during dry or frozen ground conditions, and avoid the use of herbicides or insecticides. Always use Best Management Practices to prevent or minimize soil movement and to protect soil and water quality."

Crosby Brook also contains Inland Waterfowl and Wading Bird Habitat (IWWH). MDIFW recommends "maintaining a 250-foot undisturbed (of permanent clearings, roads, etc.) buffer around the wetland. Within this buffer, any harvest activity should closely adhere to BMPs for water quality and wetland protection (e.g. harvest on frozen or dry soils only)

and uneven-aged forest management should be used. Volume removal should not exceed 30% in a 15-year period, and a well-distributed overstory should be maintained. No trees should be cut within 75 feet of the shore. Throughout the 250-foot IWWH buffer MDIFW recommends that special consideration be given to implementing a plan to leave snags and live trees with cavities that will benefit cavity nesting waterfowl and many other wildlife species."

Sandy Stream, Crosby Brook, Hall Brook, Halfmoon Stream, and their tributaries support populations of wild brook trout, and the area is also listed as Atlantic Salmon critical habitat. The recommendations above will also help protect conditions needed by these species.

For more information, see the Appendix.

## Recreation and Aesthetics

Maintaining an aesthetic appearance of the woodland is very important, especially in the areas seen by fairgoers. Recommended harvesting in this plan has changed and will continue to change this appearance, making it more open, but should still be pleasing to view. After any harvesting, some of the logging trails and roads should be used as recreation trails, with branches removed and ruts or wet areas filled in with wood chips or similar small-sized material. Slash height in the woods should be limited to 2 feet, both for aesthetics and minimization of fire hazards. Accumulated wood debris from logging activities should be removed from yarding areas and these areas reseeded after use is complete.

Main harvest trails in Stands 1, 2, and 3 should be kept clear of brush to allow easy walking and access to the edges of the wetlands. Building additional walking trails in stands 5 and 13 could bring visitors to some of the loveliest parts of the property.

## Legal Restrictions

Before any commercial harvesting occurs, MOFGA (or its agent) must file a harvest notification form with the Maine Forest Service. Year-end reports of harvested volumes and stumpage prices are part of this requirement.

For harvest areas greater than ten acres, all boundary lines within 200 feet of cutting must be clearly marked, and such marking is highly recommended for any harvesting activity. During all harvesting operations (of any size) all slash must be removed at least 25 feet from adjoining properties and 50 feet from waterbodies and roads.

All of the land west of the railroad plus a strip of land east of the railroad is in the aquifer protection district of Halfmoon Stream. This classification should not affect the management of the woodland.

The towns of Unity and Thorndike have adopted the statewide shoreland zone standards. Crosby Brook has a required 75-ft buffer, and Halfmoon Stream and the wetland in the northeast part of the property have a 250-ft buffer, within which there are three options for management:

1. **40% volume removal:** Harvesting of no more than 40 percent of the total volume on each acre involved of trees 4.5 inches DBH or greater in any 10 year period is permitted.

2. **60 square foot retention:** The residual stand must contain an average basal area of at least 60 square feet per acre of woody vegetation greater than or equal to 1.0 inch DBH, of which 40 square feet per acre must be greater than or equal to 4.5 inches DBH.

*For options 1 and 2:* A well-distributed stand of trees which is windfirm; other vegetation, including existing ground cover, must be maintained. Within 75 feet, horizontal distance, of the normal high water line of shoreland areas regulated under this section, there must be no cleared openings. At distances greater than 75 feet, horizontal distance, of the normal high water line, timber harvesting and related activities must not create single cleared openings greater than 14,000 square feet in the forest canopy. Where such openings exceed 10,000 square feet, they must be at least 100 feet apart. Such cleared openings will be included in the calculation of total volume removal. For the purposes of these standards, volume may be considered equivalent to basal area.

3. **Outcome Based:** An alternative method proposed in an application, signed by a Licensed Forester or certified wildlife professional, submitted by the landowner or designated agent to the Bureau and approved by the Bureau, which provides equal or better protection of the shoreland area than this rule.

During a harvest operation, procedures outlined in the Maine Forest Service's *Best Management Practices for Forestry: Protecting Maine's Water Quality* (2004) should be followed regarding working in and around wetlands and streams. By doing so will help the landowner comply with the Protection and Improvement of Waters Law (sections 413 & 417). Specifically, this law prohibits one from causing erosion of soil into water bodies and disposing of slash in streams, lakes and tidal waters. In the case of road construction, compliance of the Erosion and Sedimentation Control Law is necessary, which regulates activities involving filling, displacing or exposing soil. Specifically, erosion control practices (such as hay bales, sift fence and hay mulch) are properly installed and maintained whenever filling or soil disturbance occurs.

MOFGA has not put the forestland into Tree Growth Tax Law because it's a 501C3 educational foundation and as such is exempt from property taxes. However, MOFGA recognizes the powerful economic importance of property taxes on rural communities and the extraordinary demands that the Common Ground Country Fair makes on local infrastructure, and thus voluntarily chooses to pay both Unity and Thorndike towns amounts equivalent to such taxes.

MOFGA *owns* the land on which both the Belfast and Moosehead Railroad and Central Maine Power hold right-of-way easements. These easements allow for MOFGA's temporary use of the land surfaces next to the railroad tracks and below the powerlines, but no permanent building or structures or change of use (such as parking lot).

## Markets

Wood markets fluctuate in price, product specifications, and demand. Current market conditions should be assessed as part of any timber harvesting activity.

Firewood could be sold to local dealers or directly to customers. Many local sawmills in the area would be interested in any log production from the woodlot. MOFGA has sawn many thousands of board feet of its own low-to mid-quality logs in the past decade for use in its Fair buildings, and this need will continue for the foreseeable future. Developing an efficient system for handling this home-processed lumber is a necessity if its full value is to be achieved. High value logs in the future will probably be best sold to specialty mills in the area, but a general recommendation is that MOFGA's forest products should be used for MOFGA purposes as much as possible.

## Commercial Harvests of Wood Products

Properly done, commercial harvests can be one part of an environmentally sound, multiple-use forest management system. Through cutting, a forester manipulates the vegetative structure within a forest stand to attain the landowner's objectives. Sawtimber can still be grown and harvested while managing wildlife habitat and improving recreational opportunities. Typically, low quality and unhealthy trees and/or mature individuals are chosen for removal, which allows

for faster growth to occur in the more valuable, vigorous, immature trees. It also favors the release or establishment of natural regeneration of desired species. The regeneration is part of a property's long-term potential. Thus, proper harvesting not only generates immediate income for the owner, but over time can also improve the health and quality and overall value of the timber and wildlife resources of the property.

Commercial harvesting should be conducted on a marked tree or species designation basis (for example, harvest all merchantable fir in a given stand), and under the supervision of a professional forester. This supervision will ensure that the selection of trees for cutting is in the best short- and long-term interests of MOFGA, and leaves a desirable residual stocking of trees. In addition, the forester supervises harvesting operations to ensure proper utilization, minimal damage from felling and skidding to soils and residual trees, and accurate payment for harvested products

All low impact harvesting systems will be demonstrated on the woodlot, if possible, with the choice based on availability, contractors, timing, and educational program needs. The timing of specific harvests is dependent on economic and silvicultural considerations, MOFGA's need for forest products, and, most importantly, seasonal ground conditions.

Recreational and aesthetic concerns and wildlife needs are given appropriate emphasis during timber marking and while supervising harvesting activities. Yards and skid roads are located to minimize soil erosion and visual impact, as well as to improve interior access to the stands. Cutting alongside existing roads, trails, streams, and vistas needs to be especially careful to maintain aesthetically pleasing appearances. Appropriate numbers of wildlife trees and other critical areas should be left to provide both cover and food.

This woodlot contains a significant volume of timber, a modest proportion of which is recommended for harvest in the next decade. Because of the high visibility of the property and the desire to complete well-supervised, careful demonstration forestry, it makes sense to continue to conduct several smaller operations and spread out the harvest and any income over time. Income production is not a priority. This series of smaller, lighter harvests will maintain a continuous overstory better than would less frequent but more intensive harvests. Stewardship of the forest, assuring that harvesting is done on a sustainable basis, is of primary importance on the MOFGA woodlands.

## Estimates of Timber Volume and Value

MOFGA
Unity and Thorndike, Maine
August 22, 2020

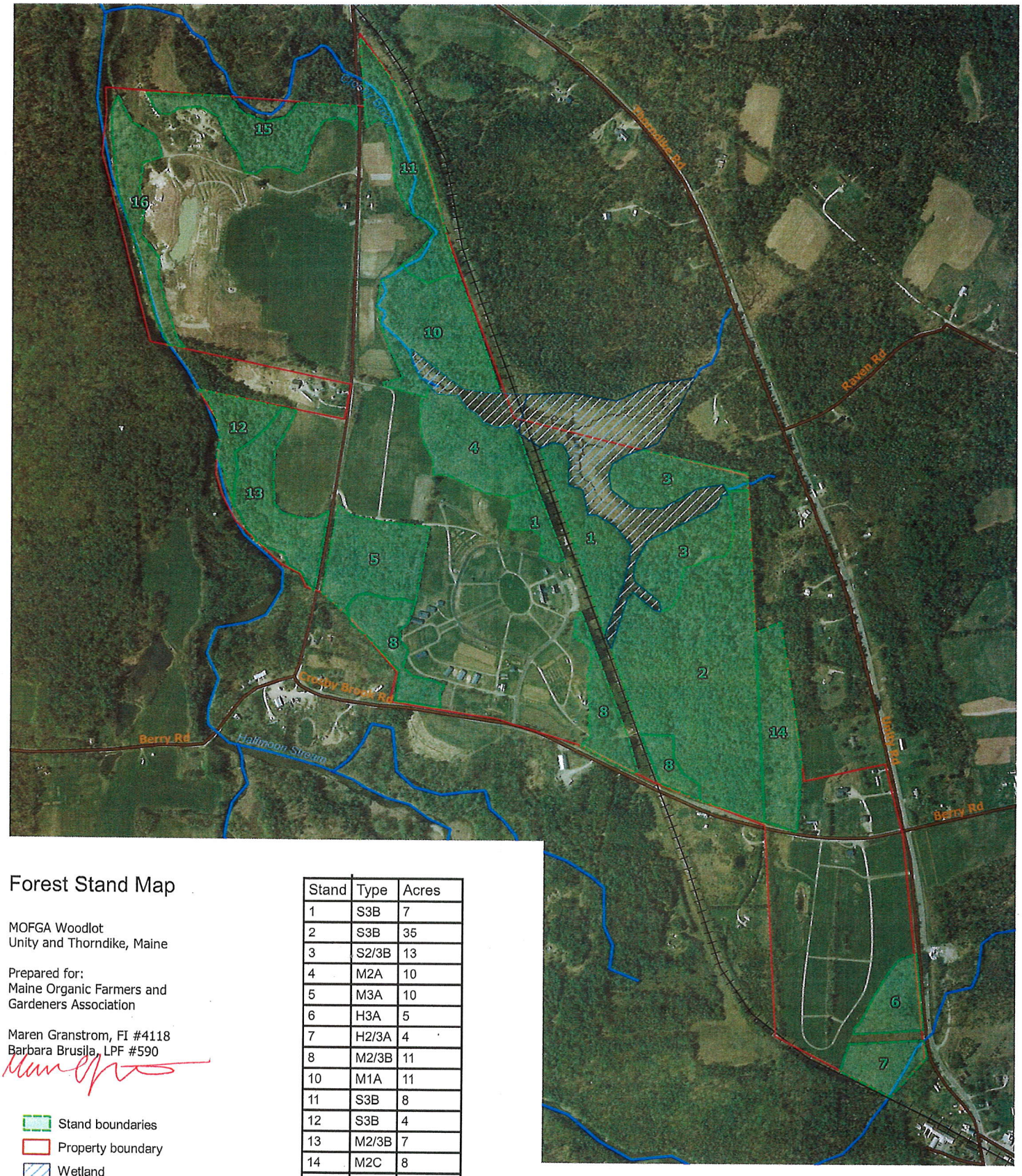
| Products, Species | Volume[1,2] | Stumpage[3] Rate | Value |
|---|---|---|---|
| Sawtimber: | mbf | $ per mbf | |
| White pine, grade | 199.5 | $175 | $34,913 |
| White pine, pallet | 99.8 | $45 | $4,491 |
| Hemlock | 32.6 | $45 | $1,467 |
| Spruce-fir | 14.8 | $80 | $1,184 |
| Red maple | 12.2 | $90 | $1,098 |
| White ash | 7.2 | $120 | $864 |
| Aspen | 7 | $70 | $490 |
| Sugar Maple | 10.3 | $225 | $2,318 |
| Red oak | 4.2 | $225 | $945 |
| | 387.6 mbf | | $47,769 |
| Pulpwood: | cords | $ per cord | |
| Softwood (chips) | 2587 | $2 | $5,174 |
| *Hardwood | 804 | $12 | $9,648 |
| *Firewood | 268 | $18 | $4,824 |
| | 3,659 cords | | $19,646 |

Total Estimated Stumpage Value = $67,415

MBF = thousand board feet of lumber
These numbers are estimates of the total standing volume, **not** the recommended harvest volumes.
[1] Total timber volume estimate is ±7% nine times in ten. Error is greater for individual species or products
[2] Pulpwood volumes include topwood from sawtimber trees.
[3] Stumpage price estimates based on recent local averages, summer 2020.
*Species include red maple, sugar maple, white birch, red oak, white ash, gray birch.

An estimated 25% of total inventoried hardwood volume is firewood grade.

Barbara Brusila, LF #590




# Forest Stand Map

MOFGA Woodlot
Unity and Thorndike, Maine

Prepared for:
Maine Organic Farmers and Gardeners Association

Maren Granstrom, FI #4118
Barbara Brusila, LPF #590

- Stand boundaries
- Property boundary
- Wetland
- Streams
- Railroad
- Roads

| Stand | Type | Acres |
|---|---|---|
| 1 | S3B | 7 |
| 2 | S3B | 35 |
| 3 | S2/3B | 13 |
| 4 | M2A | 10 |
| 5 | M3A | 10 |
| 6 | H3A | 5 |
| 7 | H2/3A | 4 |
| 8 | M2/3B | 11 |
| 10 | M1A | 11 |
| 11 | S3B | 8 |
| 12 | S3B | 4 |
| 13 | M2/3B | 7 |
| 14 | M2C | 8 |
| 15 | S3A | 6 |
| 16 | H2B | 6 |
| | | Total: 145 |

S= 75%+ softwood; H=75%+ hardwood; M=mixedwood
1=0-30ft height; 2=30-60ft; 3=60+ft
A=70-100 crown cover; B=40-70%; C=15-40%

N

0 0.2 0.4 mi

Map based on field reconnaissance in July 2020.
For forest management purposes - not a boundary survey.
Basemap is Google sattelite.
Created in QGIS.

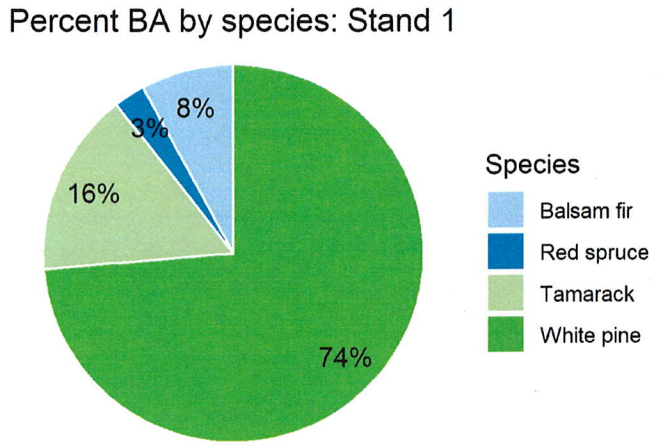
19a

## Stand Descriptions and Recommendations

The long-term (over fifty years) goal of the marked wood selection harvests mentioned in the following pages is to convert the stands to uneven-aged or multi-aged management. This change will gradually alter the structure of these stands to include more small patches of regeneration than currently exist, while maintaining an overstory of trees of a variety of sizes and ages, including some trees which will be allowed to grow through biological maturity into death. The selection system will be individual or group selection. With the following recommendations, regeneration should become established naturally, without the need for planting. No herbicides will be used on the properties.

### Stand 1 – Softwood Sawtimber - 7 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 14 |
| Range of diameters (in) | 6-34 |
| Total BA ($ft^2$/acre) basal area | 142 |
| Merchantable BA ($ft^2$/ac) | 142 |
| Total TPA (trees per acre) | 187 |
| Merchantable TPA | 187 |
| MBF/ac (thousand board feet of sawtimber) | 3.7 |
| Cords/ac (pulpwood) | 39 |
| Total cord equivalents/ac | 46.4 |




**Location, Topography, Soils, Accessibility:** This is a seven-acre stand northeast of the fairground, with portions on either side of the railroad and power line corridor. The portion west of the railroad is easily accessible from the fairground, and the eastern side is accessible via a floating bridge across the wetland into stand 2. The portion east of the railroad is bordered by the wetland, and the area within 250 ft is in a resource protection zone.

The moderately-well drained Madawaska fine sandy loam allows operability during drier months of the year as well as when frozen. The land slopes gently to the east.

**Timber Resource:** Three quarters of basal area, and all sawtimber volume, is white pine. Pines are generally tall and moderate to good quality. Many pines on the west side of the stand where there was no recent harvest have small crowns.

**Regeneration:** Regeneration is variable, including scattered white pine in some areas and dense patches in others. Sapling balsam fir is somewhat abundant, with occasional tamarack, red oak, beech, black cherry, hemlock, and red maple. On the western side, the canopy is denser and regeneration is mostly hemlock with some fir and red maple.

**History and past management:** The stand grew up from fields abandoned in the 1930s. Much of the stand east of the tracks was commercially thinned 6 years ago, in 2014. Inventory data shows that the basal area is still about 50 ft² lower than it was 10 years ago. Close to the tracks on the east side, some small-diameter trees have been felled in place and sometimes stacked, clearing the understory.

The portion west of the tracks is near the Children's area of the fair, and there are several small forts made from sticks and branches. It appears that some smaller trees were cut and stacked here, perhaps for safety or aesthetic reasons.

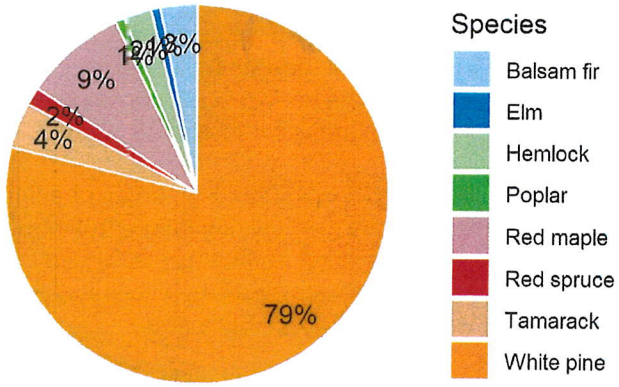
Goals and uses: As part of this stand has good access and visibility from the fairground, it is a good location for forestry and logging demonstration.

**Recommendations:** Light periodic harvests should continue in the next 10 years, in order to release patches of white pine regeneration and establish more. On the west side of the stand, low-quality pines should be thinned to favor growth on remaining trees. Most are large and straight enough to still have some useable timber for MOFGA projects. These practices are eligible for cost-share assistance with NRCS Practice Code 666.

## Stand 2- Softwood Sawtimber – 35 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 16 |
| Range of diameters (in) | 4-28 |
| Total BA (ft2/ac) | 127 |
| Merchantable BA (ft2/ac) | 124 |
| Total TPA | 158 |
| Merchantable TPA | 123 |
| MBF/ac (sawtimber) | 5.6 |
| Cords/ac (pulpwood) | 34 |
| Total cords/ac | 45.2 |

Percent BA by species: Stand 2



**Location, topography, soils, accessibility:** This 35-acre stand is the largest, and covers most of the territory east of the fairground. Trucks can easily use the pine gate gravel roadway, which passes through the southern part of the stand. A spur road and cleared area just north of the Pine Gate Road serves as a sawmilling yard. A main harvest road, improved in 2014, proceeds from this yard to the north and east into Stand 3, all the way to the edge of the wetland.

Site quality on the Madawaska fine sandy loam is good to excellent. The topography of the stand is interestingly lumpy, indicative of classic pit-and-mound effects seen in old, non-agricultural forestland. Harvest trails are thereby slightly difficult to lay out, and encounter very few large stones (glacial erratics).

**Timber resource:** Much of the stand is basically even-aged, although periodic harvests over the past decades have started transitioning the stand to a more multi-aged structure with increasingly diverse species composition. There are 5.6MBF per acre of white pine sawtimber, a third of which is lower quality (pallet grade).

**Regeneration:** Regeneration is varied and diverse in species and density. Balsam fir and red maple are the most common species. There is scattered and patchy white pine regeneration, much of which is suffering from not enough light. Other species include aspen, red oak, black cherry, beech, and white spruce in some areas.

Other ground plants and shrubs noted in the stand include more than six kinds of ferns, jack-in-the-pulpit, partridgeberry, beaked hazelnut, starflower, dogwood, Canada mayflower, raspberries, and bunchberry.

**Invasives:** There is shrubby honeysuckle and glossy buckthorn present, especially in the southern part of the stand.

**History and past management:** Over the past decades many small harvests at various forestry workshops have removed some of the volume, and many of the best stems in the stand have been pruned for future sawlog quality. A commercial harvest was conducted in the northern part of this stand in 2014.

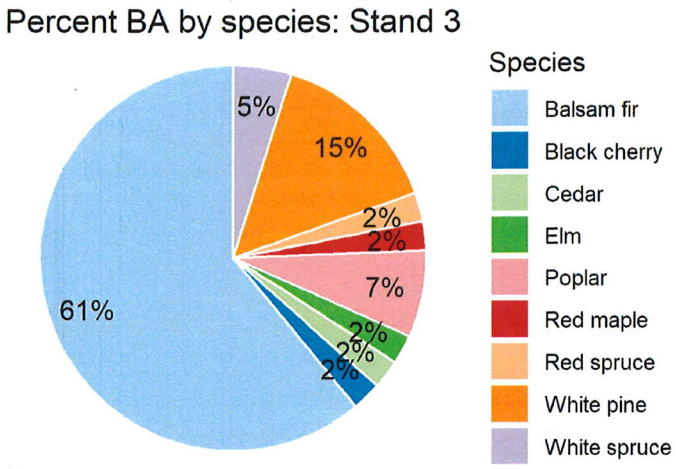
**Goals and uses:** The Pine Gate Road passes directly through this stand, on which many thousands of fairgoers walk during the three days in September every year. This intense exposure has resulted in high interest in the forestry programs of MOFGA, and the physical appearance of the stand is thus very important to maintain. This stand is an excellent location to continue demonstration of sustainable forestry practices, including use of harvests to improve growth on the best trees, to encourage species and structural diversity, to maintain high levels of carbon storage, and to provide timber for local projects.

**Recommendations:** Periodic harvests should continue, opening the canopy and encouraging development of regeneration. The danger of very gradually opening the canopy is that shade tolerant species will take over: balsam fir and red maple are the most common sapling species already. A few small gaps, perhaps 1-2 tree-heights wide, should be strategically located over areas of denser white pine and red oak regeneration. These thinning practices are eligible for cost-share assistance with NRCS Practice Code 666.

Controlling invasive honeysuckle and glossy buckthorn is also a high priority, and eradication should be attempted before any harvests, and monitored annually. It will only become more challenging to control as time goes on, so an annual invasives volunteer weekend, or some such thing, would be ideal. Control of invasives, at least initially, is eligible for cost-share assistance with NRCS Practice Code 314.

## Stand 3 – Softwood Pole/Sawtimber - 13 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 12 |
| Range of diameters (in) | 6-36 |
| Total BA (ft2/ac) | 102 |
| Merchantable BA (ft2/ac) | 102 |
| Total TPA | 241 |
| Merchantable TPA | 241 |
| MBF/ac (sawtimber) | 1.8 |
| Cords/ac (pulpwood) | 25 |
| Total cords/ac | 28.5 |




**Location, topography, soils, accessibility:** This 13 acre stand surrounds the eastern side of the wetland at the northeast section of the Fairgrounds lot. A short strip of this wetland cuts off the northern section from Stand 2, which makes access to the north dependent on frozen conditions (or by crossing the neighbor's property). The perimeter of the stand within 250 feet of the wetland is in the Resource Protection zone. No harvesting should occur with 75 feet of the wetland. A main harvest trail from Stand 2 runs up into the southern section of this stand and approximately follows their border nearly up to the wetland. Many smaller temporary trails divert off the main trail.

Most of stand 3 soils are mapped as Searsport mucky peat, along with the wetland. In reality, much of the stand may be drier than that, but portions are certainly swampy and poorly drained.

**Timber resource:** This is an adequately stocked stand with some growing to do. Fir makes up 61% of basal area but 29% of sawtimber volume; white pine is just 15% of basal area, but 58% of sawtimber; red spruce is the remaining sawtimber. There is mostly white pine overstory in the area south of the wetland (similar to adjacent stand 2), and primarily balsam fir in the overstory north of the wetland, with almost no sawtimber.

**Regeneration:** Seedlings and saplings are primarily balsam fir, with some aspen, red maple, and a few white pine. A bur oak seedling was also found near one of the plots next to the wetland!

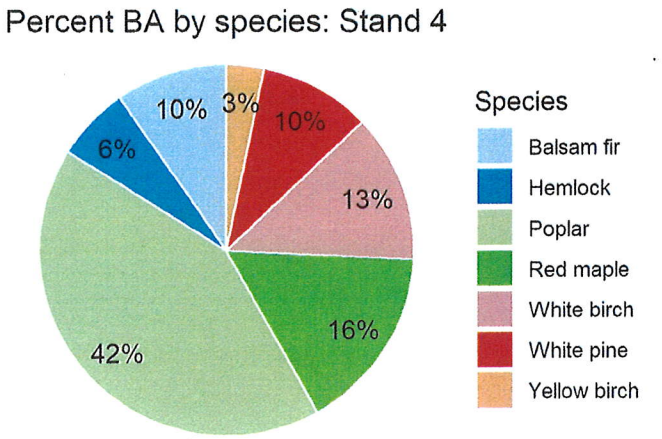
**History and past management:** A woods road was installed through stand 2 and into stand 3 in 2013. Much of this stand was harvested in 2014, a heavy commercial thinning. A number of merchantable-sized balsam fir were cut but left on the ground—perhaps conditions or timing didn't allow for skidding or sale.

**Goals and uses:** The long-term goal is to improve the aesthetic appearance of this stand while conducting periodic selection harvests to increase value and growth of the remaining trees. The northern part of stand 3 is somewhat remote and hard to access compared with other parts of the property. Much of the stand is within the shoreland zone, limiting harvest options.

**Recommendations:** Due to the 2014 harvest and current stocking, no harvesting is recommended in the next ten years. No invasive plants were noted, but they should be searched for every year and removed if/when found.

## Stand 4 – Mixedwood Poletimber - 10 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 10 |
| Range of diameters (in) | 3-16 |
| Total BA ($ft^2$/ac) | 116 |
| Merchantable BA ($ft^2$/ac) | 98 |
| Total TPA | 522 |
| Merchantable TPA | 274 |
| MBF/ac (sawtimber) | 0.27 |
| Cords/ac (pulpwood) | 17.9 |
| Total cords/ac | 18.4 |




**Location, topography, soils, accessibility:** Located between the exhibit area, the railroad tracks, Crosby Brook, and the north parking lot, this 10 acre stand includes the primitive camping area used by fairgoers. The terrain is flat, although the ground surface is quite uneven. Madawaska fine silt loam is the most common soil here, with some Searsport peat just along the Brook on the northern edges. Beaver activity is visible from this shoreline to the wetland.

**Timber resource:** This stand has low stocking and almost no sawtimber, and variable species composition and density. Some areas have mostly dense hemlock and others have poplar and clumps of red maple. White pine is usually low quality.

**Regeneration:** While not very dense, there are diverse sapling species. Hemlock, red maple, balsam fir, spruce, black cherry, paper birch, aspen, beech, and red oak were all noted.

**History and past management:** 40 to 45 years ago this stand was cut over hard, resulting in a forest of small trees with a few scattered groups of larger, older trees (mostly along the eastern edge, near the railroad tracks). Numerous footpaths have been cleared in the camping area immediately to the north of the main Fairground field. The pit and mound topography suggests that this area has not been tilled.

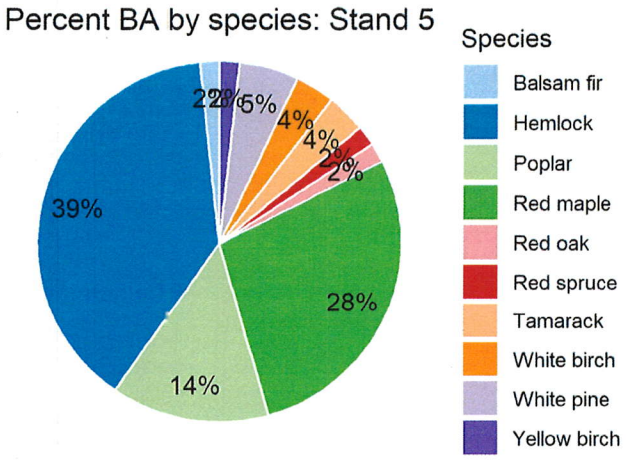
**Goals and uses:** Because of the low volumes and low values of the standing trees, and because of the increased interest in camping at the CGCF, most of this stand should be managed for campsites. This stand could also be a good opportunity

to discuss rehabilitation and crop tree release during forestry workshops.

**Recommendations:** Perhaps a few more trails and appropriate outhouse facilities could be scattered throughout. Some of the larger hemlocks along the railroad could be considered for harvesting if a need arose for specific timbers or lumber, but otherwise no timber harvesting is recommended here for another ten years. Precommercial thinning of sapling areas will give crown release to the few high-quality individual white birches, spruce, red oaks or pines in the midst of the dense clumps. 3 acres of this stand should receive crop tree release before 2030, which is eligible for cost-share assistance with NRCS Practice Code 666.

## Stand 5 - Mixedwood Sawtimber - 10 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 14 |
| Range of diameters (in) | 1-26 |
| Total BA ($ft^2$/ac) | 171 |
| Merchantable BA ($ft^2$/ac) | 162 |
| Total TPA | 1363 |
| Merchantable TPA | 228 |
| MBF/ac (sawtimber) | 3.1 |
| Cords/ac (pulpwood) | 37.2 |
| Total cords/ac | 43.4 |




**Location, topography, soils, accessibility:** 10 acres to the west of the exhibition fields, and down a steep bank, this stand is dark and moist, bounded on the north by the Rose Gate parking lot, on the west by the Crosby Brook Road, on the south (by Stand 8) by a property line running basically along the wet run there. At least two other wet runs or intermittent streams cross through the stand, making access difficult and probably only feasible during very dry or frozen conditions. Operability is limited by steep slopes in much of the stand One harvest trail was started in 2008, zigzagging diagonally down from the southeast corner (from Stand 8). A plausible yarding area could be built at the toe of the slope

next to the Crosby Brook Road, where the soils may be dry and flat enough to support such an activity, and moving wood across the stand to that yard would not fight gravity too much, if at all.

**Timber resource:** This is a well-stocked stand with a good amount of sawtimber. Trees are tall and generally of good quality, although hemlock and red maple, the species with most sawtimber, are not very valuable.

**Regeneration:** There is a fairly dense canopy and relatively sparse regeneration. Species include red maple, balsam fir, yellow birch, and hemlock.

**History and past management**: Evidence of harvesting about 60 years ago but not more recently shows how difficult this stand is to access. Some of the pine along the knoll west of Stand 8 was very lightly thinned in 2008 and 2009 at the LIF Workshops.

Goals and uses: As this stand is close to the fairgrounds, has some beautiful old trees, and open understory, it is a good site for a possible recreation trail. The high density of large trees also makes this a good stand to focus on carbon storage, in living and deadwood.

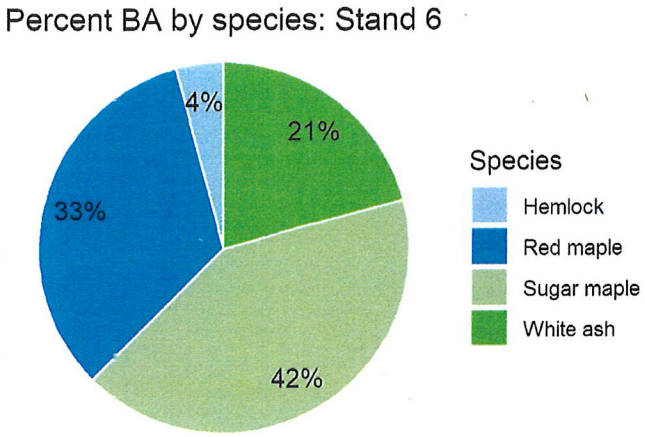
This stand has high, dense canopy cover and more snags and downed deadwood than other areas of the property. Both of these features are important for wildlife.

**Recommendations**:

Construct a walking trail, and consider using this area as a site for demonstration of carbon storage measurement. As there is a large hemlock component, monitor for hemlock woolly adelgid presence.

## Stand 6 – Hardwood Sawtimber – 5 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 14 |
| Range of diameters (in) | 5-18 |
| Total BA ($ft^2$/ac) | 120 |
| Merchantable BA ($ft^2$/ac) | 120 |
| Total TPA | 219 |
| Merchantable TPA | 219 |
| MBF/ac (sawtimber) | 2.7 |
| Cords/ac (pulpwood) | 31 |
| Total cords/ac | 36.4 |




**Location, topography, soils, accessibility:** This 5 acre stand is the southeast section of the South Lot in Thorndike, where the forested land slopes steeply away from the parking lot fields. Route 220 borders the stand on the east but is not accessible due to highway banking and guardrails. The steepness of the slope (up to 25% in places) makes access challenging; a faint old trail passes diagonally across the slope from the power line to the parking lot fields. A CMP power line passes through the property, east-west, and forms the southern edge of this stand.

A small forested wetland spreads southeast to the Hall Brook shoreline at the bottom of the slope. An old metal dumping ground at a drop-off just below the field is a hazard. The stony Dixmont soil ranges from moderately well-drained at the top of the hill to somewhat poorly drained at the bottom, where it changes to Thorndike-Winnecook in the wetter land. Depending on this drainage element, site quality for tree growing is fair to excellent.

**Timber resource:** This stand boasts some stunning white ash and sugar maple sawtimber, although the total stand volume is quite small.

**Regeneration:** Regeneration is sparse except on the edges of the stand, where there is additional light from the field and power line corridor. There are a few sugar maples, beech, balsam fir, and white ash, some of which has been browsed by deer.

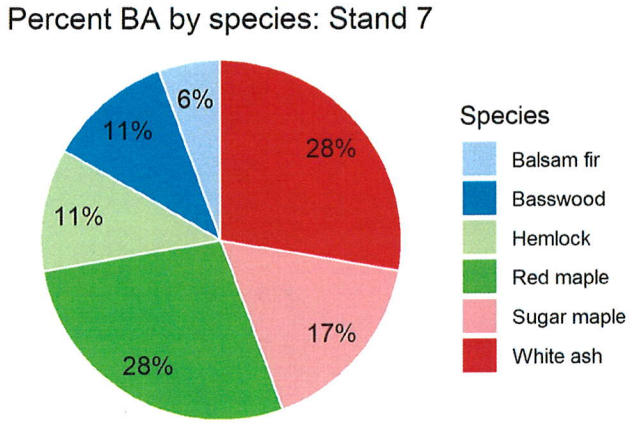
**History and past management:** Harvests in the last 70 years have been limited to light cuts along the field edge, and a few LIF demonstrations in 2007, -08, and -09.

**Goals and uses:** Sugaring demonstrations, and management for development of a sugarbush, would be a more logical use of this stand than timber production. The slope faces southeast, toward the road and stream, good for sap but an extra challenge for its collection!

**Recommendations:** Unfortunately much of the white ash will likely perish when EAB reaches this part of the state. While EAB may or may not arrive in the next decade, a few ash trees could be cut at LIF workshops in order to begin regenerating more species and favoring the maples. At the same time, several deer exclosures could be set up to see if regeneration has more success without browse pressure.

## Stand 7 – Hardwood Pole/Sawtimber – 4 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 12 |
| Range of diameters (in) | 1-22 |
| Total BA ($ft^2$/ac) | 135 |
| Merchantable BA ($ft^2$/ac) | 128 |
| Total TPA | 1650 |
| Merchantable TPA | 275 |
| MBF/ac (sawtimber) | 0.97 |
| Cords/ac (pulpwood) | 34.1 |
| Total cords/ac | 36 |




**Location, topography, soils, accessibility:** At the very tip of the South Lot property in Thorndike, this 4 acre stand is bounded by a small bit of Route 220 and Hall Brook to the east, the power line to the north, the railroad bed to the south, and the parking lot to the west. Banks leading up from the stand to both the railroad and Route 220 are very steep, effectively locking access there. The only logical harvesting route would be to make some sort of cut in the bank up to the field on the western edge of the stand. Other than the banks along the edge, the topography of the stand is fairly gently sloped down from west to east, and the surface itself is bumpy and irregular. The soils are stony Dixmont (west side) and wetter Thorndike (east side).

**Timber resource:** All of the sawtimber is white ash and sugar maple, though at less than half the density of nearby stand 6.

**Regeneration:** Regeneration is denser than in nearby stand 6, with balsam fir, beech, sugar maple, hemlock, white ash, and hophornbeam.

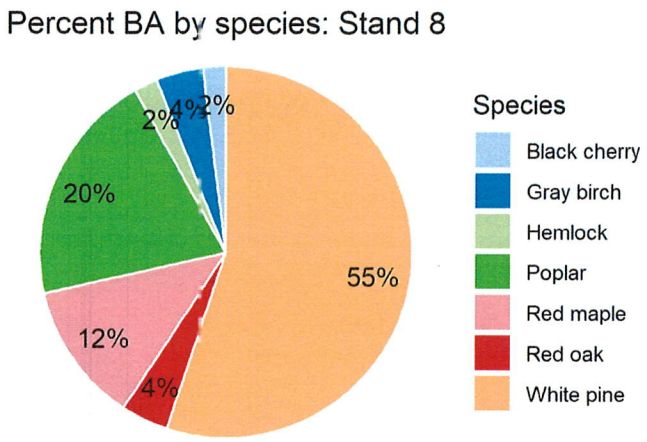
**History and past management:** There has been some very light cutting in the past ten years, but no larger harvests for at least 50 before that. Pit and mound topography suggests that this was never plowed.

**Goals and uses:** Improving the volume, species composition, and economic value of this stand is the long term goal. Cutting the worst stems first, those that are poorly formed, interfere with more valuable trees, or won't survive another ten years, should be the short term harvest plan.

**Recommendations:** A light to moderate crop tree release/improvement harvest in the next ten years should target short-lived species and low quality individuals, reducing total BA to about 100 ft²/ac. Such a small volume and value means that this would not be a commercial harvest, but wood could be used or sold as firewood. This harvest was recommended in the past management plan but not completed—it should not be put off again.

## Stand 8 – Mixedwood Pole/Sawtimber - 11 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 14 |
| Range of diameters (in) | 4-32 |
| Total BA (ft²/ac) | 147 |
| Merchantable BA (ft²/ac) | 135 |
| Total TPA | 343 |
| Merchantable TPA | 205 |
| MBF/ac (sawtimber) | 4.5 |
| Cords/ac (pulpwood) | 33.3 |
| Total cords/ac | 42.3 |




**Location, topography, soils, accessibility:** This stand is located in several small patches around the Fairground Lot's exhibit area (west 8), and between the railroad and Stand 2 (east 8). Because both east and west 8 are relatively flat and next to fields, access is good to all parts of the stand.Some camping in west 8 during the CGCF mandates leaving a dense wall of weeviled pine for privacy along the interior access road behind the animal barns. Madawaska fine sandy loam is moderately well-drained. Site quality is excellent for pine and hardwoods. During the CGDF, the LIF tent is located in this stand just west of the Pine Gate Road crossing of the railroad tracks.

**Timber resource:** White pine is 55% of basal area and nearly 90% of sawtimber volume. All of the white pine sawtimber is in east 8, and about half is low-quality (pallet grade). In west 8, there are some younger white pines and red oak that have not reached sawtimber size.

**Regeneration:** Regeneration is sparse in most areas, and includes beech, balsam fir, red maple, a few spruce and white pine, and even one bur oak seedling.

**History and past management:** This stand is generally old fields grown to woods, with an old gravel pit off the southwest corner of the exhibit area (behind the livestock barns). Cutting occurred in east 8 about 35 years ago, and some has been done in west 8 since 2007 at the LIF workshops. East 8 has been used for short woodlot tours (pruning and tree identification) frequently during the CGCF because of its proximity to the Forestry Tent in the fairgrounds and for its relatively large number of tree and shrub species in that small area.

**Goals and uses:** The long term goal is to maintain visual and audible buffer between the railroad tracks and the exhibit grounds (east 8) and the same buffers for campers in west 8 and the exhibit grounds

**Recommendations:** Few trees should be harvested, just those which may pose a safety or access problem for trails or other future infrastructure. There were invasive plants noted around the field edges—these should be removed and then monitored annually. Control of invasives, at least initially, is eligible for cost-share assistance with NRCS Practice Code 314.

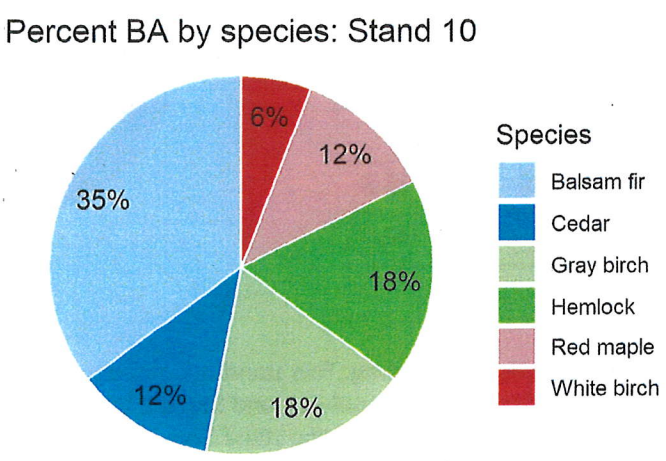
———

*There is no stand 9.*

———

## Stand 10 – Mixedwood Sapling/ Poletimber - 11 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 11 |
| Range of diameters (in) | 1-20 |
| Total BA ($ft^2$/ac) | 85 |
| Merchantable BA ($ft^2$/ac) | 50 |
| Total TPA | 4023 |
| Merchantable TPA | 95 |
| MBF/ac (sawtimber) | 0 |
| Cords/ac (pulpwood) | 6 |
| Total cords/ac | 6 |




**Location, topography, soils, accessibility:** This stand is part of the Crosby Lot, just north of the beaver wetland (Area 9), and west of the railroad line and CMP powerline. The topography is nearly flat. The southern section of the stand is Searsport mucky peat soil, but further north the land dries out a bit into Thorndike series and even a bit of Madawaska sandy loam on the western edges, along Crosby Brook. The site quality is fair to good, depending on drainage. Access is practical only from the east (railroad bed) and north (through Stand 11). Some harvest trails still exist and are occasionally used by local hunters, by foot and by ATV. Part of this stand is in the shoreland zone of Crosby brook and the wetland.

**Timber resource:** There is no sawtimber here, and just a few scattered merchantable-sized trees. The cedar and hemlock are fairly large but of poor quality—smaller stems are mostly gray birch and balsam fir.

**Regeneration:** Most trees in the stand are sapling-sized fir and gray birch. There are also some small white pine and spruce saplings, and red maple seedlings.

*Unthinned area of stand 10 (left) and a nearby section thinned 6 years before photo was taken (right).*

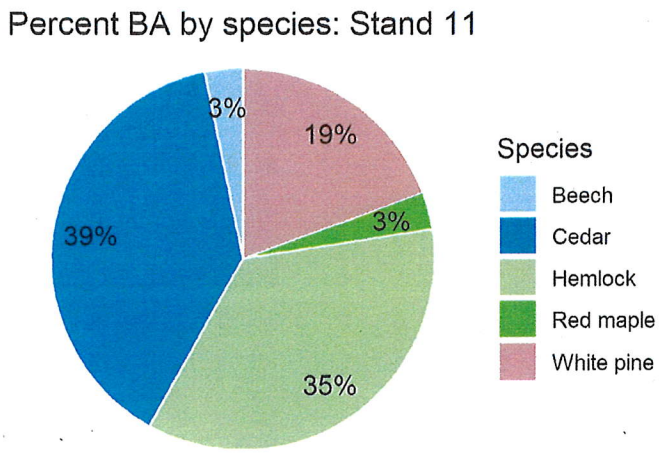
**History and past management:** This was very heavily cut about 25 years ago, and is full of many saplings and small poletimber trees. A heavy precommercial thinning was applied in 2.9 acres in 2014, spacing preferred species to 8x8ft for trees <3in dbh and 16x16ft for trees >3in dbh.

**Goals and uses:** The long-term goal for this area is a stand of diverse species with good quality timber. This stand will be a good demonstration area for explaining the effects of precommercial thinning, and potentially later commercial thinning. It will take many decades before this area produces merchantable timber again, but favoring longer-lived, desired species, and continued tending, will accelerate the process.

**Recommendations**: Leave the thinned area of this stand to grow for another ten years. Once trees have reached merchantable size, and if there is a market for softwood pulp, plan a commercial thinning. Retain larger trees for wildlife and aesthetic value. Continue precommercial thinning to the same specification as before in a further 3 acres. This is eligible for cost-share assistance with NRCS Practice Code 666.

## Stand 11 – Softwood Sawtimber – 8 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 16 |
| Range of diameters (in) | 2-28 |
| Total BA ($ft^2$/ac) | 116 |
| Merchantable BA ($ft^2$/ac) | 113 |
| Total TPA | 31 |
| Merchantable TPA | 145 |
| MBF/ac (sawtimber) | 2.8 |
| Cords/ac (pulpwood) | 23.1 |
| Total cords/ac | 28.8 |




**Location, topography, soils, accessibility:** This stand is bounded on the east by the CMP power line and the railroad tracks, and on the west by the field's edge along Crosby Brook. The soils are mostly Madawaska sandy silt loam along the Brook, with a small hunk of wetter Thorndike near the northern tip of the stand. The brook falls about 25 feet while following this stand, developing quite steep and beautiful banks as it does. Access is good all along the CMP powerline right of way. From the western field, access to the stand is good as well, because the banks are not quite as steep to the stream from that direction. The soils are the same as Stand 12, Adams silt loam, with the addition of some Madawaska sandy silt loam near the road. Some gravel may be still in the bank.

**Timber resource:** Although eastern white-cedar forms a large part of basal area, there is likely no cedar sawtimber. There are tall, good-quality hemlock and moderately good quality white pines in this stand. However, given the narrowness of the stand, sloping banks, and stream running through the middle, a harvest could be challenging.

Regeneration: Regeneration is varied and fairly abundant, with some patches of dense fir in areas and scattered species throughout. Species include white ash, sugar maple, aspen, beech, hemlock, red maple, white spruce, black cherry, and elm.

**History and past management:** Much of the eastern edges of the stand were partially harvested about 25 years ago, but there has been no management since then.

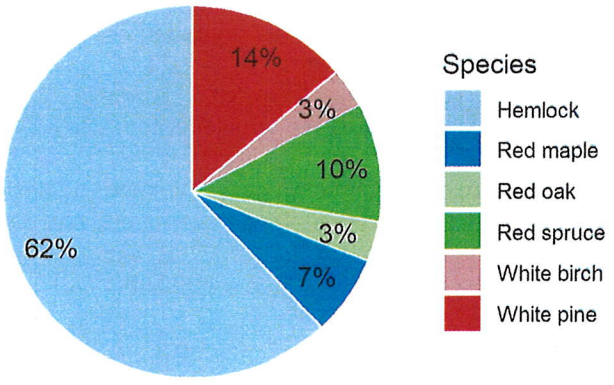
**Goals and uses:** Most of this stand is within 75 ft of Crosby brook, and therefore in the shoreland zone. While harvesting is permitted, timber production is not the primary goal in much of this stand. Shading the stream, providing good habitat in the riparian corridor, and encouraging a variety of tree species will all benefit wildlife, aesthetics, and climate adaptation.

**Recommendations:** For the most part, this stand should be left alone. Walking trails would provide nice access to this lovely part of the property, and annual monitoring for invasive plants would be wise. It is a lower priority than in other stands, but eventually light harvesting could release some of the many regenerating species in order to increase diversity, if this is not occurring naturally.

## Stand 12 – Softwood Sawtimber – 4 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 12 |
| Range of diameters (in) | 5-24 |
| Total BA ($ft^2$/ac) | 145 |
| Merchantable BA ($ft^2$/ac) | 145 |
| Total TPA | 326 |
| Merchantable TPA | 326 |
| MBF/ac (sawtimber) | 2.7 |
| Cords/ac (pulpwood) | 31.9 |
| Total cords/ac | 37.3 |

Percent BA by species: Stand 12



**Location, topography, soils, accessibility:** This stand is the northwest corner of the Maxim Lot. Halfmoon stream forms the western boundary, and the bottom of a very steep and long bank. A poorly marked boundary line with the neighboring farm to the north needs clarification.

Adams silt loam is well-drained, making operability good in much of the year. Access is to the east, sloping gently up through stand 13 to the fields used for parking at the CGCF.

**Timber resource:** Three-quarters of the sawtimber is hemlock, and the remainder is white pine. There are a number of large, tall hemlocks on the steep banks going down to Halfmoon stream. The previous plan noted the poor quality of residual stems after the last harvest—weeviled pine, skidder-damaged hemlock and spruce, and clumps of red maple. These defects were less obvious in 2020.

**Regeneration:** Regeneration is sparse and patchy. Species include hemlock, red oak, white pine, red maple, beech, and paper birch.

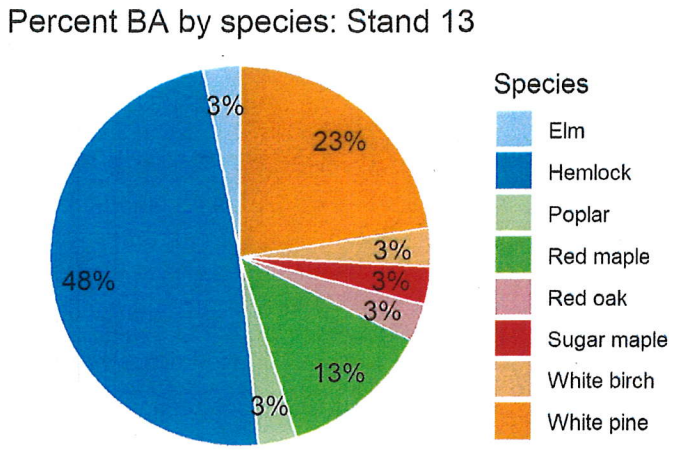
**History and past management:** This stand was cut about 15-20 years ago by previous owners, and three acres in the northern part of the stand were lightly thinned in 2016.

**Goals and uses:** Much of the stand is very steep, and in the shoreland zone of Halfmoon stream. Some harvesting will continue, but shoreland integrity, habitat provision, and recreation are higher priorities here.

**Recommendations:** The northern boundary of stands 12 and 13 needs to be redefined. A trail along the stream exists in places, but should be better defined and marked, and could be expanded to run along the top and bottom of the bank.

## Stand 13 – Mixedwood Pole/ Sawtimber – 7 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 15 |
| Range of diameters (in) | 4-28 |
| Total BA ($ft^2$/ac) | 116 |
| Merchantable BA ($ft^2$/ac) | 113 |
| Total TPA | 187 |
| Merchantable TPA | 144 |
| MBF/ac (sawtimber) | 0.5 |
| Cords/ac (pulpwood) | 28.6 |
| Total cords/ac | 29.6 |




**Location, topography, soils, accessibility:** The southern boundary of the land runs from Crosby Brook Road a short distance across to Halfmoon Stream, just south of a small access roac to a gravel pit. An existing walking trail continues from the pit parallel to the stream bank, rising moderately gently as it goes northward until reaching the top of the bank.

**Timber resource**: There is moderate stocking, but there were just a few white pine, red oak, and red maple sawlogs tallied in stand 13.

**Regeneration:** Regeneration is variable and found mostly in gaps. Species include white pine, red oak, white spruce, red maple, hemlock, fir, and white ash.

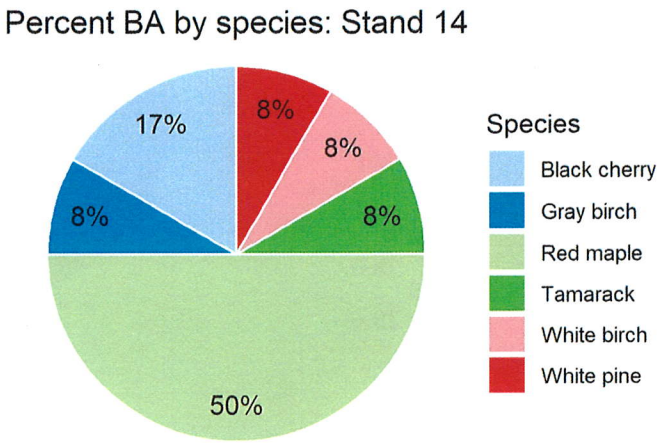
**History and past management:** This stand was cut hard about 15-20 years ago by previous owners. A crop tree release was performed on 2 acres on the eastern side of the stand in 2014. It appears some smaller, though possibly merchantable trees were felled and left in place during this operation.

**Goals and uses:** The goal for this stand is to improve quality for timber and encourage a diverse, multi-aged stand.

**Recommendations:** Improve walking trails along with those in stand 12, and blaze northern boundary. Otherwise, let this stand grow for another ten years.

## Stand 14 – Hardwood Poletimber – 8 acres

| | |
|---|---|
| Average diameter (in) (merchantable trees >5 in) | 14 |
| Range of diameters (in) | 2-18 |
| Total BA ($ft^2$/ac) | 45 |
| Merchantable BA ($ft^2$/ac) | 38 |
| Total TPA | 402 |
| Merchantable TPA | 58 |
| MBF/ac (sawtimber) | 0.5 |
| Cords/ac (pulpwood) | 9.2 |
| Total cords/ac | 10.2 |




**Location, topography, soils, accessibility:** Stand 14 is newly acquired since 2010. It forms the eastern part of the Fairground lot and extends up most of the eastern boundary of stand 2. It is fairly flat, and bordered by field on the east, Crosby Brook Road on the south, and a partially flagged line through the woods on the north. One pin was found, but the boundary should be blazed and painted. The soils are Madawaska in the west and northern part of the stand, and Thorndike-Winnecook in the southern and eastern parts.

**Timber resource:** There are very few merchantable trees in the southern part of the stand. Younger stems are growing up in some places. In the northern part of the stand, there is an area with fairly dense red maple overstory, and white pine regeneration that is beginning to show lack of light.

**Regeneration**: Regeneration is fairly dense, and includes mixed species such as aspen, red maple, elm, red oak, white spruce, and white pine in the southern part of the stand. In parts of the stand further north, there are patches of almost pure white pine.

**Invasives:** There is quite a bit of honeysuckle, multiflora rose, and glossy buckthorn, especially in the southern part of the stand.

**History and past management:** This stand was cut hard a few decades ago, especially in the southern portion.

**Goals and uses:** The goal is to create a stand of diverse species and several ages, with high-quality trees.

**Recommendations:** The southern part of the stand should be left to grow for now, with a focus on removing the fairly abundant invasives. The red maples in the northern part of the stand should receive a moderate intensity thinning in the next five years, removing the poorest stems in order to release pine regeneration. Control of invasives, at least initially, is eligible for cost-share assistance with NRCS Practice Code 314.

## Stand 15 – Softwood Sawtimber – 6 acres

*No inventory was conducted in stand 15.*

**Location, topography, soils, accessibility:** Stand 15 is newly acquired since 2010. It starts north of the Heritage Orchard and old gravel pits, and slopes, often quite steeply, down to Crosby Brook in the North.

**Timber resource:** This stand is mostly hemlock, a multi-aged structure including some large trees and patches of regeneration. Scattered other species include balsam fir, white birch, and red maple, although most of the regeneration is hemlock and a few balsam fir.

**Goals and uses:** The goal in this stand is to provide a good riparian buffer and maintain slope stability.

**Recommendations:** This stand should be left to grow. The northern boundary, especially the area between Crosby Brook and the road, should be reestablished and marked. A fence was found in places, which likely lies along the boundary line, but the deed and neighboring landowner could be consulted as well.

## Stand 16 – Hardwood Poletimber – 6 acres

*No inventory was conducted in stand 16.*

**Location, topography, soils, accessibility:** Stand 16 is newly acquired since 2010. It forms the east bank and lies in the 250-ft shoreland zone of Halfmoon Stream. It is a flat area, part of which floods seasonally.

**Timber resource:** There are mostly pole-sized trees of a variety of species. Red maple, usually in clumps, indicates some past harvesting. White, gray and yellow birch, white ash, black cherry, beech, hemlock, balsam fir, and even a white spruce were noted in this stand. Grape vines, sumac and other plants associated with hedgerows and field edges were also present. This stand transitions to dense, larger hemlock at the very southern edge, near the property boundary with the neighboring Alpaca Farm.

**Goals and uses:** The goal in this stand is to provide a good riparian buffer. The Hills to Sea trail also runs through this stand, a well-used and loved recreation trail.

**Recommendations:** This stand should be left to grow, and monitored for invasive plants.

# STEWARDSHIP PLAN ADDENDUM

MOFGA

P.O. Box 170, Unity, Maine 04988
Tel. (207) 568-4142
Waldo County
145 forested acres

February 5, 2021

prepared by: Barbara Brusila, dba Mid-Maine Forestry
1320 Western Rd. Warren, ME 04864
(207) 273-4046

Farm 2963 Tract 2871

NRCS EQIP Contract # 741218200GJ

Certification:

I assume responsibility for the development of the above stated Stewardship Plan

Addendum provided. The plan provided: (1) complies with all applicable Federal, State, Tribal and local laws and requirements; (2) meets applicable Department standards, specifications, statements of work and program requirements; (3) is consistent with the particular conservation program goals and objectives for which the program contract was entered into by the Department and the participant; and (4) incorporates alternatives that are both cost effective and appropriate to address the resource issue. Conservation alternatives will meet the objectives for the program and participant to whom assistance is provided.

Forester License # 590 Signature _____ Date _____

Landowner/Producer Signature _____ Date _____

NRCS Signature _____ Acceptance Date _____

## Record of Decisions

**Landowner Name, Address, Phone:**
Maine Organic Farmers and Gardeners Association
PO Box 170, Unity, Maine 04988
(207) 568-4142

**Planner Name, Address, Phone:**
Barbara Brusila, dba Mid-Maine Forestry
1320 Western Rd.
Warren, ME 04864
(207) 273-4046

**Forested acres in plan:** 145
**Plan date:** February 5, 2021
**Planning period:** 10 years

**Resource concerns:**

The primary land use for this resource management system is forestland. All planned land units (stands) are forested.

| Tract Number (if known) | Land Unit (Stand) | Practice Code Number | Narrative ID Number | Planned Amount | Unit | Proposed Month of Installation | Proposed Year of Installation |
|---|---|---|---|---|---|---|---|
| 2871 | 1 | 666 | 1 | 5 | acres | August | 2022 |
| 2871 | 2 | 666 | 1 | 15 | acres | August | 2022 |
| 2871 | 2 | 314 | 2 | 6 | acres | August | 2022 |
| 2871 | 4 | 666 | 3 | 3 | acres | August | 2022 |
| 2871 | 8 | 314 | 2 | 2 | acres | August | 2022 |
| 2871 | 10 | 666 | 4 | 3 | acres | August | 2022 |
| 2871 | 14 | 314 | 2 | 4 | acres | August | 2022 |

**Practice Narratives:**

1. **666 Forest Stand Improvement – Thinning for Wildlife and Forest Health.** At least 30sf of basal area per acre will be removed in order to improve growth on remaining, high quality white pine trees. Implement and operate this practice according to a design and operation and maintenance plan prepared in accordance with NRCS standard and specification Code 666.

2. **314 Brush Management –** Use mechanical control to remove non-native invasive plants including glossy buckthorn, shrubby honeysuckle, and multiflora rose. Implement and operate this practice according to a design and operation and maintenance plan prepared in accordance with NRCS standard and specification Code 314.

3. **666 Forest Stand Improvement – Crop Tree Release.** Select and release crop trees on three to four sides of the crown by removal of competing vegetation. A minimum of 20 trees per acre will be released while maintaining a fully-stocked stand. Implement and operate this practice according to a design and operation and maintenance plan prepared in accordance with NRCS standard and specification Code 666.

4. **666 Forest Stand Improvement – Precommercial thinning**. Remove undesired or competing vegetation, spacing preferred species to 8x8ft for trees <3in dbh and 16x16ft for trees >3in dbh. Implement and operate this practice according to a design and operation and maintenance plan prepared in accordance with NRCS standard and specification Code 666.

## GLOSSARY

**Basal Area (BA)** - a) of a tree: the cross-sectional area of the trunk at 4.5 feet above the ground; b) per acre: the sum of the basal areas of all the trees on an acre; a measure of tree density of a forest stand

**Board Foot** - a unit for measuring wood volume in a tree, log, or cut lumber. It is the volume of wood in a board 1 foot by 1 foot by 1 inch, equaling 144 cubic inches.

**Boltwood** - smaller diameter and/or shorter length sawlog grade hardwoods, usually birch or red oak, manufactured into items such as furniture blanks, dowels, etc.

**Canopy** - the top leafy layer of the forest, formed collectively by tree crowns

**Commercial Harvest** - a harvest operation that results in net landowner income

**Cord** - a measure of wood products 4 feet high , 4 feet wide and 8 feet long, equaling 128 cubic feet of wood, bark, and interior spaces

**Cord equivalents** – volume of cordwood and sawtimber combined

**DBH** - tree diameter at breast height, measured at 4.5 feet above the ground

**Even-aged** - a stand of trees of the same age class

**Habitat** - the type of ecosystem in which a particular wildlife species or group of species is commonly found

**Improvement cut** - cutting in a stand to improve composition and quality by removing less desirable trees

**Maturity, biological** - the age range in which abundant seed is produced, typically starting at about 40 years of age. Financial maturity is the condition of optimal tree value.

**MBF** - log measurement unit; one thousand board feet; 1 MBF = approximately 2 cords

**Operability** - ease with which logging machinery could work a site; often limited by rockiness, steep slopes, or wetness

**Overmaturity** - the age range in which significant physical decline occurs

**Patch cut** - a clearcut of a relatively small area (less than an acre)

**Poles** - trees between 6 and 9 inches DBH

**Quality (of a tree)** - expressed relative to a tree's potential to become a valuable product

**Regeneration** - seedlings or sprouts of commercial tree species

**Riparian** - the forest edge along rivers and streams and around rivers, ponds, and wetlands

**Saplings** - trees between 1 and 5 inches DBH

**Sawtimber** - trees of DBH 10 inches or greater and containing log quality wood; generally 8 - 16 feet long and straight

**Seedlings** - trees less than 1 inch DBH or 3 feet high

**Selection harvest** - the removal of individual or small groups of trees at regular intervals; designed to create or maintain an uneven-aged stand. Used as a management tool to ensure continuous establishment of regeneration of species that do not require full sunlight to grow well.

**Silviculture** - the art and science of controlling the establishment, growth, composition, health, and quality of a forest. It entails the manipulation of forest vegetation in stands and across landscapes to meet the needs and values of landowners as well as society on a sustainable basis.

**Stand** - a contiguous, homogenous unit of forestland, delineated because it supports trees of common species, size, age, potential, etc.

**Stocking** - the current number and density of trees in a forest stand, compared to the optimum it could support

**Structure (of a forest)** - the physical arrangement of a forest's vegetation

**Stumpage (value)** - the value of a live tree standing in the woods, a common basis for a logging contract

**Thinning** - a cutting to reduce density in an even-aged stand of trees, primarily to improve growth and enhance stand quality

**Timber Stand Improvement (TSI)** - an activity which improves the value of a stand for producing quality wood products; pre- or non-commercial thinning, weeding, pruning and/or crop tree release

**Type** - a unit of forestland, which may be composed of one or more individual stands which are homogenous but geographically separate

**Uneven-aged** - a stand of trees of 3 or more age classes

**STATE OF MAINE**
**DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY**
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

**JANET T. MILLS**
**GOVERNOR**

**AMANDA E. BEAL**
**COMMISSIONER**

January 6, 2021

Maren Granstrom, MOFGA
Via email: mlpgranstrom@gmail.com

Re: Forest Management Plan Review

Dear Ms. Granstrom:

In response to your request received on December 21, 2020, I have searched our data system for information on rare or unique botanical features, rare animal populations, and essential or significant wildlife habitats in the vicinity of the MOFGA property in Unity and Thorndike.

For individual parcel reviews, we use a simple checklist that summarizes our findings. The enclosed checklist includes our review of several data sets, some of which are maintained by the Maine Natural Areas Program (MNAP) and others that are maintained by the Maine Department of Inland Fisheries and Wildlife (MDIFW), and the U.S. Fish and Wildlife Service (USFWS). If a parcel intersects with a data set maintained by MDIFW or USFWS, please contact the appropriate biologist indicated on the checklist for additional information.

MDIFW recommends that you maintain a 300-foot wide forested riparian management zone along the river, within which the first 50 feet from the water are retained as a no-cut and no-disturbance zone. Timber harvesting in the remainder of the riparian zone (50-300 feet) should maintain a minimum of 60-70% mature canopy cover. Construction of roads and log landings, or any other permanent land use conversion, should be avoided or minimized within the 300-foot management zone.

In addition, because riparian buffers are essential to maintaining stream integrity, cool water temperatures, and high water quality, which are all critical to the conservation of Brook Floater, MDIFW recommends that you maintain a 100-foot riparian management zone on each side of all perennial streams on the parcel that drain into or out of the Sheepscot River, within which the first 50 feet from the water are retained as a no-cut and no-disturbance zone. Timber harvesting in the remainder of the tributary riparian zone (50-100 feet) should maintain a minimum of 60-70% mature canopy cover. Construction of roads and log landings, or any other permanent land use conversion, should be avoided or minimized within the 100-foot tributary riparian management zone.

The following recommendations also apply within the 300-foot riparian management zone and the 100-foot tributary riparian management zone: avoid active cutting operations and motorized vehicle access between April 15th and October 15th , build temporary bridges across all perennial streams prior to equipment crossing, harvest only during dry or frozen ground conditions, and avoid the use of herbicides or

**MOLLY DOCHERTY, DIRECTOR**
MAINE NATURAL AREAS PROGRAM
90 BLOSSOM LANE, DEERING BUILDING

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-8044
WWW.MAINE.GOV/DACF/MNAP

insecticides. Always use Best Management Practices to prevent or minimize soil movement and to protect soil and water quality. Please refer to the attached factsheet for more information about this species.

The property is associated with a moderate value Inland Waterfowl and Wading Bird Habitat (IWWH) at Crosby Brook. MDIFW recommends maintaining a 250-foot undisturbed (of permanent clearings, roads, etc.) buffer around the wetland. Within this buffer, any harvest activity should closely adhere to BMPs for water quality and wetland protection (e.g. harvest on frozen or dry soils only) and uneven-aged forest management should be used. Volume removal should not exceed 30% in a 15-year period, and a well-distributed overstory should be maintained. No trees should be cut within 75 feet of the shore. Throughout the 250-foot IWWH buffer MDIFW recommends that special consideration be given to implementing a plan to leave snags and live trees with cavities that will benefit cavity nesting waterfowl and many other wildlife species.

Sandy Stream, Crosby Brook, Hall Brook, Halfmoon Stream, and their tributaries support populations of wild brook trout. Brook trout prefer cool, well-oxygenated waters that benefit from intact riparian corridors. Any forest management activities planned for riparian zones should closely follow the state's Best Management Practices, including appropriate buffer distances, shade retention, and minimization of sediment runoff. Please see the attached fact sheet for more information about brook trout in Maine.

Good management of these habitats is consistent with good forestry, and MDIFW's regional wildlife and fisheries biologists are available to assist you in maintaining their integrity while allowing for forest management and timber procurement. According to the information currently in our files, there are no other rare species or important habitats documented within the property, though the area is mapped as Atlantic salmon critical habitat. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare features.

Thank you for using the MNAP in the forest management planning process. If you have questions about the MNAP, or if you would like more information about this site, please feel free to contact me. You can also visit us on the web at www.maine.gov/dacf/mnap.

Sincerely,

*Lisa St. Hilaire*

Information Manager | Maine Natural Areas Program
maine.nap@maine.gov | Phone: (207) 287-8044 | Fax: (207) 287-8040

cc: Keel Kemper, Wes Ashe, MDIFW

MAINE NATURAL AREAS PROGRAM
(207)287-8044 or maine.nap@maine.gov

# Forest Management Plan Review

Forester: *Maren Granstrom* Landowner: *MOFGA* Lot Name: *MOFGA property*
Date Received: *12.21.2020* Town: *Unity & Thorndike* County: *Waldo* MDIFW Region: *B*

| PLANT, ANIMAL, AND HABITATS | Documented to occur at the site? YES | NO | Contact the following biologist to discuss conservation considerations |
|---|---|---|---|
| **Plants:** rare, threatened and/or endangered<br>*If yes, see attached summary table.* | ☐ | ☒ | |
| **Natural Communities:** rare and/or exemplary<br>*If yes, see attached summary table.* | ☐ | ☒ | |
| **Animals**: rare, threatened, or endangered<br>*If yes, see attached summary table.* | ☐ | ☐ | MDIFW Regional Wildlife Biologist<br>Keel Kemper, 287-5369 |
| **Mapped Essential Wildlife Habitats:** | | | |
| Roseate tern | ☐ | ☒ | |
| Piping plover and Least tern | ☐ | ☒ | |
| **Mapped Significant Wildlife Habitats:** | | | MDIFW Regional Wildlife Biologist |
| Deer wintering area | ☐ | ☒ | Keel Kemper, 287-5369 |
| Inland waterfowl and wading bird habitat | ☒ | ☐ | |
| Tidal waterfowl and wading bird habitat | ☐ | ☒ | |
| Significant vernal pool | ☐ | ☒ | |
| Shorebird feeding/roosting area | ☐ | ☒ | |
| **Wild brook trout habitat** | Yes ☒ | Unknown ☐ | MDIFW Assistant Regional Fisheries Biologist<br>Wes Ashe, 287-5363 |
| **Atlantic Salmon:** | Yes | No | USFWS Biologist Wende Mahaney, 902-1569 |
| Salmon critical habitat | ☒ | ☐ | For more information:<br>www.fws.gov/mainefieldoffice/Atlantic_salmon.html |
| Salmon stream habitat | Yes ☐ | Unknown ☒ | |
| **Canada lynx**: The town & parcel may provide habitat for lynx | | ☒ | |

| LANDSCAPE CONTEXT | YES | NO |
|---|---|---|
| Does parcel intersect with a Beginning with Habitat Focus Area?<br>Focus Area Name:<br>Additional information on this focus area may be available at www.maine.gov/dacf/mnap/focusarea | ☐ | ☒ |
| Is the parcel adjacent to or on Conservation Lands? Owner:<br>Ownership type: ☐ Fee ☐ Easement Area Name: | ☐ | ☒ |
| Is the parcel within an area identified by MNAP as a potential inventory site for undocumented rare plants or exemplary natural communities? If so, MNAP will contact the landowner for permission prior to any inventory work. | ☐ | ☒ |

Review completed by: DR
Date: 01/06/2021
MNAP #: 2021_01_06_DR_08

MAINE NATURAL AREAS PROGRAM
(207)287-8044 or maine.nap@maine.gov

Forester: Maren Granstrom Landowner:*MOFGA* Lot Name: MOFGA

## Summary Table: Plants, natural communities, and animals documented to occur at the site

| Feature Name | State Status [a] | State Rank [b] | Global Rank [c] | SGCN Priority [d] | Additional Information |
|---|---|---|---|---|---|
| | | | | | |

**[a] State Status (please note that all species with E, T, or SC status are listed as Species of Greatest Conservation Need in the State Wildlife Action Plan)**

- **E** Endangered; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- **T** Threatened; Rare and, with further decline, could become endangered; or federally listed as Threatened.
- **SC** Special concern; A species that does not meet the criteria for E or T, but is particularly vulnerable and could easily become a Threatened, Endangered, or Extirpated Species.

**[b] State Rank (State Rarity Rank)**

- **S1** Critically imperiled in Maine because of extreme rarity or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- **S2** Imperiled in Maine because of rarity or because of other factors making it vulnerable to further decline.
- **S3** Rare in Maine.
- **S4** Apparently secure in Maine, includes **S4B** for breeding birds and **S4N** for nesting birds.
- **S5** Demonstrably secure in Maine.

**[c] Global Rank (Global Rarity Rank)**

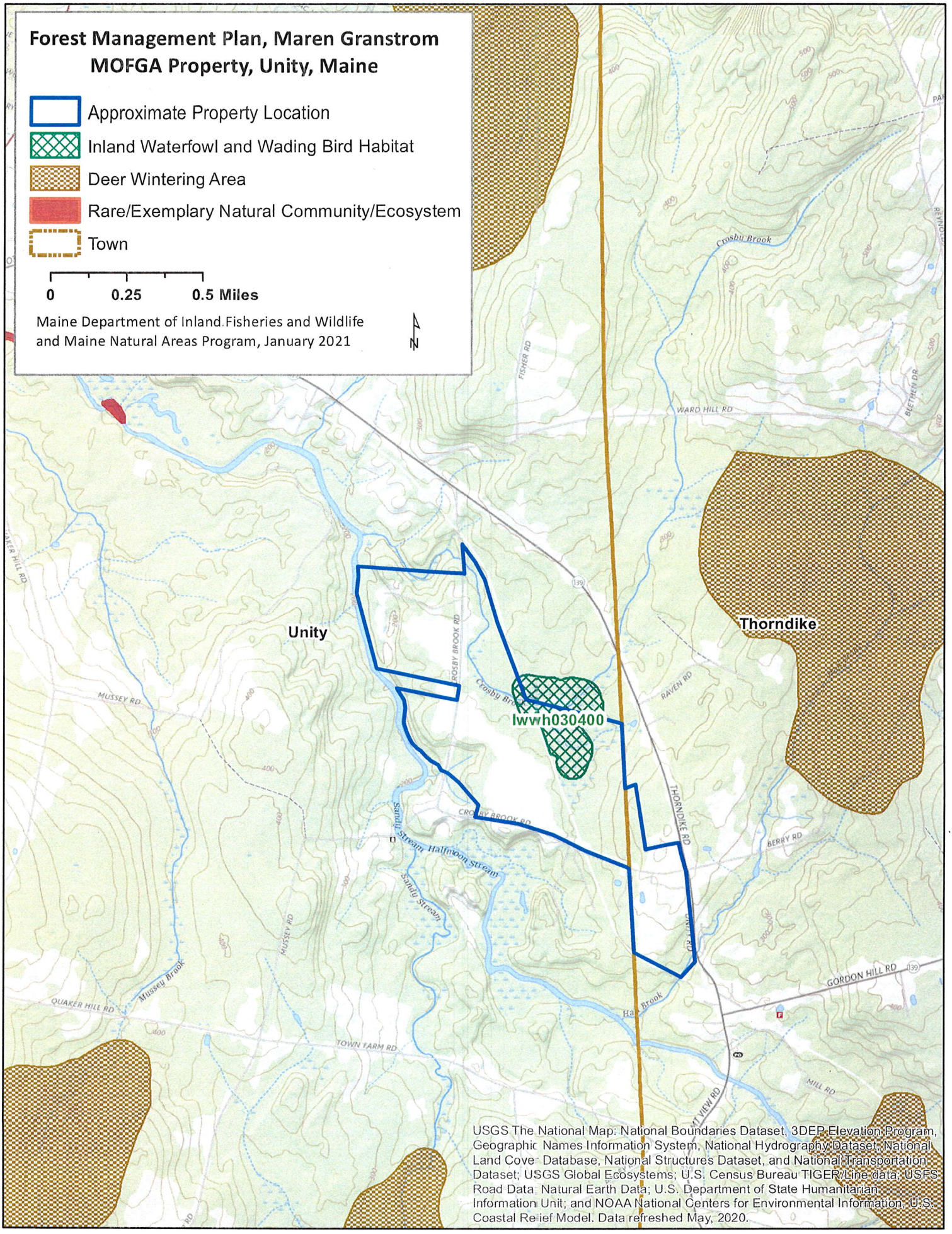
- **G1** Critically imperiled globally because of extreme rarity or because some aspect of its biology makes it especially vulnerable to extinction.
- **G2** Globally imperiled because of rarity or because of other factors making it vulnerable to further decline.
- **G3** Globally rare.
- **G4** Apparently secure globally.
- **G5** Demonstrably secure globally.

**[d] SGCN Priority**

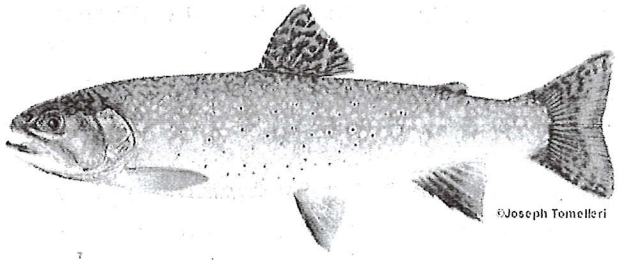
Describes the prioritization of Species of Greatest Conservation Need based primarily on risk of extirpation, population trend, endemicity, and regional conservation responsibility. **Priority 1** is Highest Priority; **Priority 2** is High Priority; **Priority 3** is Moderate Priority. For more information, please visit Maine's State Wildlife Action Plan (SWAP) – 2015, http://www.maine.gov/ifw/docs/2015%20ME%20WAP%20All_DRAFT.pdf.

**[e] EO Rank (Element Occurrence Rank)**

Describes the quality of a rare plant population or natural community based on size, condition and landscape context. Ranks range from A-E, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank.


Forest Management Plan, Maren Granstrom
MOFGA Property, Unity, Maine
Approximate Property Location
Inland Waterfowl and Wading Bird Habitat
Deer Wintering Area
Rare/Exemplary Natural Community/Ecosystem
Town
0
0.25
0.5 Miles
Maine Department of Inland Fisheries and Wildlife
and Maine Natural Areas Program, January 2021
N
Unity
Thorndike
lwwh030400
Crosby Brook
Sandy Stream
Halfmoon Stream
Mussey Brook
Ha Brook
WARD HILL RD
CROSBY BROOK RD
RAVEN RD
THORNDIKE RD
BERRY RD
GORDON HILL RD
QUAKER HILL RD
TOWN FARM RD
MUSSEY RD
FISHER RD
HILL RD
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cove Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Re ief Model. Data refreshed May, 2020.

**MAINE DEPARTMENT OF**
**INLAND FISHERIES AND WILDLIFE**




# Forest Management Recommendations for Brook Trout

## *Background*

Brook trout (*Salvelinus fontinalis*), commonly referred to as squaretail, brookie, and speckled trout, are native to Maine and are the most preferred sport fish sought by Maine anglers. Size may vary, depending on water temperature, productivity, and food sources, but 3 year-old brook trout in Maine lakes may range from 7.5 to 17.5 inches long. Stream populations are typically slower growing, and lengths of 6 to 10 inches are more common place, although some populations mature and reproduce at lengths smaller than 6 inches.

Maine is the last stronghold for wild brook trout in the eastern United States. There are more than twice as many watersheds supporting wild populations in Maine than all of the other 16 states within the historical eastern brook trout range combined. Maine is also the only remaining state with extensive intact lake and pond dwelling populations of wild brook trout.

Brook trout require clean, cool, well oxygenated water and are very sensitive to changes in habitat and water quality. Rivers and streams typically provide spawning and nursery habitat. Adults are commonly resident in streams, but migrate throughout and between drainages to meet seasonal life history requirements.

Stream habitat suitability is maintained by the presence of intact, mature wooded riparian corridors that conserve forest soils, provide shade to reduce stream warming, protect stream water quality, provide cover for fish, and provide a source of woody debris and leaf litter from mature trees that maintain in-stream habitat for fish and the aquatic insects they feed upon. Floodplain and fringe wetlands associated with streams can be a significant source of springs and groundwater discharge that maintain stream flows and cool temperatures during warm low flow summer periods. Protection of these important riparian and wetland functions ensures that the overall health of the stream habitat and watershed is maintained.

Maine brook trout fisheries are unique and highly valuable, but they are vulnerable to habitat alteration that may be caused by poorly planned and implemented land management activities. Well planned forestry operations can protect habitat and help ensure that forests remain as forest; a compatible land use for brook trout and many other fish and wildlife.

***Forest Management Recommendations***
Brook trout are not afforded any special state or federal regulatory protection for forestry operations, and as such management recommendations are advisory.

The MDIFW recommends following Best Management Practices (BMPs) during all road and trail building activities, as well as timber harvesting. BMPs are detailed in the booklet titled *Best Management Practices for Forestry*, which offers guidance on managing and protecting water quality, installing road-stream crossings, and providing fish passage. This booklet is available at: http://www.maine.gov/doc/mfs/pubs/bmp_manual.htm or contact the Maine Forest Service at 1-800-367-0223.

Potential harmful impacts to fish and wildlife may be further minimized by designating low impact "riparian management zones" adjacent to streams and stream-associated fringe and floodplain wetlands in forest management and harvest plans. Smaller streams may be greatly influenced by land management practices; these systems benefit the most from well-managed and intact riparian corridors.

The MDIFW also recommends limiting the harvest of trees and alteration of other vegetation within 100 feet of streams and their associated fringe and floodplain wetlands to maintain an intact and stable mature stand of trees, characterized by heavy crown closure (at least 60 – 70%) and resistance to wind-throw. In some situations wider buffers should be considered where severe site conditions (e.g., steep slope, vulnerable soils, poor drainage, etc) increase risk to soil and stand stability. Any harvest within the riparian management zone should be selective with a goal of maintaining relatively uniform crown closure.


Map Scale: 1:14,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Waldo County, Maine
Survey Area Data: Version 20, May 29, 2020

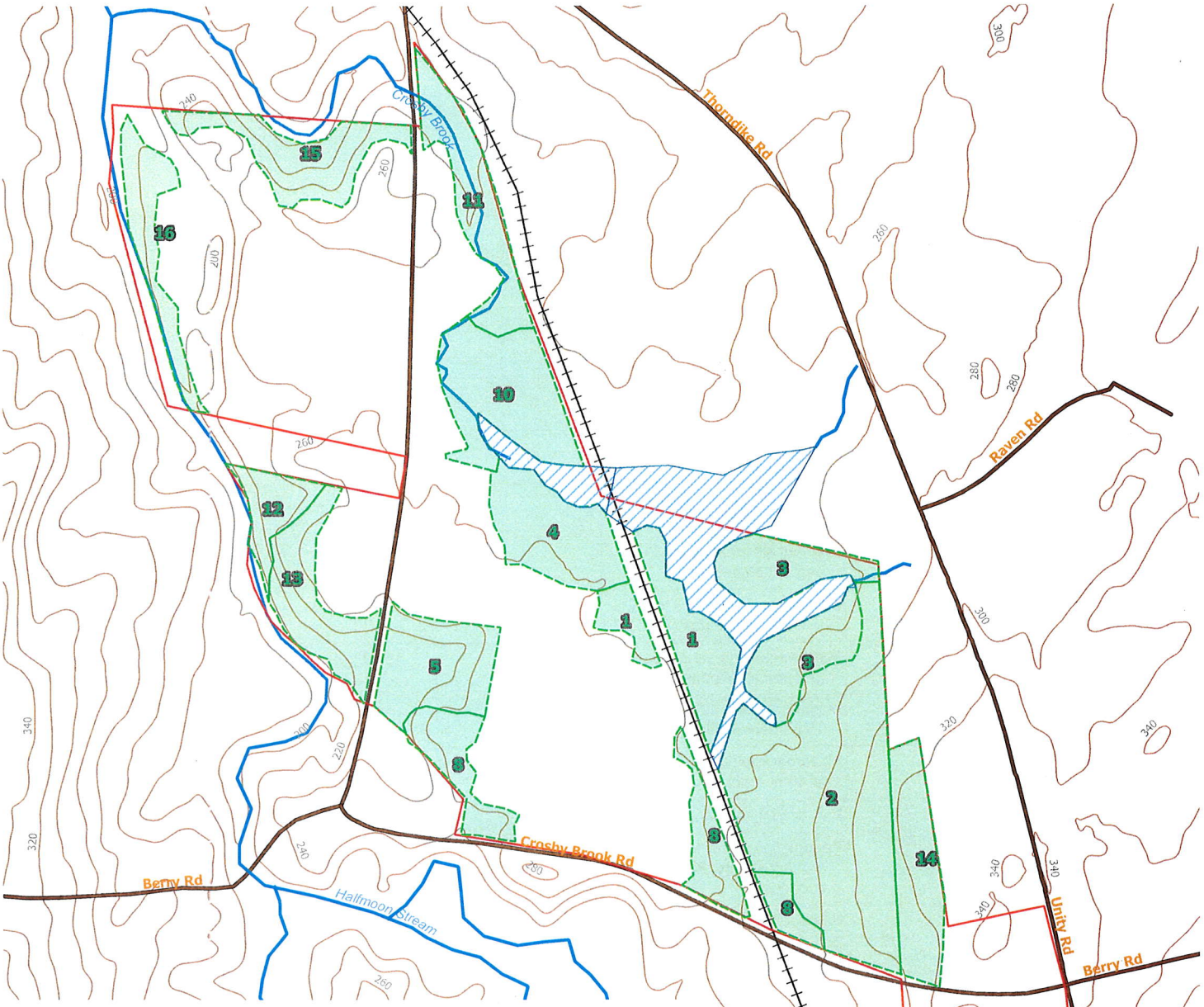
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 17, 2010—Aug 31, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| AdB | Adams loamy sand, 3 to 8 percent slopes | 9.3 | 2.8% |
| AdC | Adams loamy sand, 8 to 15 percent slopes | 31.4 | 9.3% |
| AdD | Adams loamy sand, 15 to 25 percent slopes | 4.5 | 1.3% |
| BoB | Boothbay silt loam, 3 to 8 percent slopes | 1.5 | 0.4% |
| DxB | Dixmont silt loam, 3 to 8 percent slopes | 6.3 | 1.9% |
| DxC | Dixmont silt loam, 8 to 15 percent slopes | 2.7 | 0.8% |
| DyB | Dixmont very stony silt loam, 3 to 8 percent slopes | 7.4 | 2.2% |
| MaB | Madawaska fine sandy loam, 3 to 8 percent slopes | 158.6 | 46.9% |
| MkC | Masardis fine sandy loam, 8 to 15 percent slopes | 11.0 | 3.3% |
| MkE | Masardis fine sandy loam, 15 to 45 percent slopes | 4.9 | 1.5% |
| Pg | Pits, gravel and sand | 10.9 | 3.2% |
| Py | Podunk fine sandy loam, 0 to 3 percent slopes, frequently flooded | 0.0 | 0.0% |
| Se | Searsport mucky peat | 38.9 | 11.5% |
| Sw | Swanville silt loam, 0 to 3 percent slopes | 0.3 | 0.1% |
| ThB | Thorndike-Winnecook complex, 3 to 8 percent slopes, rocky | 16.2 | 4.8% |
| ThC | Thorndike-Winnecook complex, 8 to 15 percent slopes, rocky | 31.1 | 9.2% |
| ThD | Thorndike-Winnecook complex, 15 to 35 percent slopes, very rocky | 1.7 | 0.5% |
| W | Water bodies | 1.5 | 0.5% |
| **Totals for Area of Interest** | | **338.1** | **100.0%** |




# Forest Stand Map - Topography

MOFGA Woodlot
Unity and Thorndike, Maine

Prepared for:
Maine Organic Farmers and Gardeners Association

Maren Granstrom, FI #4118
Barbara Brusila, LPF #590

- Stand boundaries
- Property boundary
- Wetland
- 20 ft contour
- Railroad
- Road
- Stream

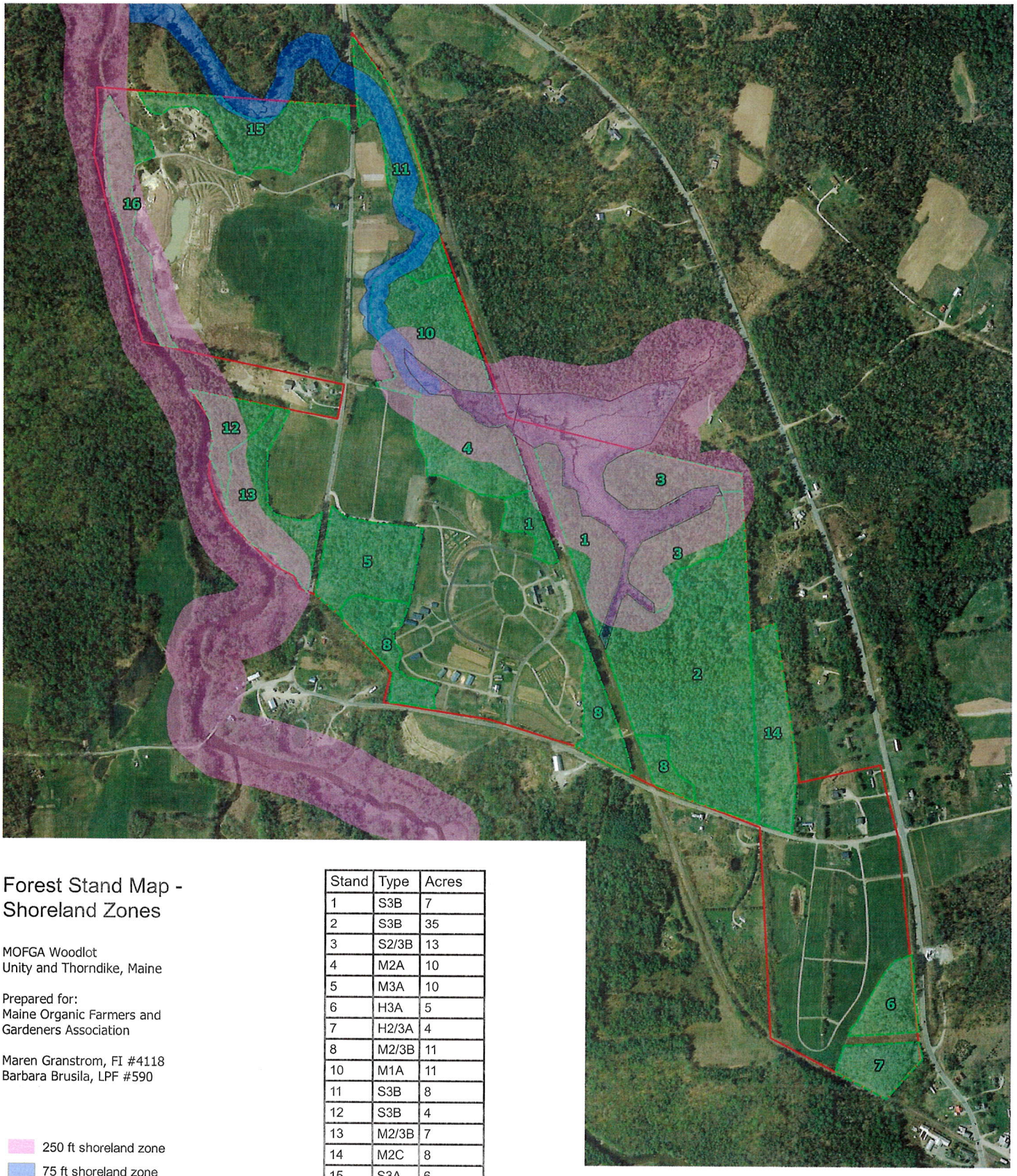
| Stand | Type | Acres |
|---|---|---|
| 1 | S3B | 7 |
| 2 | S3B | 35 |
| 3 | S2/3B | 13 |
| 4 | M2A | 10 |
| 5 | M3A | 10 |
| 6 | H3A | 5 |
| 7 | H2/3A | 4 |
| 8 | M2/3B | 11 |
| 10 | M1A | 11 |
| 11 | S3B | 8 |
| 12 | S3B | 4 |
| 13 | M2/3B | 7 |
| 14 | M2C | 8 |
| 15 | S3A | 6 |
| 16 | H2B | 6 |
| | | Total: 145 |

S= 75%+ softwood; H=75%+ hardwood; M=mixedwood
1=0-30ft height; 2=30-60ft; 3=60+ft
A=70-100 crown cover; B=40-70%; C=15-40%

N

0 0.2 0.4 mi

Map based on field reconnaissance in July 2020.
For forest management purposes - not a boundary survey.
Created in QGIS.




# Forest Stand Map - Shoreland Zones

MOFGA Woodlot
Unity and Thorndike, Maine

Prepared for:
Maine Organic Farmers and Gardeners Association

Maren Granstrom, FI #4118
Barbara Brusila, LPF #590

250 ft shoreland zone
75 ft shoreland zone
Stand boundaries
Property boundary

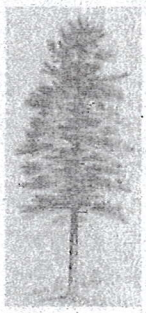
| Stand | Type | Acres |
|---|---|---|
| 1 | S3B | 7 |
| 2 | S3B | 35 |
| 3 | S2/3B | 13 |
| 4 | M2A | 10 |
| 5 | M3A | 10 |
| 6 | H3A | 5 |
| 7 | H2/3A | 4 |
| 8 | M2/3B | 11 |
| 10 | M1A | 11 |
| 11 | S3B | 8 |
| 12 | S3B | 4 |
| 13 | M2/3B | 7 |
| 14 | M2C | 8 |
| 15 | S3A | 6 |
| 16 | H2B | 6 |
| | | Total: 145 |

S= 75%+ softwood; H=75%+ hardwood; M=mixedwood
1=0-30ft height; 2=30-60ft; 3=60+ft
A=70-100 crown cover; B=40-70%; C=15-40%

N

0 0.2 0.4 mi

Map based on field reconnaissance in July 2020.
For forest management purposes - not a boundary survey.
Basemap is Google sattelite.
Created in QGIS.



INFORMATION SHEET 4
January 2006

# Boundary Line Information

Maine Forest Service, DEPARTMENT OF CONSERVATION, 22 State House Station, Augusta, ME 04333

Robert Frost's observation "*good fences make good neighbors*" is as true today as when he wrote it. With more expensive land and higher timber values, good boundaries are even more important today than they were in the past. The following information can help landowners avoid boundary problems:

## Establishing boundaries:

1. An "established property line" means a line demarcated by monuments, signs, markings, pins, reference points or other markers that denotes a change in ownership between abutting properties. These established property line markers must have been placed upon mutual agreement of the abutting landowners, based on historical physical evidence of a preexisting boundary line or by a licensed professional surveyor.

Only a licensed surveyor can establish a property line if there are no existing blazes or monuments. In Maine, surveyors must be licensed (32 MRSA § 13901 *et seq*).. Copies of the law and a roster of land surveyors licensed to practice in Maine are available from:

Board of Licensure for
Professional Land Surveyors
35 State House Station
Augusta, ME 04333
(207) 624-8603

2. The landowner or a licensed forester may maintain a line or reestablish one where some monuments or blazes still exist. If you cannot sight from one blaze to another, you should probably get the line surveyed by a licensed surveyor. Previously marked lines may be incorrect and will be relocated after an accurate survey.

3. Monuments are relatively permanent features like stone posts, iron bars, etc., that are established by the surveyor. Tree blazes are not monuments; they are only an approximate location of where the line lies. A cap listing the surveyor's license number must be placed on the lot's corner posts.

4. Line trees are only those trees where the actual boundary intersects any part of the tree, such that part of the tree is on either side of the boundary (17 MRSA § 2511, sub-§ 1.D. See Tree A on the back of this sheet). Because they may be evidence of a line, blazed trees on a property line serve as witness trees and should not be cut. They generally have little value for timber since the blaze provides an avenue for bacteria and fungi to invade the tree and cause rot. These trees may also have fencing tacked to them. This will cause them to be rejected at the sawmill. **Line trees may only be cut with the permission of the abutting landowner** (17 MRSA §2511 sub-§ 2.B).

5. Before permanently marking the boundary by either blazing or painting, the line should be walked with the adjoining landowner to ensure its location is mutually agreeable. When there is a disagreement about a line, it should be surveyed. The landowners may agree to share the costs; however this should be agreed to or otherwise determined before proceeding with the survey.

## Maintaining boundaries:

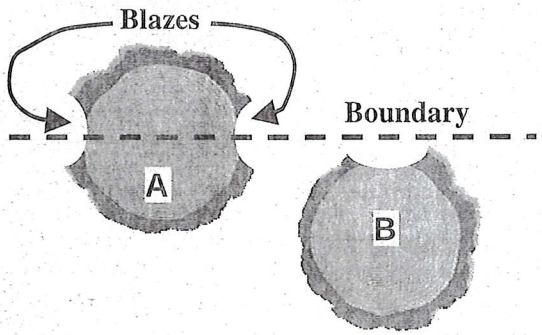
1. Boundaries should be painted with high grade, durable paint. Use a color such as red, yellow, orange or blue, these colors are easily seen and visible for long distances. Paints specifically formulated for marking boundaries are available from forestry supply companies. Paint trees only when the bark is warm and dry. Paint witness trees at the point where the boundary line intersects the tree.

2. In blazing and painting trees along the boundary line, the following rule is used:

A. If the boundary line passes through the middle of a tree, blaze and paint on both sides of that tree where the line passes through it (Tree A).

B. Where the line passes adjacent to the tree, blaze and paint one point only, immediately adjacent to the line (Tree B).

C. Be sure to blaze and paint both sides of the line so that it can be seen from either side. This will help prevent accidental trespass.




3. Avoid blazing well-formed, large or valuable trees as blazing the tree may allow the entrance of bacteria and fungi causing decay. Blazes should be about 4 to 5 inches in diameter and located about five feet above the ground. Blaze often enough so that it is possible to see the next blaze easily.

4. Boundary lines should be cleaned/brushed out for easy traveling and locating. Pruning limbs to head height and cutting small trees along the line will help. Cutting any vegetation on another's property requires permission. Check with the adjoining landowner before proceeding.

5. Corner posts should be of some permanent material, with the adjoining trees (witnesses) marked for easy locating. With the exception of cedar, wood makes a poor corner post as in a few years it will rot and fall to the ground. Iron pipe is long lasting, easily transported and inexpensive, and is easily driven into the ground. Where available, pile small stones around corner posts. Paint the stones and the corner post.

6. High quality paint, properly applied, should last up to ten years in the woods; axe blazes should last longer. Lines should be checked and maintained annually or periodically. Lines and corners should be shown to family members so they can locate them in the future.

## Timber Harvesting and Boundaries:

Maine law protects abutting landowners from timber trespass and damages that occur during timber harvesting operations. If you are considering harvesting timber, you should know and observe the laws governing timber harvesting near property lines, timber trespass, and slash disposal.

1. Anyone who authorizes timber harvesting, or in fact harvests timber shall **clearly mark with flagging or other temporary and visible means any established property lines within 200 feet of an area to be harvested.** The marking of property lines must be completed prior to commencing timber harvesting. Parcels less than 5 acres are exempt. (17 MRSA § 2511 sub-§ 3.D). Failure to clearly mark property lines may also make the person who authorized the cutting liable for double damages to an abutter if a timber trespass occurs (14 MRSA § 7552-A).

2. Slash left from any cutting operations of forest growth must be disposed of according to the following regulations: (12 MRSA § 9331-9336).

A. Along highways, slash must not be left in the right-of-way or within 50 feet of the nearer side of the right-of-way of a public highway.

B. Along railroads and utility lines (pipeline, electric, telephone, telegraph, or cable) slash must be removed from in the right-of-way or within 25 feet of the nearer side of the right-of-way.

C. Slash that might constitute a fire hazard shall not be allowed to remain on the ground within 25 feet of the property line of land belonging to another.

**For more information, please contact:**
Maine Forest Service
DEPARTMENT OF CONSERVATION
22 State House Station
Augusta, ME
04333-0022
(207) 287-2791 or
1-800-367-0223
forestinfo@maine.gov

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Bulletin #2509

MAINE INVASIVE PLANTS

# Multiflora Rose, Rambler Rose

***Rosa multiflora***
(Rose Family)

## Threats to Native Habitats

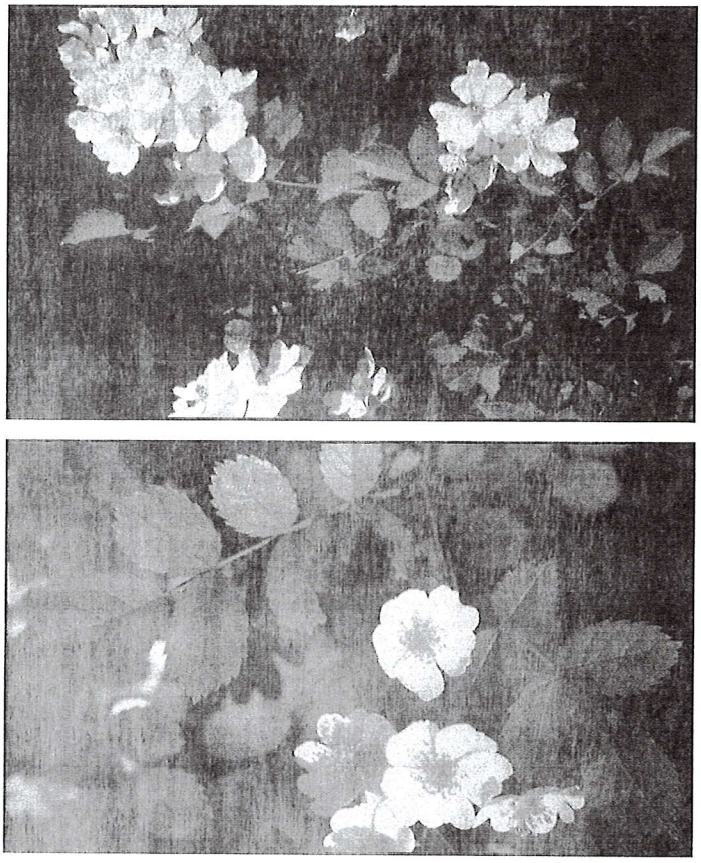
Multiflora rose is an aggressive colonizer of open unplowed land and is highly successful on forest edges. This prolific seed producer can create extremely dense, impenetrable thickets that crowd out other vegetation and inhibit regrowth of native plants. Associated vegetation of multiflora rose thickets is often limited to a few tree stems that have managed to overtop the rose before the thicket developed. Dense stands of multiflora rose can slow down forest regeneration: the species can dominate a forest understory. Anyone who has attempted to traverse a thicket of this plant would have few kind words for it, as its interweaving, abundantly-thorned branches snag on clothes and hair and can be quite painful. Large populations are sometimes associated with former plantings, but the plant has naturalized throughout much of the United States and continues to be spread with the help of birds.

## Description

Multiflora rose is a robust perennial shrub with thorny arching stems. It has alternately arranged compound leaves, generally with seven or nine leaflets. It forms large clusters of fragrant white or pink flowers that bloom from June to July. Like other roses, it forms small red pulpy fruits called hips, which may be eaten by birds. It reproduces from seeds or by rooting at the tip of arching stems that touch the ground. It can be distinguished from native roses by its long arching stems and numerous small white flowers or hips depending on the season. To verify identification of this plant contact a natural resources professional.

## Habitat

Multiflora rose prefers old fields, fencerows, power lines, roadsides, and forest edges. In other parts of its range it is successful in the understory of hardwood forests. It tolerates both moist and relatively dry conditions.



*Multiflora Roses (photos by the Maine Natural Areas Program, and John A. Lynch, courtesy of the New England Wild Flower Society)*

## Distribution

Multiflora rose is native to eastern Asia. It was brought to North America in the late nineteenth century to be used in horticultural plantings. Since then it has been widely planted for a variety of reasons, including wildlife food and cover, erosion control, and as a living fence to border properties or pen livestock. Its use was historically advocated by the U.S. Soil Conservation Service and by some state conservation departments. Multiflora rose is now naturalized (established and reproducing in the wild) throughout much of the United States. In Maine, it is documented in Oxford, Waldo, and York Counties, but likely occurs in more.

## Control

The best method of controlling multiflora rose is to prevent it from becoming established in the first place. It should be removed as soon as possible if it is found colonizing an area. Repeated mowing—at least six cuts per year near the ground for two or more years—can successfully eliminate light infestations. In areas where thickets have formed it may be necessary to use a bulldozer to remove the plants. Coarse mechanical removal by bulldozer or otherwise must be followed by removal of root sprouts or new growth from the seedbank if reinfestation is to be prevented. The herbicides glyphosate and triclopyr are also effective. Use a 2% solution of glyphosate or triclopyr mixed with a 0.5% surfactant, and thoroughly wet the leaves. To aid in the absorption of the herbicide apply when temperatures are greater than 65 degrees F. Herbicides can also be used in combination with mechanical treatments or as follow-up to a burn. Consult a licensed herbicide applicator before applying herbicides over large areas.

## References:


Josselyn Botanical Society of Maine. 1995. *Checklist of the Vascular Plants of Maine, Third Revision.* Orono, ME: Maine Agricultural and Forest Experiment Station.

Eckardt, N. 1987. *Element Stewardship Abstract for Rosa multiflora.* Arlington,VA: The Nature Conservancy in collaboration with the International Network of Natural Heritage Programs and Conservation Data Centers. Natural Heritage Databases.

Smith, C.L. 1998. *Exotic Plant Guidelines.* Raleigh, North Carolina: Department of Environmental and Natural Resources, Division of Parks and Recreation.

Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada.* New York: New York Botanical Garden.


**For more information or for a more extensive list of references on invasive species contact:**


**Don Cameron**
**Maine Natural Areas Program**
**Department of Conservation**
**#93 State House Station**
**Augusta, ME 04333-0093**
**(207-287-8044)**

**or**

**Lois Berg Stack**
**University of Maine Cooperative Extension**
**495 College Avenue**
**Orono, ME 04469**
**(800-870-7270)**



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Bulletin #2507

MAINE INVASIVE PLANTS

# Shrubby Honeysuckles

Tartarian Honeysuckle
Morrow Honeysuckle
Belle's Honeysuckle
***Lonicera species***
(Honeysuckle Family)

*Shrubby Honeysuckle (Maine Natural Areas Program)*

## Threats to Native Habitats

Shrub honeysuckles can rapidly invade and degrade native plant communities. They form a dense layer that shades the ground, interfering with the growth of many native woody and herbaceous species, including rare plants. The ground under a honeysuckle thicket is often void of other vegetation. Shrub honeysuckles leaf out earlier than native species and they retain their leaves longer into the fall, giving them a competitive edge. Their success on high pH, dry, exposed soils has made them a threat to some of the Northeast's unique limestone plant communities. The fruit of these shrubs is eaten by common birds, which helps spread the seed into new locations and makes the shrub even more difficult to control.

## Description

Bush honeysuckles are upright deciduous shrubs that grow from a few feet to as high as 16 feet. The branches are widely spreading, with the older ones being hollow. The oval to oblong leaves are from 1 to 2fi inches long and are arranged in pairs on the stem. The flowers are tubular and occur in pairs. The fruit is a many-seeded red, orange or yellow berry. Tartarian honeysuckle has hairless leaves and flowers that are pink or white, and that do not turn yellow with age. Morrow honeysuckle has fuzzy or downy leaves and white flowers that turn yellow with age. Hybrid honeysuckle is a cross between Tartarian and Morrow honeysuckle and generally has features common to both but is capable of growing substantially taller. Care should be taken not to mistake the common native fly-honeysuckle (*Lonicera canadensis*) for these non-natives. The native fly-honeysuckle can be distinguished from non-natives by its pith. The native honeysuckle has solid pith—spongy tissue inside the stem—while non-native honeysuckles have hollow pith (cut stem lengthwise to see). Also, the native fly-honeysuckle flowers much earlier in spring, while the others flower in June.

## Habitat

Bush honeysuckles can be aggressive colonizers of abandoned agricultural fields, hedgerows, and edges of forests and wetlands, but they can also be found in forests, especially where there has been disturbance and the soils are limey. They prefer open locations but can tolerate moderate shade and can grow in soils ranging from moist to very dry.

## Distribution

Tartarian honeysuckle is native to central and eastern Russia, where it is found in a wide range of habitats and can tolerate desiccating winds, near-drought conditions, and temperatures ranging from -50 to +110 degrees F. Morrow honeysuckle is native to Japan, where it also occurs in a wide range of habitats and lives in a climate similar to the Atlantic coast of the U.S. Generally, Tartarian honeysuckle is found in dry, exposed sites and Morrow honeysuckle is found in wetter sites. Each of the honeysuckles listed is highly invasive. Shrub honeysuckles are now naturalized (established and reproducing in the wild) throughout much of the northeastern United States. As recently as the 1980s they were promoted for their wildlife values, ornamental use, and soil stabilization. In Maine, shrub honeysuckles have been documented in every county except Franklin and Piscataquis.

## Control

The best method of control is to prevent non-native shrubby honeysuckles from becoming established. These plants should be removed as soon as possible if they are found colonizing an area. Small infestations can be cleared by hand using a shovel or hoe, provided the entire root is removed. Larger colonies have been controlled by various combinations of repeated treatments of mechanical control, burning, or applying a glyphosate herbicide. If cutting is included as part of a treatment, it should be done in early spring and in late summer or early fall. Cutting of plants results in resprouting, but is effective in temporarily reducing seed production. Seedlings are easily pulled. Treatment by prescribed burning is most effective if conducted during the growing season. Control methods may need to be repeated for three to five years to inhibit resprouting and to exhaust the seedbank.

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## References:

Josselyn Botanical Society of Maine. 1995. *Checklist of the Vascular Plants of Maine, Third Revision.* Orono, ME: Maine Agricultural and Forest Experiment Station.

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The Nature Conservancy of Vermont. 1998. *Invasive Exotic Fact Sheet: Shrubby Honeysuckles.* Montpelier, VT.

Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada.* New York: New York Botanical Garden.

**For more information or for a more extensive list of references on invasive species contact:**

**Don Cameron**
**Maine Natural Areas Program**
**Department of Conservation**
**#93 State House Station**
**Augusta, ME 04333-0093**
**(207-287-8044)**

**or**

**Lois Berg Stack**
**University of Maine Cooperative Extension**
**495 College Avenue**
**Orono, ME 04469**
**(800-870-7270)**

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Bulletin #2505

MAINE INVASIVE PLANTS

# Common Buckthorn and Glossy Buckthorn

***Rhamnus cathartica* and *Frangula alnus***
(Buckthorn Family)

## Threats to Native Habitats

Although seedlings of both buckthorns invade apparently stable habitats, they grow most successfully where there is ample light and exposed soil. These buckthorns have long growing seasons and rapid growth rates, and resprout vigorously after being topped. In North America, both species leaf out prior to most woody deciduous plants, and can retain their leaves well into autumn. Buckthorns rapidly form dense, even-aged thickets. The large leaves and continuous canopy create dense shade. Even-aged thickets are common in both wetlands and in woodland understories. Common buckthorn invasion is greatest in thinned or grazed woods, along woodland edges, and in openings created by windfalls. Common buckthorn's tolerance of moist, dry, or heavy clay soils increases its success in many types of habitats. Glossy buckthorn sometimes invades similar woodland habitats but more often invades wetlands that are comparable to its European wetland habitats. North American wetlands invaded by glossy buckthorn include wet prairies, marshes, calcareous fens, sedge meadows, sphagnum bogs, and tamarack swamps. Natural community composition, especially of upland deciduous woods and of wetlands, may be altered due to invasion of common buckthorn and glossy buckthorn. These species can cause habitat degradation, shade out rare species, and give rise to declines in native species diversity. Both buckthorns have become widespread in North America due to various disturbances, such as drainage, lack of fire, and woodland grazing and cutting, which have created ideal habitat for seedling establishment. Dispersal is accelerated by the birds and mammals that feed on the fruit of these species.

[redacted] Glossy Buckthorn (photos by Mary W. Walker and Chris Mattrick, courtesy of the New England Wild Flower Society)

## Description

Common buckthorn is a deciduous shrub or small tree that grows up to 20 feet in height. Dull green leaves are oval, edged with fine teeth, and one to two inches long. The leaves have several pairs of distinct veins that are curved toward the leaf tip. Leaf arrangement on the stem is alternate to nearly opposite. Twigs may be tipped with sharp, stout thorns. Small clusters of fragrant greenish-yellow flowers, each with four petals, grow from among the leaves. Like common buckthorn, glossy buckthorn is a deciduous shrub or small tree. It can readily be distinguished from common buckthorn by several obvious characters. Glossy buckthorn has similarly shaped leaves, but they are glossy or shiny and lack teeth on their margins. Flowers are also similar, but have five petals on glossy buckthorn. Plants of both species reach seed-bearing age quickly, and both produce drupes (berries). Care should be taken not to mistake the native alder-leaved buckthorn for

these non-natives. Alder-leaved buckthorn can be distinguished from common buckthorn by the lack of thorns at the end of its twigs, and it can be distinguished from glossy buckthorn by the presence of small teeth on its leaves.

## Habitat

Potential habitats of common buckthorn are diverse and include open woods, thickets on exposed rocky sites, hedgerows, pastures, and roadsides. It grows in well-drained sand, clay, or poorly drained calcareous soils, but prefers neutral or alkaline soils. It is less vigorous in dense shade. Glossy buckthorn typically inhabits wetter, less shaded sites than common buckthorn. It grows in soils of any texture. Habitats include alder thickets and calcareous or limestone-influenced wetlands.

## Distribution

Common buckthorn is native to Europe and grows in West and North Asia. Glossy buckthorn is native to North Africa, Asia, and Europe. In North America, common buckthorn is naturalized from Nova Scotia to Saskatchewan, south to Missouri and east to Virginia. Glossy buckthorn occurs from Nova Scotia to Manitoba, south to Minnesota, Illinois, New Jersey and Tennessee. These species were probably introduced to North America before 1800, but did not become widespread and naturalized until the early 1900s. In the past they have been cultivated for hedges, forestry plantings, and wildlife habitat. In Maine, common buckthorn is documented in nearly every county, while glossy buckthorn has only been documented in four counties.

## Control

Cultural controls that have been used for management include cutting, mowing, girdling, excavation, burning, and "underplanting." Repeated cutting reduces plant vigor. Mowing maintains open areas by preventing seedling establishment. Glossy buckthorn girdled with a two- to three-centimeter-wide saw-cut, completely through the bark at the base, does not resprout. Girdling may be done at any time of the year. A five-second flame torch application around the stem kills stems less than 4.5 centimeters in diameter. Seedlings or small plants may be hand-pulled or removed with a grubbing hoe. Larger plants may be pulled out with heavy equipment. Excavation often disturbs roots of adjacent plants, or creates open soil readily colonized by new seedlings. This technique may be most useful to control invasion at low densities, or along trails, roads and woodland edges.

## References:


Josselyn Botanical Society of Maine. 1995. *Checklist of the Vascular Plants of Maine, Third Revision.* Orono, ME: Maine Agricultural and Forest Experiment Station.

Eckardt, N. 1987. *Element Stewardship Abstract for Rosa multiflora.* Arlington,VA: The Nature Conservancy in collaboration with the International Network of Natural Heritage Programs and Conservation Data Centers. Natural Heritage Databases.

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**Department of Conservation, #93 State House Station**
**Augusta, ME 04333-0093**
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**Lois Berg Stack**
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**495 College Avenue, Orono, ME 04469 (800-870-7270)**



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