

Woodland Management Services
Green Certified Resource Managers

MID-MAINE FORESTRY

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FOREST MANAGEMENT PLAN

for

Jane Garvin and James Jacobson
831 Dutch Neck Rd., Waldoboro, ME 04572
612-867-7352; <jimandjane@mac.com>

property located at 831 Dutch Neck Rd. and Gross Point Rd.
Waldoboro, Lincoln County, ME

Tax Map R-2, Lot 75
32 acres total (30 wooded acres)

Prepared by:

Mitchell Kihn
LPF #3206

April 11, 2019

This plan meets specifications for filing under Maine's Tree Growth and Open Space Tax Laws and 2016 standards for the Maine Forest Service's WRAP cost-share program. The planning period is 10 years and its renew date is April 11, 2029.

Recycled Paper

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INTRODUCTION

This serves is a review of the Garvin/Jacobson woodlot in Waldoboro, Maine and will present management options for different areas and a schedule of activities for the next 10-year planning period. Forest management is a long-term endeavor. As time passes and the recommendations are implemented, the plan will need updating every 10 years. This will allow incorporation of changes arising from human and natural, non-human influences, as well as economic changes in the forest products industry.

The plan begins with a statement of objectives and proposed recommendations. It then provides an overview of the woodlot regarding its history, topography, soils, timber, and wildlife resources. Other considerations and legal restrictions on management, if any, activities are mentioned. The Tree Growth Tax and Open Space Laws are discussed, as well as market conditions. Accompanied with a map, forest stands are described in more detail and specific management recommendations are presented. The plan concludes with a glossary of forestry terms and a listing of sources available for further assistance.

SCHEDULE OF ACTIVITIES

SUMMARY OF MANAGEMENT PRIORITIES
2019-2029

Year	Activity	Stands	Extent	Estimated Income/(cost)
2019-28	Aesthetic cleaning and domestic firewood cutting, as desired	6	2 ac.	(-)
2019-24	Invasive shrub/vine eradication	5, 6	4 ac.	(-)
2019-22	Connector trail creation	5	300'	(-)
2023-26	Connector trail creation	2	400'	(-)
2028	Update management plan	All	107½ ac.	(-)

* codes: (+) = positive value; (-) = cost; (x) = even

MANAGEMENT OBJECTIVES

The forest that is enrolled in the Maine Tree Growth Tax Law will be managed primarily to grow trees for commercial harvest according to the law's requirements for commercial use. A healthy forest and general species diversity is an important goal. Therefore, the long-term health and vigor of the forest should be maintained or improved. Aesthetics and recreation are equally important objectives. Lastly, the Jane and Jim also want to protect diverse the water resource and wildlife habitat. Any harvesting should also strive to improve the growth, health, stocking, and species composition of the forest.

PROPERTY DESCRIPTION, ACCESS AND LAND USE HISTORY

The property is located at the southwest side of Waldoboro, in Lincoln County. It is a rectangle between Dutch Neck Rd. on the east and the Gross Point Rd. on the west. Each road has about 400' of frontage. A finger of Broad Cove (part of the of Medomak River that is tidal) divides the property's 32 acres into 9 acres on the east and 23 acres on the west side of the water. A side finger of the Cove also cuts partially into the south line. The east side is 1½ miles from Rt. 32 and the west side is only 1 mile. A house is next to Dutch Neck Rd., with some two acres of yard and fields. The southern neighbor stores his lobstering equipment in the south east corner, based on an easement he had with the previous owner.

Each side of the water has its own access. The eastern parcel has two skid roads entering from the field, near the north boundary and near the south. The western section has an old wood yard in the northwest corner. A skid road runs along the north boundary, with a major fork at 750' heading south and then running along the south boundary.

The property could have been part of a larger salt-water farm, probably established in the mid-to-late 18th century. Stone walls encircle an upper area near Dutch Neck Rd. part of which remains open. The rest of the boundaries contain barbed wire remnants. Most of the woodland is either ledgy and stony or moist to wet and was most likely used simply as pasture. The Jim and Jane bought the property in 2018. A timber harvest occurred about five years ago.

TOPOGRAPHY AND SOILS

See the Wildlife Habitat Map on page 6a for a depiction of the property's topography. The land is a continual moderate slope down to the water on the east side. The west side rises up to a knoll 1/3 the distance from the road to the water. The terrain then slopes down in the middle to a gently sloping / flat area in the eastern 1/3. Dutch Neck Rd. is the lot's highest elevation at 120'. The tidal Broad Cove is brackish. A small seasonal stream feeds into its west finger. A small swamp is adjacent to Gross Point Rd., which is also fed by a small seasonal stream.

The property has five different soil types. The field and upper slope behind the house has the well-drained Marlow fine sandy loam soil. The two sides of the Broad Cove finger, as well as the area next to Gross Point Rd., have Scantic silt loam. It is poorly drained and wet through much of the year. The lower east slope of the knoll is Boothbay silt loam, which is a little drier but still somewhat poorly drained. The knoll and its upper slopes is mostly Lyman soil. It is shallow to bedrock and somewhat excessive drained with ledge common. It is intermixed with pockets of Tunbridge, which is deeper to bedrock and well drained. All soils can reasonably support commercial tree growth, though site quality varies depending on rooting depth and wetness. The deeper Marlow and Tunbridge are most productive and Boothbay is moderate. Due to their restrictive rooting depths and undesirable drainage, both the wet Scantic and shallow Lyman are only fair. They both have high windthrow hazard. The wet soil also has severe equipment limitations and high seedling mortality.

BOUNDARIES

The property has not been surveyed but the lines are mostly clear. After the stone walls on both the north and south boundaries in the east end, the remaining line contains remnants of barbed wire and old flagging. It's a little hard to find on parts of the north line, west of the water. The south line west of the water also has old orange painted blazes and rebars at the road, and two spots of Broad Cove.

Property boundary lines should be permanently delineated, especially before cutting. Ideally, the line is first cleared for unobstructed viewing. Boundary trees are then blazed (scarred with an ax) and/or painted. Boundary lines should be inspected, reblazed and painted every 15± years to preserve current boundary evidence and to protect against timber trespass.

TIMBER RESOURCE

For purposes of describing the forest and setting management priorities, different forest types and stands were identified. These are found in the Stand Description section and on the Property Map. No formal timber inventory was taken - rather an informal walk-through was made making ocular assessments and periodic stocking measurements with a 15 BAF prism.

Six different stands have been identified in the woodlot, totaling 30 acres. The Mixedwood timber type accounts for 60% and Softwood for 40%. Common trees include red oak, white pine, spruce and red maple. Others include white birch, fir, hemlock, aspen, cedar, ash, black cherry, red pine, tamarack, beech, gray birch, white oak and apple.

Canopy trees are both pole and sawtimber size that are moderate to tall. Due to the past heavy harvest, stand stocking, ie tree density, is understocked and crown closure is sparse. The exception is the adequately stocked stand 4, which is the buffer strip along the water of Broad Cove. For the entire 30 wooded acres, the total standing volume of wood is estimated to be 340 cords of pulp/firewood and 44,000 board feet of sawtimber. This is equivalent to an average volume of 11.3 cords and 1½ mbf per wooded acre, which is low. Its estimated value is $6,700, or $223 per wooded acre, is also low.

The sawtimber category is mostly spruce, with some pine and oak. Sawtimber comprises slightly more than an average percentage of the total commercial wood volume. A reasonably high percentage could be maintained over time if the good quality small sawtimber is allowed to continue to grow rather than get cut prematurely.

Tree quality for sawtimber production is good. Most of the spruce, pine and oak are decent, though there are some forked, limby or declining trees. Most maples are poorly formed. The fir continues to die and fall over. Snags, culls, blowdowns and breakages are common. By cutting the poor quality individuals and favoring the better trees will maintain or improve overall tree quality.

Once a forest stand is thinned, the growth rate could double. Therefore, the growth rates here are good at about 0.6 cord per acre per year. This allows a sustainable harvest level of 18 cords per year for the 30 wooded acres. For a 20-year cutting cycle, this comes to the equivalent of 360 cords, or 12 cords per acre. Due to variability of age, structure and stocking of the forest types, harvest levels will vary among stands. Some may not be cut at all, while others may possibly experience a heavy regeneration cut.

The density of the tree regeneration depends on light/shade conditions and wetness on the forest floor. It is dominated by spruce, fir and beech in the shadier areas, with a mix of pine, maple sprouts and white birch in the openings.

FOREST HEALTH ASSESSMENT

The forest has no significant insect or disease problems. Trees of poor quality sometimes also contain any one of many fungal infections that slowly rot the trees' wood. This is sometimes caused by overcrowding or poor site quality, which limits tree growth and vigor and makes them more susceptible to fungal infection. They are not significant and are considered a normal component of the forest ecosystem. Snags and deadfall are common. No significant storm damage has occurred recently, though there are a few tree blowdowns.

Some invasive plants are taking in the woods near the open land south west of the house, namely Asiatic bittersweet, shrubby honeysuckle and multi-flora rose. Eradication or control efforts should be made as soon as possible, and monitoring/eradication should be continued on a yearly basis. If left unchecked, these non-native invasive plants will spread quickly and take over habitat from native plants. Although they do provide wildlife food, their fruits and seeds are not necessarily as nutritious as seeds and fruits of native plants. Also, when wildlife eat these non-native fruits, they are spreading those seeds rather than those of native plants. Control of invasives can be through either mechanical or chemical means. Mechanical control is possible using a tool called a "weed wrench" or "puller bear". In general, mechanical control works best where the plants are scattered or not too numerous. For heavy infestations, chemical controls, used by a licensed pesticide applicator, is the most effective and least costly method.

WILDLIFE

The woodland is mostly upland, but it does include a small wooded swamp and a couple of seasonal streams, as well as being adjacent to a salt water cove. The presence of fresh drinking water is an important habitat requirement for animals. Creatures either visit these water sources for nourishment and protection or live there. Woodland adjacent to the streams, rivers and wetlands are *riparian* forests. They serve several ecological functions: minimize downstream flooding, filtering runoff and protecting water quality, maintaining cool water temperatures for fish, adding biomass for the bottom of the aquatic food chain, and provide logs that create fish and invertebrate cover and substrate for aquatic algae. Riparian forests typically support more animals than areas further away from water, including

tree-nesting waterfowl (such as wood duck, merganser, and common goldeneye) and water-based animals (such as beaver, otter, mink and moose). Large pines are potential nesting and loafing sites for bald eagle and osprey, especially near the open water. Upland mammals use this area as travel corridors, denning and feeding zones. Soil disturbance and sediment run-off should be avoided when harvesting. To protect water quality and maintain shade, a canopy with >70% crown closure should be left within 75' of wetlands. Buffers provide wildlife travel corridors and buffer aquatic wildlife from human activities in the uplands.

Oak acorns, with their high fat content, are a favorite food for many animals. Apples are also a universal favorite. Additional food sources are spruce (particularly by red squirrels), pine and birch seeds, as well as raspberry and blackberry in forested openings, winterberry and alder shrubs in the swamp, and hawthorne, sumac and American cranberry on the field edges.. Aspen buds are eaten by partridge in the winter. Small semi-open patches within the woods of seedlings, saplings and/or shrubs, as well as woodland edges along the fields and woods roads, present a mix of habitat for both food and cover for animals such as deer, moose, partridge, fox and hare. Thick patches of low sapling regeneration and shrubs are beneficial for early-succession species dependent on young and/or semi-open growth, such as snowshoe hare, ruffed grouse, chestnut-sided warbler, magnolia warbler and eastern towhee.

During any cutting, certain trees should be retained to benefit wildlife, even though they may not have sawtimber value. These include den trees (cavity trees) and snags, which should not be cut unless they pose a safety hazard during logging. A few poor quality live trees have rotten section and/or cavities, which are useful for birds and rodents. Cavity trees are valuable in providing nesting opportunities for both mammals and birds, escape from predators, foraging, caching food and rearing young, as well as a habitat for invertebrates, which are eaten by woodpeckers. 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" in diameter and three exceeding 14". They do not need to be evenly distributed, but may be clumped into areas such as along rock walls, field edges or swamp. In addition to existing wildlife trees, potential future ones should be identified and allowed to grow old and die. Leaving downed trees on site adds to the coarse woody debris on the forest floor, which is important for nutrient recycling and microsite habitats for small animals.

Open areas resulting from patch cuts are valuable for increasing browse, as well as providing abundant cover and nesting sites for some animals. Seeding landings and roads after use will improve forage opportunities. Native wildlife trees and shrubs such as mountain ash, highbush cranberry, serviceberry, apples, cherries or staghorn sumac could be planted in openings. Cutting should avoid sensitive habitats and be timed to minimize disruption of important nesting and young rearing seasons in Spring and early Summer. Harvesting will help maintain age and structural diversity within the forest ecosystem.

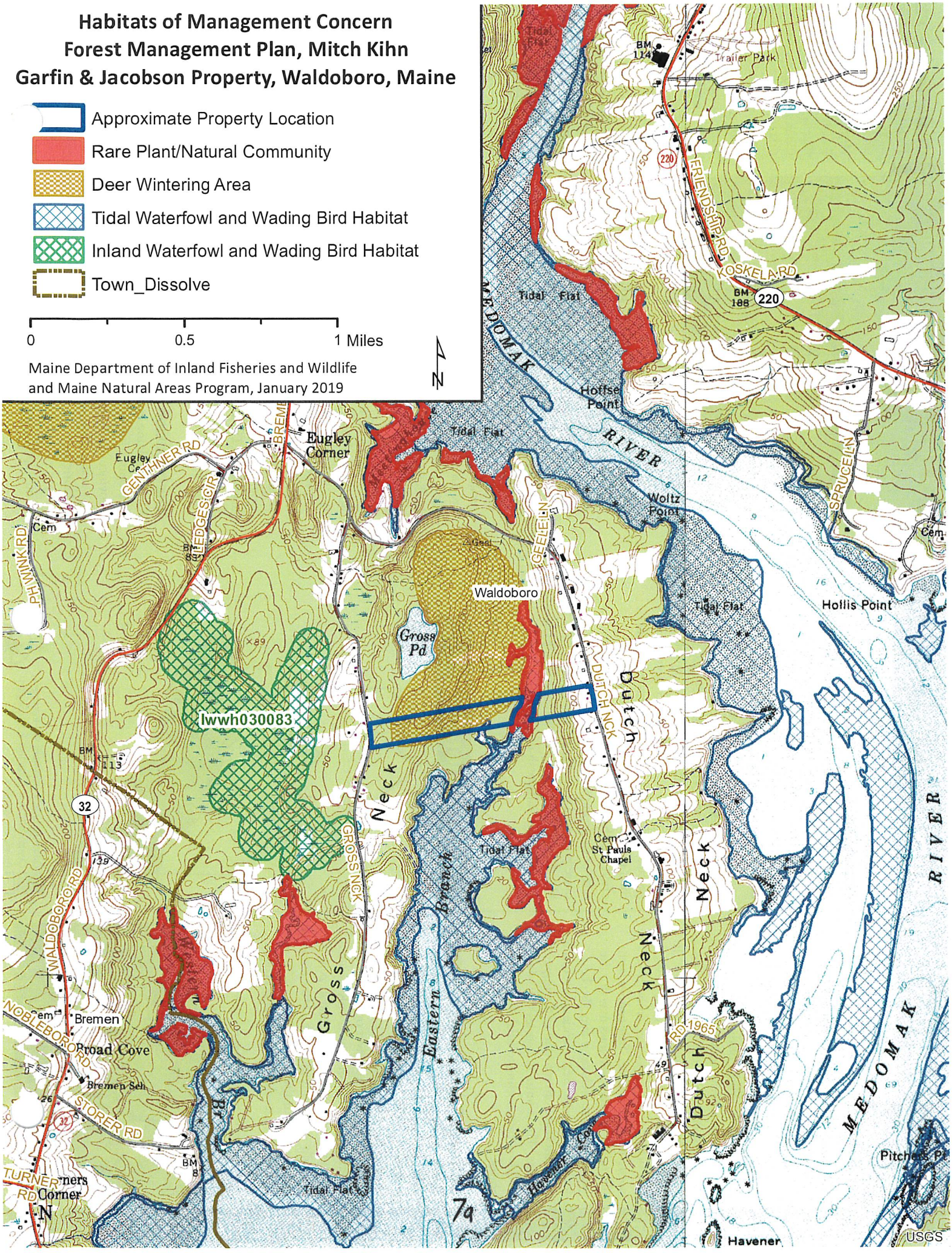
The Maine Department of Inland Fisheries and Wildlife (MDIFW) has mapped the most of the western section as a Deer Wintering Yard, which is considered as a Significant Wildlife Habitats. Contact the Regional Wildlife Biologist Keel Kemper at 547-5319 for advice and recommendations to ensure the continued availability of critical conifer shelter for wintering deer while accommodating the need to manage for timber production. You can find more information about managing for deer wintering areas at the MDIFW website, http://www.maine.gov/ifw/docs/DWA_Guidelines_2.4.10.pdf.

The Medomak River and its 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. A fact sheet for more information about brook trout in Maine is in the Appendix.

The Maine Natural Areas Program (MNAP) notes that the finger of Broad Cove that cuts through the property is a Tidal Waterfowl and Wading Bird Habitat and a Salt-hay Saltmarsh. Large, high quality examples of this wetland type are rare in Maine and provide important habitat for a wide variety of plants and animals. Where possible, MNAP recommends leaving an uncut forested buffer around the marsh to minimize impacts to these habitats. If harvesting occurs within the forested buffer area, harvest activity should closely adhere to BMPs for water quality and wetland protection (e.g., winter harvest on frozen soils). It is also important that any roads constructed in the vicinity of this marsh are built such that they do not impede the flow of water into, out of, or within the marsh. We suggest that you follow guidelines for harvest on uplands adjacent to wetlands that are over ten acres, i.e., to harvest not more than 40% of the basal area in a ten-year time period from areas within 250' of wetlands. See the attached factsheet for more information, but note that these Salt-hay Saltmarsh recommendations are for your information only and do not have any regulatory implications.

The property does *not* provide habitat for lynx. No evidence of threatened or endangered plants or animals was noted during the fieldwork. Should such plants or animals be discovered, appropriate measures should be adopted to ensure protection of their habitat. The parcel is not within any Focus Area of MNAP.

It does lie within an area identified as critical Atlantic Salmon habitat. Private landowners have the primary responsibility to avoid "taking" (harm, harass, kill, modify/destroy habitats, etc.) of threatened and endangered species. However, protecting water quality though appropriate BMPs and other laws will likely be sufficient to avoid the occurrence of a "taking" of salmon. This designation may have an impact if federal cost-share is sought, such as through NRCS. Activities requiring federal permits may require additional review by USFWS. For more information, contact US Fish and Wildlife Service Biologist Wende Mahaney at 866-3344, ext. 118 or http://www.fws.gov/mainefieldoffice/Atlantic_salmon.html.


Habitats of Management Concern
Forest Management Plan, Mitch Kihn
Garfin & Jacobson Property, Waldoboro, Maine
Approximate Property Location
Rare Plant/Natural Community
Deer Wintering Area
Tidal Waterfowl and Wading Bird Habitat
Inland Waterfowl and Wading Bird Habitat
Town_Dissolve
0
0.5
1 Miles
Maine Department of Inland Fisheries and Wildlife
and Maine Natural Areas Program, January 2019
N
lwwh030083
Waldoboro
Eugley Corner
Hoffse Point
Woltz Point
Hollis Point
Gross Pd
Tidal Flat
Trailer Park
FRIENDSHIP RD
KOSKELA RD
GENTHNER RD
PH WINK RD
EDGES CIR
GEELEIN
DUTCH NCK
SPRUCE LN
GROSS NCK
Gross Neck
Dutch Neck
Eastern Branch
MEDOMAK RIVER
WALDOBORO RD
NOBLEBORO RD
STORER RD
TURNER RD
Bremen
Broad Cove
Bremen Sch
Cem
St Pauls Chapel
Havener
Pitchers Pt
USGS



Salt-hay Saltmarsh

Spartina Saltmarsh

State Rank S3

Community Description

These tidal marshes consist of expanses of saltmeadow cordgrass, smooth cordgrass, and/or black-grass. Shrubs are virtually absent, and the herbaceous cover is usually >85%. Much of the marsh is high marsh, where saltmeadow cordgrass forms meadows, and where black-grass may be dominant at slightly higher elevations. In the low marsh, along creeks or at elevations just below mean high water, smooth cordgrass is abundant. Salt pannes with abundant seashore saltgrass may dot the high marsh; goosetongue may also be locally common. Sea lavender and seaside goldenrod are often found at the upper tidal fringe. The dominant species typically form bands corresponding to tidal inundation zones.

Soil and Site Characteristics

Spartina saltmarshes are typically associated with beach-dune systems (back barrier marshes) or the outer reaches of estuaries (finger marshes). They are extensive along both sides of the tidal river or stream. The extensive high marsh zone is only flooded by above average tides. Salt marsh peat is typically several meters thick. Most are large (>10 acres), but they occasionally occur as smaller pockets along estuaries and coves.



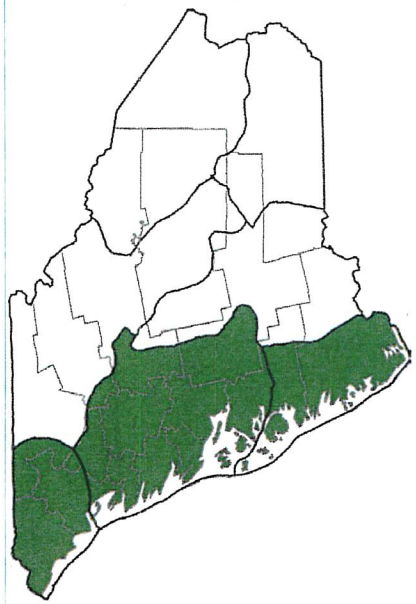
Diagnostics

These types are coastal back dune marshes, or near the outer reaches of estuaries, with saltmeadow cordgrass, smooth cordgrass, and black-grass totaling >35% cover, often in bands. The high marsh is well developed.

Similar Types

Mixed Graminoid-Forb Saltmarshes may also have cordgrasses and/or black-grass abundant, but will also have a mix of other co-dominant species, which tend to occur in patches rather than tidal zones; they are typically smaller, often less than 5 acres, and tend to occur farther upstream in estuaries or in smaller, more protected pockets. Brackish Tidal Marshes, which also occur farther upstream in estuaries, lack saltmarsh cordgrasses.

Location Map



Community is known from this Ecoregion
Community may occur in this Ecoregion



Spartina Saltmarsh – Kinney Shores

Conservation, Wildlife, and Management Considerations

Few of the larger saltmarshes in Maine are pristine, with some having been filled and nearly all ditched at one time or another. With wetland protection in recent decades many of those that remain are reverting to a more natural hydrologic regime. Many of the remaining high quality Spartina Saltmarshes are on public land or private conservation land. Maintenance of appropriate wetland buffers can help reduce degradation that could result from adjacent land uses.

Saltmarshes are important nesting habitat for Nelson's sharp-tailed sparrow, seaside sparrow, and the rare saltmarsh sharp-tailed sparrow. These wetlands also provide foraging habitat for a large number of wadingbirds and shorebirds, including rare species such as the laughing gull, black-crowned night-heron, and least tern. The big bluet, a rare damselfly, inhabits saltmarsh ponds with emergent vegetation in southern Maine.

Distribution

Coastal Maine, mostly southwest of Merrymeeting Bay (Eastern Broadleaf Forest Province); sporadic and less well developed downeast. Extends southward along the Atlantic coast.

Landscape Pattern: Large Patch

Characteristic Pla

These plants are frequently fou community type. Those with a often diagnostic of this commu

Herb

Alkali bulrush
Black-grass*
Common arrow-grass*
Goosetongue*
Purple-stemmed aster
Saltmeadow cordgrass*
Sea milkwort*
Seashore saltgrass*
Seaside goldenrod*
Smooth cordgrass*
Wire rush*

Associated Rare P

Dwarf glasswort
Lilaeopsis
Saltmarsh bulrush
Saltmarsh false-foxglove
Slender blue flag

Associated Rare A

Big bluet
Black-crowned night-hero
Laughing gull
Least tern
Saltmarsh sharp-tailed spa
Short-eared owl

Examples on Conserva Lands You Can Visit

- Bass Harbor Marsh, Acadia N – Hancock Co.
- Morse Mountain Preserve – Co.
- Rachel Carson National Wil – York Co.
- Reid State Park– Sagadahoc
- Scarborough Marsh Wildlife Management Area – Cumbe

LONG TERM RESOURCE CONSIDERATONS

For further information on the topics below, one can also contact the local Maine Forest Service District Forester. For Lincoln County, this is Morton Moesswilde, whose office is at 536 Waldoboro Rd., Jefferson, ME 04348, cell phone is 441-2895 and email is morten.moesswilde@maine.gov.

Biodiversity - Forested landscapes are homes for more than just trees. No one parcel can provide habitat for all species. However, maintaining or improving existing woodland communities is a desirable goal. Elements of ecological structure such as snags, downed woody material, cavity trees, etc. can enhance biodiversity and a variety of wildlife habitat. For more information, contact the Maine Natural Areas Program at 207-287-8044 or visit http://www.maine.gov/dacf/mnap/index/html.

Forest health - Balanced amounts of dead, down and dying wood are actually a beneficial part of a healthy functioning forest. However, severe weather, insects and diseases or other disturbances sometimes create an imbalance and become a barrier to realizing your goals and objectives. For more information, contact the MFS Division of Forest Health and Monitoring at http://www.maine.gov/dacf/mfs/forest_health/index/htm or 207-287-2431.

Wetlands - Both forested wetlands and other kinds such as open marshes, bogs or beaver ponds provide habitat , flood control and scenic beauty. For more information, see the book *Natural Landscapes of Maine*, available from the Maine Natural Areas Program, 207-287-8044 or http://www.maine.gov/dacf/mnap/index.html.

Soil & water quality protection - Activities in the woods that involve roads, log landings and yarding or recreational trails can sometimes contribute to rutting, soil movement and pollution of the watershed. Improperly conducted logging operations can also cause damage. Use of appropriate Best Management Practices (BMPs) greatly reduces this risk. For more information, see the booklet entitled *Best Management Practices for Water Quality,* available from the MFS by calling 1-800-367-0223 or visiting http://www.maine.gov/dacf/mfs/publications/handbooks_guides/bmp_manual.html.

Fish & wildlife - As part of managing according to Stewardship Principles, maintaining a healthy functioning forest will contribute to maintaining healthy wildlife habitat and fisheries. For more information, contact the Department of Inland Fisheries and Wildlife at 207-287-8000 or visit www.maine.gov/ifw.

Recreation - Maine's Landowner Liability Law gives landowners a high degree of protection when other people use their land. It might be hunted by others. It is a good idea for others to get landowner permission before engaging in recreational activities such as hunting, hiking or ATV or snowmobile use on someone else's land. For more information, contact the Department of Inland Fisheries and Wildlife at 207-287-8000 or www.maine.gov.ifw and click on the Quick Link for the Landowner Relations Program/Outdoor Partners.

Aesthetic quality - Maintaining the beauty of your woodlands may be of high importance to you, as it is for many landowners, especially near dwellings, along trails and special area. Stewardship can include activities undertaken to create or protect aesthetic quality. In addition, the visual impact of forestry activities such as timber harvesting can communicate a lot about stewardship. Efforts to maintain a harmonious woodland appearance usually pay off in a greater acceptance of silvicultural practices. For more information on logging aesthetics, contact the Sustainable Forestry Initiative at 207-622-9288 or www.sfimaine.org.

Protection from pests - There are many species of invasive plants and insects, both native and exotic, which can affect your woodland and possibly get in the way of meeting your goals and objectives. Monitoring for early detection can reduce negative impacts and reduce the costs of control. For more information, contact the MFS Division of Forest Health and Monitoring at http://www.maine.gov/dacf/mfs/forest_health/index.htm or 207-287-2431.

Protection from fire - Wildfire is rare in Maine. There is a lot you can do to reduce the risk of a wildfire on your woodlot and near your home. For more information on how you can make your home "Firewise," visit http://www.maineforestservice.gov or call the Division of Forest Protection at 207-287-4990. Please be careful with all outdoor fires and observe all the open burning laws. If you see a wildfire or smell smoke during a high fire danger day, call 911 or the Maine Forest Service at 1-800-750-9777.

Historical, cultural & archaeological sites - Stone walls and old cellar holes or foundations are often found in woodlands, as remnants of previous settlement and agriculture. High and dry areas near water bodies may have been pre-historic Native American dwelling sites. Most properly conducted forest management activities will not harm these resources. Construction of roads, trails or landings, however, could potentially disturb significant sites. For more information, contact the Maine Historic Preservation Commission (MHPC) at 207-287-2132 or visit http://www.maine.gov/mhpc or your local historic commission/society. Tree Farmers are strongly encouraged to contact the MHPC to meet current Tree Farm Standards.

Forests of Recognized Importance (FORI) - FORI are globally, nationally and regionally significant large landscape areas of exceptional ecological, social, cultural or biological values. These forests are evaluated at the landscape level rather than the stand level and are recognized for a combination of unique values rather than a single attribute. There is no state or federal government regulation of FORI on private lands.

There is no central clearinghouse for information on FORI. However, in Maine the best resources are the Maine Natural Areas Program and the Maine Historic Preservation Commission. If you are interested in finding out more, a location map can be sent to either of the agencies to get information related to FORI in your area. Tree Farmers are strongly encouraged to contact both of these agencies to meet current Tree Farm Standards. Most FORI in the U.S. have already been identified and protected by state or federal governments or have been put under a conservation easement by an environmental nonprofit organization. After careful consideration and research, the Maine Tree Farm Committee has determined that NO Forests of Recognized Importance (FORI) currently exist in the state of Maine.

Carbon sequestration - As climate change increases the likelihood of severe weather events, the migration of both beneficial and invasive species and new risks to forest health and productivity, good woodland stewardship is the key to preparedness. Living trees take carbon from the atmosphere and store it in wood fiber. Wood products continue to keep carbon out of the atmosphere. For more information, go to the Climate Smart Land Network at http://climatesmartnetwork.org. Among the many benefits provided by forests, removing carbon from the atmosphere and storing it in trees may have increasing significance in the years to come. For more information, visit www.maine.gov/doc/mfs/mfs/topics/carbon.

Monitoring - You are encouraged to stay engaged with their woodlands. This can take the form of regularly scheduled boundary line maintenance, recreational activities such as hunting or hiking, or following up after completing silvicultural activities to check results. Keeping in touch with your land can help prevent theft or trespass. It can also be rewarding on many levels. Consider keeping a photographic record of the changes your woods go through before, during and after harvests and other management activities. One way to do this is with a picture post. For more information, visit www.picturepost.nh.edu.

Woodland legacy planning information - Your land is part of your legacy. Planning for the future of your woods after you are no longer involved is an important part of good stewardship. Woodland legacy planning could, if fact, be the most important step you take as a landowner – not just for your own benefit but for the benefit of your family, your community and, of course, for the land itself. Who will own your land and how will it be used? What will your legacy be? For more information from the U.S. Forest Service about conservation-based legacy planning, go to www.na.fed.us/stewardship/estate/estate.sthml. You may also want to visit the Small Woodland Owners Association of Maine's website at http://www.swoam.org/LandownerResources.aspx and click on the "Succession Planning" link. The Maine Coast Heritage Trust also has "Conservation Options" information listed at http://www.mcht.org/land_protection/conservation_options.html.

TREE GROWTH AND OPEN SPACE TAX LAWS

Twenty-six of the Garvin/Jacobsons' 30 wooded acres are currently enrolled in Maine's Tree Growth Tax Law. This state-wide law is a "current-use" property tax program, administered by the local assessor. Valuation of land classified as "forest" is based on its ability to grow timber instead of so-called "highest and best use." This plan includes activities to regenerate, improve and harvest a standing crop of timber.

The Maine Forest Service determines the per acre valuations each year by Timber Type and by County. Enrollment requires a long-term commitment to forest management, and penalties exist for withdrawal for the program. To stay in compliance, commercial activity will need to be performed as outlined in the plan and is the responsibility of the landowner to implement. Enrollment in the program may result in significant savings in the annual property tax bill. For more information about the Tree Growth Tax Law, go to http://www.maine.gov/revenue/forms/property/pubs/bull19text.htm.

The law does not apply to non-forested acres, to forested areas not used primarily for timber production, to forested areas not capable of commercial tree growth or to inoperable/inaccessible areas, such as the wetlands. Two wooded acres downhill from the house and two acres along the Gross Point Rd. frontage are not in Tree Growth. Based on 2018 valuations for Lincoln County, the 26 acres of eligible woodland are valued as:

		acres	per acre valuation	valuation
Forest:	Softwood	12	$337	$4,044
	Mixedwood	14	$408	$5,712
	sub-total:	26		$9,756
Other:	Forest not classified	4		
	Residence	1		
	Field	1		
	sub-total:	6		
	Total Property:	32 acres		

An alternative or adjunct to Tree Growth is the Open Space tax program, which does not require active forest management. This allows a 20% reduction off the standard assessment value. Additional restrictive options allow further assessment reductions. Acquiring a Conservation Easement with a Land Trust allows an additional 30% reduction. A "Forever Wild" option will give an additional 20% for a total of 70% reduction. An additional 25% will also be granted if public access is allowed, for a potential reduction of 95%. Another option within Open Space is "managed forest", which will allow an additional 10% reduction. For this, a forest management plan must be prepared and updated every 10 years and it must be followed by the landowner. This is similar to the Tree Growth program except that the primary management objective need not be growing trees for commercial forest products.

LEGAL RESTRICTIONS

Deed restrictions and easements - Deed restrictions are encumbrances on the property and/or specific uses that are recorded at the county Registry of Deeds. The property is not subject to deed restrictions that affect forest management activities. Easements may include legally conveyed conservation/land use restrictions, utility lines, public rights of way, and the like. The southern abutter does have an easement in the southeast corner to store his lobstering equipment. It is a rectangle measuring 100' along the road and 200' deep.

Water bodies and water quality - Protection of water bodies and water quality occurs through different rules that vary with location and type of activity. Water bodies typically include saltwater, lakes, ponds, rivers, streams and non-forested wetlands. The rules highlighted below regulate timber harvesting and related activities within/near water bodies.

Waldoboro has accepted the 2012 *Statewide Standards for Timber Harvesting and Related Activities in Shoreland Areas.* **(MFS Rules Chapter 21** – found at http://www.maine.gov/dacf/mfs/publications/rules_and_regs/chap_21_rules_effective_01012016.pdf). These standards are administered by Maine Forest Service's district forester rather than the town's Code Enforcement Officer. The 250' strip along the Back River's shoreline falls under Statewide Standards as a Shoreland Area. Harvesting is still allowed in these zones but with restrictions - harvested volume is limited to no more than 40% of the total timber volume within the Shoreland Area in any 10-year period OR a residual stand must contain a basal area of at least 60 ft^2/acre of woody vegetation 1"+ dbh, of which 40 ft^2/acre is 4.5"+ dbh. A well-distributed stand of trees must remain, with canopy openings no larger than 250 ft^2 within the first 75'. Greater than 100', cleared openings must not be >14,000 ft^2. Harvesting activity must not result in ground disturbance. Accumulation of slash is not allowed to be higher than 4' nor within 50' of the water. Shoreline integrity must also be protected along the seasonal streams and swamps.

Natural Resources Protection Act (NRPA) - The NRPA regulates work in and adjacent (within 75') to lakes, streams, freshwater wetlands and tidal wetlands (as well as in elevations greater than 2,700'). Activities regulated include disturbing soil, placing fill and building permanent structures in or adjacent to these areas. A permit is required from the Maine Forest Service (MFS) for such common work as:

- Road building, excavating, filling, or otherwise disturbing the soil within 75' of lakes, rivers, streams and wetlands,
- Building new bridges, fords or installing culverts for road or trail crossings,
- Building or placing permanent structures in, on or over lakes, rivers, streams and wetlands

Exempt activities include:

- Temporary structures, ie. a road crossing using a temporary bridge, that are in place less than 7 months in a protected resource is exempt. However, it is not exempt if fill is used.
- Repair, maintenance or replacement of an existing culvert, provided any replacement is not more than 25% longer than that being replaced and not longer than 75'. Erosion control must be used and fish passage may not be blocked.
- Forest management, including associated road construction or maintenance, in or adjacent to forested wetlands as long as it:
  1) meets minimum stocking requirements under the Forest Practices Act;
  2) meets "permit-by-rule" standards for road crossing of a stream, or for soil disturbance adjacent to great pond, river or stream and DEP is notified prior to starting the work;
  3) the area is not a forested wetland mapped as a significant wildlife habitat; and
  4) the road construction is not used to access development, but is primarily used for forest management activities.

Two permitting programs exist under the NRPA. "Permit-by-rule" is the simpler procedure and covers most minor activities, such as installing bridges and culverts in rivers and streams or disturbing soil 25-75' from a waterbody or wetland, and maintenance and repair of structures. It requires a 1-page notice to the MFS and following applicable construction and erosion control standards. A full MFS permitting process covers activities with greater potential impacts than those under permit-by-rule.

Best Management Practices - BMPs should be utilized appropriately to comply with these regulations. 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. It can be found at: http://www.maine.gov/dacf/mfs/publications/handbooks_guides/bmp_manual.html. This will allow the landowner to comply with the Protection and Improvement of Waters Law (sections 413 & 417). Specifically, this law prohibits causing erosion of soil into water bodies and disposing of slash in streams, lakes and tidal waters. For 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.

Forest Operations Notification (FON) and Landowner Report: MFS Rules Chapter 26 - These rules require that landowners notify the Maine Forest Service of planned timber harvesting. The notification forms are available at most town offices and the ME Forest Service at no charge. Before any commercial harvesting occurs, landowners (or their agent) must file a FON with the Maine Forest Service. It is valid for up to 2 years and is not a permit. Each FON has a unique six-digit number, which is used to track wood transport and marketing. Year-end Landowner Reports of harvested wood volumes and stumpage prices are a part of this requirement. They are sent to the landowner or agent in December and must be filed with the MFS by the following January 31. A FON & Landowner Report will be required for the timber harvesting recommended in this Plan.

Clearcutting: MFS Rules Chapter 20 - These rules regulate the establishment, arrangement and regeneration of clearcuts for landowners who own >100 acres statewide. Clearcuts are harvests that leave an area 5 acres or greater with less than a minimum stocking of trees. Harvest plans must be submitted to the Maine Forest Service for proposed clearcuts >20 acres. A copy of the Rules can be found at http://www.maine.gov/dacf/mfs/publications/rules_and_regs/chap_20_rules_05012014.pdf. This management plan does recommend a clearcut in stand 7a that would just barely exceed the 5 acre threshold.

Liquidation Harvesting (LQH): MFS Rules Chapter 23 - This rule regulates timber harvesting on land sold or offered for sale within 5 years of purchase. No LQH is recommended in this Plan. The complete MFS Chapter 23 Rules may be found at http://www.maine.gov/dacf/mfs/publications/rules_and_regs/chap_23_rules.pdf.

Local ordinances - A number of municipalities have adopted ordinances (other than Shoreland Zoning) that affect timber harvesting. It is a good idea to check with town officials before proceeding with timber harvesting. Waldoboro has no local ordinances regulating forest management activities on the property. Regulations can change, however, and it is the responsibility of the woodland owner to comply with the regulations in effect at the time any forest management activities are conducted. The landowner should engage a consulting forester to oversee the implantation of these activities as appropriate to ensure compliance.

Additional restrictions - All boundary lines within 200' of cutting must be clearly marked. All slash from a harvest must be removed at least 25' from adjoining properties if they pose a fire hazard.

MARKETS AND COMMERCIAL HARVESTS OF WOOD PRODUCTS

Wood markets fluctuate in price, product specifications, and demand. Current market conditions should be assessed as part of any timber harvesting activity. All wood greater than 5" dbh is useable by wood-processing mills. With the closure of the four paper mills that rely on softwood pulp in the last two years, however, the entire softwood pulp market is currently depressed and the ability to sell softwood pulp stumpage is very difficult. Both hardwood and softwood pulp are used by Verso Co. in Jay and by SAPPI in Hinckley. The market for hardwood pulp and firewood is stronger, but even that has softened since last year. The hardwood would best be used for firewood. With the closure of the Emera plant (near Bangor) and reduced demand for wood chip generated electricity, the market for wood chips is significantly down. Robbins Lumber in Searsmont has built such a facility and will create a local market for chips, which is encouraging.

Except for oak, sawlog prices have rebounded since the 2007-08 recession. The largest sawmill are on the mid-coast area is Robbins Lumber in Searsmont. It specializes in sawing pine but also buys and resells other species. Smaller straight spruce pulpwood trees also have a market as studwood in Canada, which is worth twice as much as regular pulpwood. Other mills that process pine logs include Hammond Lumber in Belgrade and Irving in Dixfield. N.C. Hunt, in Jefferson, is a good market for the low-grade pine and low-valued hemlock. For hardwoods, logs are often sold to wood brokerage companies such Premium in Whitefield or Medomak River Lumber in Union. Hardwood can be sold as 4' bolts to pallet mills.

Commercial harvesting should be conducted on a marked tree or species designation basis and under the supervision of a professional forester. This will ensure that the selection of trees for cutting is in the best short- and long-term interest of the owner, and leaves a desirable residual stocking of trees. In addition, the forester supervises harvesting operations to ensure proper utilization, minimal felling and skidding damage to residual trees, and to help assure accurate payment for harvested wood products.

Properly done, commercial harvests are 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 stated objectives. Sawtimber can still be grown and harvested while improving wildlife habitat and recreational opportunities. Typically, low quality and unhealthy trees and/or mature individuals are chosen for removal. This allows 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 the 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 of the timber and wildlife resources of the property.

Wildlife needs should be given appropriate emphasis during timber marking harvests. Appropriate numbers of wildlife trees and other critical areas should be left to provide both cover and food. Yards and skid roads should be located to minimize soil erosion and visual impact, as well as to improve interior access. To preserve the integrity of the soil in the wetter areas near the stream, any timber harvesting should be done when ground conditions are stable and able to hold up heavy machinery. This means either dry or frozen ground.

STAND DESCRIPTIONS AND RECOMMENDATIONS

INTRODUCTION

Six forest stands have been identified. They are numbered from west to east and add up to 30 acres. Three factors determine forest type of the stands: 1) the dominant tree species or species group in the canopy; 2) canopy height; and 3) canopy density (also referred to as crown closure). Determination of dominance is based on basal area, not the raw number of trees or wood volume. Basal area expresses the amount of growing space a species is utilizing in the stand. The three broad timber types are Hardwood, Softwood and Mixedwood (where neither hardwood nor softwood is >25% of the basal area). Average tree diameter is that of only the canopy trees (the "featured" stand). The stocking level, too, is determined by the basal area per acre, # trees per acre and average tree diameter of only the canopy trees (the "featured" stand). Therefore, the suppressed trees in the understory are excluded, usually the saplings less than 5" in diameter (except for when saplings are part of the featured stand). However, it is the total basal area in the pie chart depicting species as percentages of basal area. Recommended stocking levels are from various pamphlets issued by Forest Experiment Stations of the US Forest Service. They represent the minimum density for maximum growth and wood production. They are not necessarily the ideal levels if stand objectives are other than rapid timber production.

Canopy height is classified into three levels: 1 = low = <30'; 2 = moderate = 30-60'; and 3 = high >60'. Canopy density also comes in three levels: A = high = >70% crown closure; B = moderate = 40-70%; and C = low = 10-40%. An area with less than 10% crown closure is not considered a forested stand. Growth rate is expressed as volume per acre per year. Volumes are expressed as board feet for sawtimber stands or as cords for poletimber stands. The standard conversion between board feet and cords is 1,000 board feet (1 mbf) = 2 cords. All numbers are estimates, so the "about" qualifier will not be used.

Recommended stocking levels are from various pamphlets issued by Forest Experiment Stations of the US Forest Service. They represent the minimum density for full site utilization and maximum growth and wood production and varies among timber type groups and are referred to as the "B" line. It is a basal area of 70 ft^2/acre for Hardwood, 100 ft^2/acre for Mixedwood and Managed White Pine, and 120 ft^2/acre for Softwood. They are not necessarily the ideal levels if stand objectives are other than rapid timber production. Minimum stocking of a stand for it to still be considered worthwhile for management and before being considered understocked are 20 ft^2/acre lower, namely 50, 80 and 100 ft^2/acre, respectively. This is the "C" line. It takes about 10 years for stands at the "C" line to reach the "B" line.

LONG-TERM GOALS

The primary goal for the property is to maintain a fully stocked, multi-aged forest that is productive and healthy. Individual stands will differ from another in their structural characteristics based on timber harvesting history and species composition. Overall, manage for an uneven-aged forest with stands of varying ages and structure. Strive to grow big trees (18"+ diameters) and maintain long individual tree rotation ages (>100 years). Aesthetics take precedence in the stand behind the house, which is not in Tree Growth.

For timber management, favor the more commercially valuable species of spruce, white pine and oak. Weed out low value species, trees of unacceptable form and those that are declining in health. A cutting cycle of 20 years per acre is appropriate.

To benefit wildlife, favor oak for acorns, soft-mast trees such as cherry and apple, and birch, spruce and pine for their seeds. Improving wildlife habitat may include releasing mast-bearing crop trees, creating patches of early succession vegetation, retaining snags and den trees, keeping protective buffers within 75' of the wetlands and streams, creating brush piles or putting up bird boxes. Dead trees ought to be left in the forest, both as upright snags and downed stems, to serve the important ecological function of nutrient recycling and wildlife habitat.

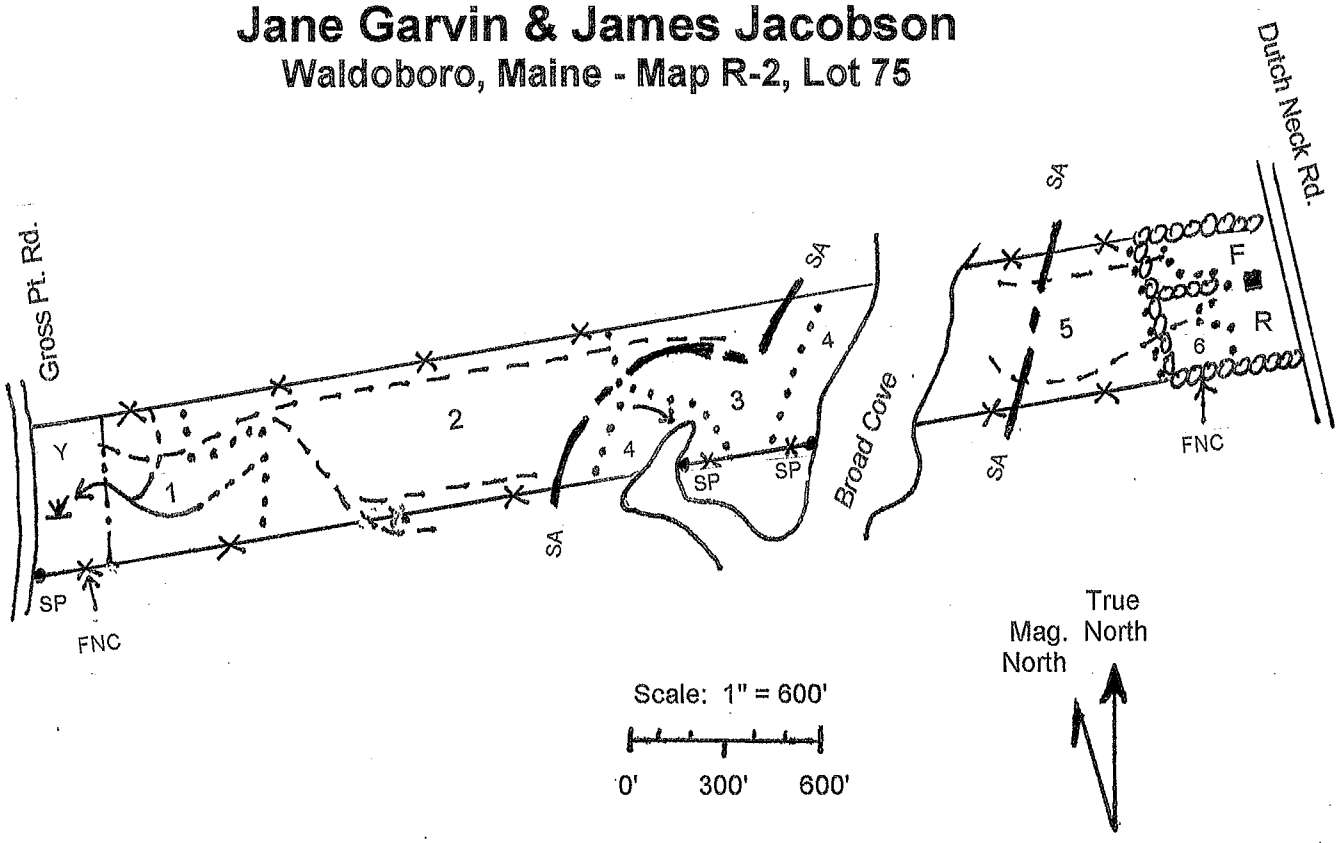
Open up and maintain (keep clear of deadfall and in-growth) selected skid roads for recreational use, with loop trails for connectors.

Combat the invasive species and their spread by eradication or at least some control.

PROPERTY MAP

Jane Garvin & James Jacobson

Waldoboro, Maine - Map R-2, Lot 75



Scale: 1" = 600'

0' 300' 600'

True North

Mag. North

LEGEND

Stand number & boundary	2
Building	
Trail & wood yard	Y
Survey pin	SP
Stone wall	
Barbed Wire	
Seasonal stream	
Wetland	
Shoreland Area	SA

FOREST TYPES

Stand	Type		in Tree Growth	Total Acres
1	M-2/3-A	pole/sawtimber	3	5
2	S-3-A	sawtimber	11	11
3	H-2/3-A	pole/sawtimber	4	4
4	M-2-A	poletimber	3	3
5	H-1/2-B	saps/poles	5	5
6	M-2-B		0	2
	Woodland	=	26	30
	Residence (R)		1	
	Field (F)		1	
	Forest Not Classified (FNC)		4	
	Non Tree Growth Land	=	6	
	TOTAL PROPERTY	=	32 acres	

*Codes:
S = 75%+ Softwood; H = 75%+ Hardwood; M = Mixedwood
1 = 0-30' height; 2 = 30-60'; 3 = 60'+
A = 70-100% crown cover; B = 40-70%; C = 10-40%
sawtimber = trees 12"+ diameter for hardwoods;
10"+ for softwoods & white birch
poletimber = trees 5-9"; saplings = 1-4"; seedlings = <1"

Mitchell Kihn - LPF #3206
MID-MAINE FORESTRY
April 11, 2019

Map details are approximate and based on tax map, aerial photo and personal reconnaissance, March, 2019. **For forest management purposes - not a legal boundary survey.**

STAND 1 - MIXEDWOOD POLE/SAWTIMBER (M-2/3-A) 5 acres

Stand 1 is adjacent to Gross Pt. Rd., at the lot's west end. The wood yard is in the northwest corner and a skid road heads eastward. Two seasonal streams converge in the stand's middle and flow westward into a swamp before continuing beneath the road. The ground slopes moderately upward away from the drainage. Soils are poorly drained and seasonally wet along the drainage, but dry, shallow and well-drained elsewhere. Small ledges are common. Site productivity is fair where swampy and ledgy and better with increasing soil depth. Operability is good outside the swamp, though challenging around the ledges. It was harvested about five years ago. The two acres along Gross Pt. Rd. are excluded from Tree Growth.

This mixedwood stand consists of oak, spruce, beech, white pine, hemlock, aspen, red maple, white and white birch. Tree sizes are a mix of poles and sawtimber. With an average basal area of 75 ft^2/acre (ranging 30 to 120 ft^2/acre), it is understocked to sub-optimally stocked. The crown closure is full with some canopy gaps. Canopy height is moderate to tall.

Tree quality for sawtimber production is mixed but generally good. The growth rate is good at ¾ cord per acre per year. Wood volume per acre is moderate, with 19 cords of pulpwood and 1¾ mbf of sawtimber. The percentage of sawtimber is a bit below average. Tree regeneration is also mixed, mostly with spruce, fir, beech and maple sprouts. Alder and winterberry are in the wet drainage.

RECOMMENDATIONS

At least for the back three acres in Tree Growth, manage for commercial timber production, with aesthetics, wildlife and soil/water conservation in mind. The stocking goal should be a basal area of 100 ft^2/acre, but could be as low as 80 ft^2/acre. Favor the better quality oak, pine and spruce for sawtimber.

Current average stocking is 25% below the recommended level. Leave alone and allow to grow and increase its stocking. Re-evaluate in 10 years.

STAND 2 - MIXEDWOOD POLE/SAWTIMBER (M-2/3-B/C) 11 acres

Stand 2 is the largest stand of the woodlot and is located in the middle of the western section. It is easily access by the main skid coming in from the wood yard. It splits into two skid roads that run closely to the north and south boundaries. Slopes are gentle to moderate on top of the hill and its eastern slope. Soils have a shallow to moderate depth to bedrock and are well- to somewhat excessively drained. Small ledges are common. No seasonal streams are present. Operability is good, working around the ledges. It was harvested about five years ago. The southeast corner is within the Shoreland Area.

This is a mixedwood stand dominated by spruce on the slope and by red oak on the hilltop. Other trees include white pine, red maple, aspen and white birch. It was cut heavily in the last harvest and is now a two-aged stand. With an average basal area of only 30 ft^2/acre (range 0-75 ft^2/acre), it is understocked. Stems are mostly poles and small sawtimber size with a moderate to tall canopy height. Crown closure is sparse to moderate.

Tree quality for sawtimber production is mixed. Spruce blowdown and stem breakage is common as are birch and spruce snags. Other birches are declining. Some of the spruces and other hardwoods are decent. The growth rate is good, at ¾ cord per acre per year. Wood volume per acre is low at only 8 cords pulpwood and ½ mbf sawtimber. Sawtimber percentage is below average. Tree regeneration is abundant but is competing with raspberries, blackberries and ferns in places. It includes spruce, pine, birch, fir and maple sprouts.

RECOMMENDATIONS

Manage for commercial timber production, with aesthetics, wildlife and soil/water conservation in mind. The stocking goal should be a basal area of 100 ft^2/acre, but could be as low as 80 ft^2/acre. Favor the better quality oak, spruce and pine for sawtimber.

Current average stocking is 70% below the recommended level. Leave alone and allow to for the regeneration to become established and grow. Unless there is a future need for salvage, there will probably no need for another harvest for many decades. Re-evaluate in 10 years.

Develop a trail along the east side that connects the north and south skid roads.

STAND 3 - SOFTWOOD SAWTIMBER (S-2/3-C) 4 acres

Stand 3 is in the east side of the western parcel. The north skid road provides good access. It is flat to gently sloping with poorly drained soil, which is seasonally wet and has fair productivity. Operability is excellent, though limited to frozen ground conditions due to wetness. It was harvested about five years ago. The south and east sides are within the Shoreland Area.

Stand 3 is a slight extension of stand 2, though it is a softwood stand dominated by spruce. A few cedar, oak and white birch are also present. Canopy trees are mostly small sawtimber. The canopy, however, is sparse with low crown closure. With an average basal area of only 12 ft^2/acre, it is very much understocked and open. The heavy harvest may be considered a Seed Tree regeneration cut. It is now a two-aged stand. Height of the upper canopy is moderate to tall.

Tree quality for sawtimber production is mixed. Many of the spruces are nice, but snags and blowdowns are common. The growth rate is fair, but wood accrual is low due to low wood volumes. There are about 1½ cords of pulpwood and 1 mbf of sawtimber per acre. Sawtimber percentage is high. Regeneration is thick and is mostly spruce with some birch. Raspberries are common.

RECOMMENDATIONS

Manage for commercial timber production, with aesthetics, wildlife and soil/water conservation in mind. The stocking goal should be a basal area of 120 ft^2/acre, but could be as low as 100 ft^2/acre. Favor the better spruce for sawtimber. At this point, however, the canopy is just in holding mode while the new regeneration becomes established and eventually becomes the featured stand.

Current average stocking is 90% below the recommended level. Like stand 2, the stand should just be left alone and allowed to grow. Unless there is a future need for salvage, there will probably no need for another harvest for many decades. Re-evaluate in 10 years.

STAND 4 - SOFTWOOD SAWTIMBER (S-3-A) 3 acres

Stand 4 contains two strips in the western parcel's east end. They border the water in two places. The ground is gently sloping and soils are poorly drained. A small stream is in the western unit. Operability is good, but limited by the wetness and may only be worked on frozen ground. Site productivity is fair. The water-side of these 100-150' strips were not cut in the last harvest, while the outer half was lightly cut. Both units are entirely in the Shoreland Area.

This softwood stand contains mostly spruce, with a few big white pines, white birch, oak and intermediate hemlock, plus one observed red pine. Trees are a mostly of sawtimber size. This stand served as a protective buffer strip for the water and wasn't cut nearly as hard as stands 2 and 3. With an average basal area of 115 ft^2/acre (range 45-90 ft^2/acre), stocking is adequate. Crown closure is full and canopy height is tall.

Tree quality for sawtimber production is mixed but mostly fine. Fir snags and dead-fall are common. The growth rate is fair at ½ cord per acre per year. Wood volume per acre is moderately high, with 24 cords of pulpwood and 5 mbf of sawtimber. The sawtimber percentage is high. Tree regeneration is sparse due to shade but is mostly spruce and fir.

RECOMMENDATIONS

Manage for commercial timber production, with aesthetics, wildlife and soil/water conservation in mind. The stocking goal should be a basal area of 120 ft^2/acre, but could be as low as 100 ft^2/acre. Favor the better spruce and pine for sawtimber.

Current stocking is at the recommended level. Therefore, a harvest is really not needed. Although there is some volume available, it is not nearly enough to support a stand-along harvest. Leave alone for now and re-evaluate in 10 years.

STAND 5 - SOFTWOOD POLE/SAWTIMBER (S-2/3-B) 5 acres

Stand 5 is in the west side of the eastern parcel, adjacent to the finger of Broad Cove. It is accessible from Dutch Neck Rd. through the open land and skid roads that drop downhill along both the north and south boundaries. Slopes are moderate to gentle. Soils are well drained and very productive on the upper (east) slope. The lower (west) slope is more poorly drained and less productive. Operability is good. It was harvested about five years ago. The shoreline along Broad Cove is in the Shoreland Area.

This softwood dominated by spruce and white pine, with some oak. There're also lesser amounts of white birch, ash, aspen, understory cedar, tamarack, beech and red pine. Stems are a mix of poles and sawtimber. With an average basal area of 54 ft^2/acre, it is understocked. Crown closure is only moderate. Canopy height is moderate to tall.

Tree quality for sawtimber production is good with most of the spruce, pines and oaks of decent forms. Some of the pines, though, are forked or limby. Fir snags and blowdowns are common. The growth rate is good at ¾ cord per acre per year. Wood volume per acre is moderately low at 12 cords of pulpwood and 2 mbf of sawtimber. The sawtimber percentage is above average. Raspberry and blackberry are common native shrubs. Invasives include shrubby honeysuckle and Asiatic bittersweet.

RECOMMENDATIONS

Manage for commercial timber production, with aesthetics and soil/water conservation in mind. The stocking goal should be a basal area of 120 ft^2/acre, but could be as low as 100 ft^2/acre. Favor the better spruce, pine and oak for sawtimber.

Current average stocking is 55% below the recommended level. Like stands 2 and 3, the stand should just be left alone and allowed to grow. Unless there is a future need for salvage, there will probably no need for another harvest for many decades. Re-evaluate in 10 years.

Eradicate/control the invasive shrubs. Develop a connecting loop trail, partially using the old skid roads.

STAND 6 - MIXEDWOOD POLE/SAWTIMBER (M-2-B) 2 acres

Stand 6 is in the eastern parcel, along the west side of the field and building area. It is bounded by stone walls on the north, south and west, as well as one running down from the house. It is accessible from both. Slopes are gentle and soils are well drained. Operability is excellent and site productivity is very good. It was not harvested with the other stands. It is entirely excluded from Tree Growth.

This is a relatively young former field that has grown up in to a scruffy mix of poles sawtimber and saplings. Trees include oak, black cherry, white pine, fir, aspen and gray birch, as well as apple. Norway maple and one white oak are on the field's edge. A young horse chestnut is along the southern skid road, an offspring from a large yard tree near the road. Stocking is sparse with a low basal area. Crown closure is only moderate and canopy height is moderate.

Tree quality for sawtimber production is fair. The growth rate is poor at low due to low volumes, maybe 1/10 cord per acre per year. Wood volume per acre is 9 cords of pulpwood and ¼ mbf sawtimber. Regeneration includes the overstory species. Shrubs are native hawthorne, sumac and American cranberry by the field, but also includes invasive multiflora rose and Asiatic bittersweet along the south side.

RECOMMENDATIONS

Manage for aesthetics and forest health. As such, a stocking goal is unimportant. Harvest domestic firewood as needed. Eradicate/control the invasive shrubs. Perform understory cleaning, as desired. As the farm gets more established, a portion of this stand may get cleared for more pasture land.

CONCLUSIONS

Due to the last harvest and some mortality, the Garvin/Jacobson woodland contains a mix of mature sawtimber, middle-aged poles and young saplings. Access is excellent via skid roads. Operability in good, though small ledges and stoniness on the western knoll and seasonal wetness by the cove are challenges. Tree quality is mostly good, though some trees are forked, limby or declining in health. A modest amount of invasive shrubs is entering the eastern woods behind the house.

The chart at the front of the plan lists the various activities in selected stands that could be performed over the next 10 years. This is a guide and is flexible. Due to the last heavy cut and current low stocking, no commercial harvest is recommended.

GLOSSARY

Acre – A unit of land 43,560 ft^2 in area. If square-shaped, each side would be 208.5'.

Basal Area (BA) – a) of a tree: the cross-sectional area of the trunk at 4.5' 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, expressed as square feet per acre, expressing the growing space taken up by the trees.

Blaze – To scar a tree by removing a spot of bark with an ax, making a semi-permanent mark. Commonly painted to indicate boundary lines.

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' by 1' by 1", equaling 144 in^3. The more common unit for forestry use is 1,000 board feet, abbreviated as mbf. 1 mbf = 2 cords.

Browse – Leaves, buds and woody stems used as food by woodland mammals such as deer, moose and snowshoe hare.

Buffer strip – Vegetation left along a stream, lake or wetland to protect aquatic habitat and water quality. Buffer strips filter sediment, debris and pollution, provide food, maintain cool water temperatures and increase diversity in the landscape.

Canopy – The top leafy layer of a forest, formed collectively by tree crowns.

Clearcut – A forest harvest practice in which all, or nearly all, trees are removed in a stand. It is used for maximum income or the regeneration of shade-intolerant tree species.

Commercial Harvest – A harvest operation that results in net landowner income. Harvests control the growth of stands through adjustments in stand density.

Cord – A measure of wood products 4' high, 4' wide and 8' long, equaling 128 cubic feet. It is the equivalent of 85 cubic feet of solid wood.

Crop tree – Trees chosen within a stand to live their full commercial lives, usually the highest quality and value of all the trees. Harvests or thinnings remove trees that compete with the crop trees.

Cull – A tree that has no current or potential market value.

DBH – Tree diameter at breast height, measured at 4.5' above the ground.

Den Tree – A tree with a cavity used by wildlife.

Even-aged – A stand of trees of the same age class (within 15-20 years of each other).

Forest management – The application of sound forestry principles and practices to achieve certain stated objectives.

Growing stock, Acceptable – Trees capable of producing at least one 12' sawlog now or in the future.

Habitat – The ecosystem in which a particular wildlife species or group is commonly found.

Hardpan – A compact layer of soil that is impermeable to water and restricts soil drainage and rooting depth. Its depth below the soil surface is a significant influence on the site's quality.

Highgrading – Selective removal of the most economically valuable trees without regards to improving the residual forest for future value.

Improvement cut – Cutting in a stand to improve composition and quality by removing less desirable trees

Mast – Nuts, seeds or fruits produced by woody plants and consumed by wildlife.

Maturity, biological – The age range in which abundant seed is produced, typically starting at about 40 years of age.

Maturity, financial – The condition of optimal tree value.

Merchantable – A forest product that can be harvested and sold, including portions of trees.

Operability – Ease with which logging machinery could work a site. Limitations include excessive rockiness, steep slopes, or wetness.

Overmature – The age range during which significant physical decline occurs.

Overstory removal – Removing the overstory trees releasing established regeneration.

Overtopped/Suppressed tree – A tree whose crown is entirely below the general level of the crown cover, receiving no direct light either from above or from the sides.

Pasture pine – A pine that had grown out in the open in its early life, thus having grown and retained large lower limbs. It typically has multiple stems with a wide full crown, a result of the white pine weevil having eaten the leading bud and causing lateral buds to curve upward in attempts to become the leading stem.

Pioneers – Trees that are quick to seed or sprout in abandoned fields.

Poles – Trees between 5" and 9" dbh.

Pruning – Removal of tree limbs, branches or tops to improve tree form, shape or health and increase quality or growth.

Quality (of a tree) – Expressed relative to a tree's potential to become a high-value product

Regeneration – Seedlings or sprouts of commercial tree species, or artificially by planting.

Residual Stand – Those trees remaining uncut following a harvest operation.

Riparian – The forest edge along rivers and streams and around lakes, ponds and wetlands.

Sample Point – A spot in a woodlot where tree measurements and other pertinent information is recorded. The measurements taken from all the points are statistically analyzed to reflect the composition of the forest.

Saplings – Trees between 1" and 4" dbh.

Sawtimber – Trees larger than 10" dbh for softwood and 12" dbh for hardwoods and contain log quality wood. Logs are 8 - 16' long and straight and can be sawn into lumber.

Seedlings – Trees less than 1" dbh or 3' high.

Seed Tree Harvest – An even-aged management system in which a most trees are cut but a few scattered mature trees are left as sources of seed to establish a new forest.

Selection Harvest – The removal of individual or small groups of trees at regular intervals to 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.

Shelterwood Harvest – An even-aged management system involving 2 or more cuts and in which the new age class of trees develops beneath the partial shade of residual trees.

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

Slash – The tops, branches and non-merchantable parts of trees left on the ground after logging, pruning or brush cutting.

Snags – Dead standing trees, often with tops broken off, which serve as home, forage site, perches or lookouts for wildlife.

Stand – A contiguous, homogenous unit of forestland, delineated because it supports trees of common species, size, age, potential, etc.

Stocking – The 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 – The value of standing, uncut trees.

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

Thinning – Removal of some trees to reduce density in an even-aged stand, primarily to improve growth and enhance forest health.

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

Weeding – The removal of poor quality or low value trees, as well as those that are diseased or damaged.

Wildlife Habitat – An area in which a wildlife species can satisfy its particular requirements of the four components of habitat – food, water, cover and space.

Wolf Tree – A tree with a very large crown, limby and poorly formed, with little commercial value. It has same function as a snag, except that it is still alive and possibly producing mast.

Wood Yard – A place where merchantable wood harvested from the forest is brought and assembled for loading onto trucks for mill delivery.

ADDITIONAL SOURCES OF ASSISTANCE

1) Mid-Maine Forestry (MMF): We can assist with all phases of implementation of this forest management plan, including marking trees for harvest, selection of competent loggers, and harvest administration and supervision. We also maintain boundary lines, administer forestry cost-share programs, as well as supervise TSI, tree planting, trail building, and wildlife habitat enhancement practices. Contact us for further assistance.

2) Maine Forest Service (MFS): A source of educational material and information, including taxation and utilization expertise. State House Station #22, Augusta, ME 04330. 1-800-367-0223. Website: http://www.state.me.us/doc/mfs/mfshome.htm.

3) University of Maine Cooperative Extension (UMCE): A good source of educational materials and information. Website: www.umaine.edu/umext/forestry/.

4) Maine Woodland Owners (MWO): A statewide non-profit organization that promotes long-term management of private woodland. It publishes a monthly newsletter and sponsors educational programs on forest management and ownership.
P.O. Box 926, Augusta, ME 04330. 1-207-626-0005. www.swoam.org.

5) Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service: Information on, and technical assistance with, conservation and erosion control practices, as well as applications for Federal forestry cost-share programs, such as tree planting, weeding, pruning, and erosion control. Aerial photographs.
Augusta Field Office, NRCS, USDA; Tel. (207) 622-7847, X3.
Peter Abello, District Conservationist; email: <peter.abello@me.usda.gov>
Central Maine Commerce Center, 21 Enterprise Dr., Augusta, ME 04330.

6) Knox-Lincoln County Soil and Water Conservation District (SWCD): Advice and educational outreach about conservation issues.
Hildy Ellis, Administrator; email: <hildy@knox-lincoln.org>; (207) 596-2040.
893 West St., W. Rockport, ME 04865. Website: www.Knox-Lincoln.org.

7) Medomak Valley Land Trust (MVLT) and Midcoast Conservancy (MC): On January 1, 2019 MVLT, a local land trust since 1991, will be merging with MC, a newly formed regional land trust in the heart of Maine's mid-coast, established in 2015, that includes five (now six) adjacent land trusts. Its mission is "To support and promote healthy lands, waters, wildlife, and people in Midcoast Maine through conservation, education, and recreation."
Jody Jones, Executive Director; Joan Ray, Land Protection Specialist
P.O. Box 439, Edgecomb, ME 04556; 290 US Route 1, Edgecomb; (207) 389-5150.
Website: www.midcoastconservancy.org; email: news@midcoastconservancy.org.

WoodsWISE

Incentives to Stewardship Enhancement

Be Woods Wise!

Landowner Stewardship Pledge

Forest Management Planning is partially funded by the USDA Forest Service's Stewardship Program.

I understand that any practice for which I receive cost-share funds must be maintained for 10 years. In placing my application for participation in Maine's WoodsWISE program, I pledge to conserve, nurture, enhance, and protect the forest resources of my/our land, and will strive to provide a high level of stewardship for all my/our natural resources.

This plan reflects my objectives as the landowner. I accept and approve the recommendations made by the resource professional who prepared the Plan. I pledge that any management practices implemented on my land will be consistent with these recommendations and it is my intention to follow them wherever possible.

I also understand that the Maine Forest Service may contact me for the purposes of monitoring the implementation of this Plan, either by a site visit or other means of communication.

Landowner signature: _____ date: _____

Landowner signature: _____ date: _____

Background:
The above statement must be signed by the landowner and is considered part of a Forest Management Plan. It means that, in return for accepting funding for assistance in management planning, the landowner will continue to manage their land in a responsible way. It further means that the landowner has accepted the plan as meeting their objectives, and will make a reasonable attempt to follow the plan, though the landowner may amend the plan to meet changing conditions or circumstances. The pledge does not mean that the landowner is obligated to accept or adopt a plan that does not meet their own objectives for their land.

The pledge also means that if a landowner who has received cost-share funding for the preparation of the plan later chooses to change the use of the land, e.g. for housing/commercial development, or otherwise engage in activities that are inconsistent with stewardship principles, the landowner who received the cost-sharing is obligated to return the funding that was provided to them for natural resource management planning.

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 2½ 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.

Materials developed by the Maine Natural Areas Program for use by University of Maine Cooperative Extension. This fact sheet was made possible by a gift from New England Grows.

THE UNIVERSITY OF MAINE Cooperative Extension

DEPARTMENT OF CONSERVATION MAINE

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

Converse, C. K. 1984. *Element Stewardship Abstract for Lonicera spp.* Arlington,VA: The Nature Conservancy in collaboration with the International Network of Natural Heritage Programs and Conservation Data Centers. Natural Heritage Databases.

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:

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Bulletin #2506

MAINE INVASIVE PLANTS

Asiatic Bittersweet

Celastrus orbiculata
(Staff-tree Family)

Threats to Native Habitats

Asiatic bittersweet poses a serious threat to other species and to whole habitats due to its aggressive habit of twining around and growing over other vegetation. This plant has a high reproductive rate, long-range dispersal mechanisms, and the ability to root-sucker. The vines can strangle tree and shrub stems. All types of plants, even entire plant communities, can be over-topped and shaded out by the vine's rapid growth. Nearly pure stands of this vine are sometimes found in affected areas. Recently it has been discovered colonizing sand dunes in Connecticut and Rhode Island.

Description

Asiatic bittersweet is a deciduous vine that climbs by means of twining about a support. The branches are round, hairless, light to dark brown, and have noticeable lenticels (surface "bumps"). The outer surface of its roots is characteristically bright orange. Leaves are arranged alternately on the stems and vary in shape. They are typically oval with a pointed tip and range from one to five inches in length. Flowers are small, greenish-yellow, and grow in clusters from the joints between the leaves and the stems. The fruits are pea-sized capsules, which change in color from green to bright yellow as they mature. When the fruit is ripe the capsule splits open, revealing a bright orange-red berry within. Heights in excess of 50 feet have been recorded in the South. Asiatic bittersweet closely resembles our native American bittersweet (*Celastrus scandens*). The two can be distinguished by examining the locations of the clusters of flowers or fruits on the stems. American bittersweet's flowers and fruits are always found in clusters at the ends of stems, while Asiatic bittersweet's flowers are found in the joints where the leaves grow out of the stems. For accurate identification contact a natural resource professional.



Asiatic Bittersweet (photo by John A. Lynch, courtesy of the New England Wild Flower Society)

Habitat

Asiatic bittersweet can grow in a variety of habitats ranging from floodplain forests to dry, rocky slopes. It has an affinity for forest edges where it has the greatest opportunity to twine around and grow over other plants while receiving lots of light. It is commonly found along fencerows, roadsides, power lines, and in abandoned fields. It is also successful in open woods, including tree plantations. It is dispersed by birds that eat the bright red fruits in winter. It is also dispersed by humans who use dry fruiting stems in flower arrangements, and then dispose of them on compost and brush piles.

Distribution

Asiatic bittersweet is native to East Asia. It is thought to have been introduced to eastern North America in the mid-1800s for use as an ornamental. In some states it has been planted for highway landscaping as well as wildlife food and cover. It has escaped into the wild in the majority of the states where it is cultivated. In Maine, Asiatic bittersweet has been documented in five counties. It probably occurs in more, but has been under-collected due to a general lack of interest in weedy species.

Control

Small patches can be hand-pulled. Take care to remove the entire root to prevent resprouting. Low patches have been successfully removed by cutting the vine and treating the regrowth with a triclopyr herbicide. Control is more successful in taller patches when cut stems are immediately painted with triclopyr or glyphosate. This plant has a substantial seedbank, and complete eradication may depend on repeating control methods for several years.

References:

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

Dreyer, G.D. 1987. *Element Stewardship Abstract for Celastrus orbiculata.* Arlington,VA: The Nature Conservancy in collaboration with the International Network of Natural Heritage Programs and Conservation Data Centers. Natural Heritage Databases.

The Nature Conservancy of Vermont. 1998. *Invasive Exotic Fact Sheet: Asiatic Bittersweet.* 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:

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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.

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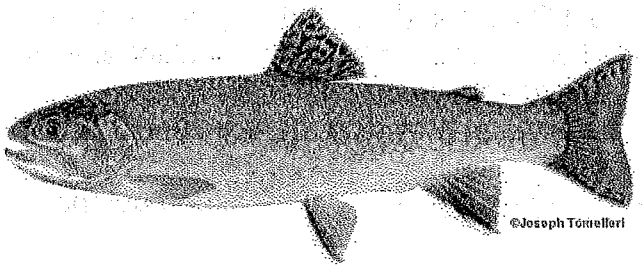
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MAINE DEPARTMENT OF
INLAND FISHERIES AND WILDLIFE



Forest Management Recommendations for Brook Trout

Background

Brook trout (Salvelinus fontinalis), commonly referred to as squaretail, brookie, and speckled trout, are native to Maine. This colorful fish is 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 where 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 brook trout in the eastern United States. There are more than twice as many watersheds supporting brook trout in Maine than all of the other 16 states within the eastern brook trout range combined. Maine is also the only 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, stable, mature wooded riparian corridors that: conserve forest soils, provide shade to reduce stream warming, protect stream water quality, provide cover for fish, provide a source of woody debris and leaf litter from mature trees that maintain critical in-stream habitat for fish and the aquatic insects they feed upon (leaves provide the energy source that drives productivity in streams). Floodplain and fringe wetlands associated with streams are 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 insures that the overall health of the stream habitat and watershed is maintained.

Maine brook trout fisheries are unique and highly valuable, but vulnerable to habitat alteration that may be caused by poorly planned and implemented land management activities, including road and trail construction, as well as timber harvesting. However, well planned

forestry operations can protect habitat and help ensure that forests remain as forest, which is the most beneficial land use for brook trout and many other fish and wildlife.

Management Recommendations

Brook trout are not afforded any special state or federal regulatory protection, and as such provided 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 entitled "Best Management Practices for Forestry", which offers guidance on managing and protecting water quality, installing road-stream crossings, and providing fish passage. This information is available at:
www.maine.gov/dacf/mfs/publications/handbooks_guides/bmp_manual.html 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 protection areas" 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 and resistant to wind-throw. In some situations wider buffers should be considered where severe site conditions (i.e., steep slope, vulnerable soils, poor drainage, snow pack, etc) increase risk to soil and stand instability. Any harvest within the riparian buffer zone should be selective and less valuable trees may remain uncut to enhance stand integrity and maturity.