FOREST MANAGEMENT PLAN

Ipcar Preserve
Town of Georgetown
Map U13 Lots 3 & 7
Sagadahoc County

Town of Georgetown
P.O. Box 436
Georgetown, Maine 04548

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This plan meets standards for the Maine Forest Service's Project Canopy cost-share program.

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INTRODUCTION

This plan describes the Ipcar Preserve owned by the Town of Georgetown, Maine and makes suggestions for its management. It is intended to be a comprehensive educational and management tool for a 10-year planning period.

Forest management is a long-term endeavor. The recommendations given here are a continuing step towards achieving the Town's stated goals. As time passes and the recommendations are implemented, this plan will need updating. This will allow incorporation of changes to the forest arising from human as well as natural, non-human influences.

The plan begins with the Town's objectives. It then provides an overview of the woodlot regarding its history, topography, soils, timber, and wildlife resources. Legal restrictions on management activities are mentioned, as well as market conditions. Accompanied with a map, forest stands are described in more detail and specific management recommendations are presented. A final table lists the high priority activities, with estimates of income and costs. The plan concludes with a glossary of forestry terms and a listing of sources available for further assistance.

MANAGEMENT OBJECTIVES

Providing recreation opportunities is a priority for this property, along with maintaining an aesthetically pleasing and healthy forest. Soil and water resources, along with wildlife habitat values, should be protected with any activity. Any timber harvesting should improve the quality, species composition, stocking, health, and growth of the remaining forest. That said, fire prevention is a crucial consideration, since the property is surrounded by homes. Timber production for income is not a priority, but is an accepted activity as long as it does not diminish long-term recreation values. Large management projects will most likely be done by contractors.

PROPERTY DESCRIPTION AND LAND USE HISTORY

The Round-the-Cove property is actually two parcels. One (called west lot in this report) is an irregularly-shaped parcel on the west side of the Old School House Road, behind the church. The other lot (called east lot in this report) includes much of the land within the loop formed by the Old School House Road and Route 127. A big fire burned through parts of the preserve in 1937. The west lot is the one least often used by townspeople. It was once pastureland, as is evidenced by stone wall remnants. Most of it was cut about 40 years ago.

The east lot was once pastureland, and allowed to regrow to forest beginning about 100 years ago. Very little harvesting (mostly trail clearing) has been conducted since then. According to "A Guide to Walking and Hiking Trails in Georgetown, Maine," in 1973,

Adolph Ipcar led fundraising efforts which resulted in the Town's purchase of this property. The west lot is 13 acres (all wooded) and the east lot is 20 acres, all of which are wooded except the 0.5 acre pond and tennis court area.

TOPOGRAPHY AND ACCESSIBILITY

Highest elevation on the west lot is about 130', near the northwest property corner. An intermittent stream flows southerly through the west lot. The terrain between the intermittent stream and Old School House Road is mostly flat. West of the stream, the land slopes steadily up to the west. One overgrown trail generally parallels the intermittent stream. A small parking area is located on the property, just northeast of the church. If/when any timber harvesting is conducted here, the parking area could perhaps be used as a wood yard, or a wood yard could be established along the road.

Highest elevation on the east lot is about 110', at the height of land in the south-southwest part of the lot. From this relatively flat area, the land slopes down in all directions. Steepest slopes are found on the east side, facing the ocean. The terrain becomes more challenging here, with some ledgy areas. The parking area near the tennis court provides ample convenient access for recreation. For any timber harvesting, a wood yard could be established at an (as yet unspecified location) on relatively flat, well-drained land along the Old School House Road.

Skid trails used for any timber harvesting could be cleared of any brush and used as recreation trails after harvesting is complete.

SOILS

Please refer to the soils map on page 3a, on which the soil types of the Town's property are delineated. The letter codes pertain to the particular soil types, as described below. Soils information is from *Soil Survey of Sagadahoc County, Maine* (USDA, NRCS)

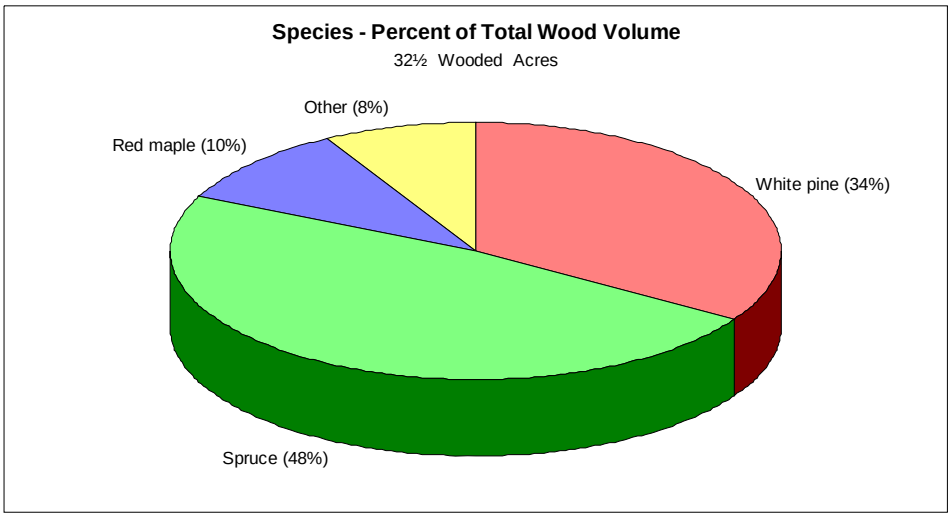
		Factors Affecting Management		
	Erosion	Equipment	Seedling	Windthrow
Soil Name	Hazard	Limitation	Mortality	Hazard
Bo Biddeford	slight	severe	severe	severe
HsB Hollis	slight	mod.-severe	severe	severe
HsC Hollis	slight	mod.-severe	severe	severe
RhC Rock land-Hollis	slight	severe	severe	severe
RhD Rock land-Hollis	slight	severe	severe	severe

BOUNDARIES

The property has not been surveyed. Remnants of old wire fence and stone wall were seen along some parts of the west lot's boundaries. Pink flags and old wire fence mark part of the south boundary of the east lot. These lots have numerous abuttors, with irregular boundary lines. Ideally, the property should be surveyed and the unclear boundary lines located (blazed and painted.) It's important to do this before any activities such as timber harvesting happen. Once the property lines are marked, they should be inspected yearly, and reblazed and repainted every ten years.

TIMBER RESOURCE

For purposes of accurately describing the forest and setting management priorities, different forest types and stands were identified. These are described in the Glossary and map legend. A timber inventory was conducted in July 2013. Inventory data was taken at 18 variable radius (15 BAF prism) plots on cruise lines running N82E (true bearing.) Data was processed using the INVENT Forest Inventory Program from the University of New Hampshire. Overall volume estimate is accurate within ±14% nine times out of ten. Error is greater for individual species, products, and values.



In the inventory, 48% of the overall volume was determined to be red spruce, followed by white pine (34%), red maple (10%), aspen (6%), with small amounts of hemlock, aspen, and red oak(3% or less each.) Twenty-six percent of the overall volume is sawtimber quality. This reflects the relatively high percentage of sawtimber in the east lot.

Most of the east lot is a mature red spruce stand, about 100 years old. Townspeople have enjoyed walking there for many years, and appreciate lack of undergrowth, because it allows them to enjoy seeing the tall trees. Although this forest is very aesthetically pleasing today, we as humans unfortunately cannot "keep" the forest like this forever. Like humans,

trees grow old and die. The forest is even-aged, old, and subject to stresses of overcrowding, winter storms, shallow soils, and wind. Blowdowns have happened and will continue to happen. This may continue at a slow pace for ten years (maybe even more,) or a major storm may come this winter and blow down most of the forest. We have no way of knowing. We have choices. First, we could do nothing, and allow nature to take her course. We would have an undetermined number of more years to enjoy the forest as it has been. When significant blowdowns occur (and this will happen at some point), we will be faced with a salvage operation to clean up the trees, which will have become more difficult and less safe to harvest than if they were standing. This will noticeably lower their value. Before the trees are cleaned up, they will be a fire hazard and difficult/impossible to walk through.

A second option is to harvest the mature spruce now, before they blow over. This will create an opening that is about 15 acres, with scattered white pine, hardwood, and shorter spruce trees (less than 40'.) The forest would look very different than it does now, and new trees will start to grow (natural regeneration.) Income from the sale of the spruce could be used for other stewardship activities on this property as well as the Round-the-Cove forest, such as survey work, invasive plant control, and trail building.

Conducting a partial harvest (selection cut) is not a realistic option. This has been tried many times by different foresters, loggers, and landowners, but the result is the same. Opening up mature spruce stands on shallow soils and exposed to the wind results in blowdown of the remaining trees.

There are options for timber harvesting systems, if the town decides to proceed with some harvesting on this property. Public scrutiny will be at a high level here. Because of the relatively high volume of timber that is recommended for harvest on the east lot, and the subsequent large amount of slash (tree tops and branches), the use of **horses and/or small equipment** would be problematic.

A **cut-to-length harvesting system** could be appropriate. It generally involves two machines in the woods. One machine harvests the trees and cuts them into appropriate lengths for sale, leaving the tree tops and branches low to the ground in the woods, and one machine picks up the wood products, puts them on a trailer, and carries (not drags) them out of the woods. They do not require much space for a wood yard. **Skidders** are a common type of machine used for harvesting wood, and they may be suitable for harvesting on this lot.

Whole tree chipping operations leave a "clean, vacuumed" appearance of the woods, since most of the tops and limbs are removed rather than left on the ground. This type of harvest is aesthetically pleasing to many people. It would be an efficient and visually appealing way to deal with the tops and limbs of the spruce trees, if considerable harvesting is done. Removal of much of the slash by chipping would significantly reduce the fire hazard following harvesting. However, removal of large amounts of biomass can be a concern because nutrients are taken from the site rather than left to decompose into the soil.

Perhaps even more important than the type of harvest system is the skill and attitude of the logger, and the choice of correct season for harvesting (avoiding operations on wet

ground, and the subsequent soil damage.) When any harvesting is done, the area should be well-signed so the public knows what is going on. Active logging areas should be off-limits for the public. It's a good idea to notify abuttors prior to logging activity.

Overall, the woodlot has excellent potential for long term production of quality wood products (sawlogs, etc.) while providing recreation opportunities and maintaining a healthy, aesthetically pleasing forest. Young forests, like older forests, can be aesthetically pleasing.

INSECT, DISEASE AND WEATHER INFLUENCES

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

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

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

FOREST HEALTH

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

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

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

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

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

WILDLIFE

The property provides diverse habitat types for a variety of wildlife species. The most important habitat element is the pond. Although it is small and close to human activity, it provides a freshwater habitat that is uncommon in the immediate area. Other habitats present include the intermittent stream in the west lot, shrub growth, large den (live hollow) trees, and snags (standing dead) trees. Many animals feed on the nuts and seeds (hard mast) provided by the oaks in the west lot.

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

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

No vernal pools were noted during the field work for this plan, although one or more may exist. Vernal pools are depressions that fill with water from spring runoff. The absence of fish in these pools makes them ideal breeding and feeding areas for local amphibian populations. Any management activity which impacts the pool directly or the water regime in a vernal pool indirectly may affect the survival of these amphibians. The best time to look for vernal pools is in the spring. They are usually found in shallow depressions in the ground, at the bottom ridges, etc. During harvesting, these pools should be identified and should not be driven through nor should tops of harvested trees be left in them.

The Department of Inland Fisheries and Wildlife (DIFW) and Maine Natural Areas Program (MNAP) have identified the west part of the west lot as part of a larger deer wintering area that borders on Charles Pond to the west. Management activities recommended in this plan should not detract from the value of this habitat. Along with the surrounding landscape, the property is part of Atlantic salmon critical habitat.

No evidence of other threatened or endangered plants or animals was noted during the field work for this plan. The MNAP has not identified any rare, threatened, or endangered species or other important habitats on the property. Should such plants, animals, or habitats be discovered, appropriate measures will be adopted to ensure their protection.

RECREATION, AESTHETICS, & CULTURAL FEATURES

Hiking, cross-country skiing, and wildlife observation are some recreational activities enjoyed by the public. A marked trail begins at the parking area near the tennis court and continues into the east lot. Safety is a primary concern; large dead limbs, tipped-up trees, and hazardous dead trees near the trails have been and should continue to be cleared promptly.

No formal botanical inventory was conducted, but the shrubs noted during field work for the plan were: low bush blueberry, huckleberry, juniper, witch hazel, spirea, viburnum, beaked hazelnut, alternate leaf dogwood, alder, and winterberry holly. Ground plants noted were: Canada mayflower, gold thread, star flower, sarsaparilla, bunchberry, and bracken fern. Species diversity and the number of ground plants are both low, most likely due to deer browse.

LEGAL RESTRICTIONS

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

For areas greater than 10 acres, all boundary lines within 200' of cutting must be clearly marked. It is highly recommended that these lines be marked even if the harvest area is less than 10 acres. During harvesting operations of any size, all slash must be removed at least 25' from adjoining property lines and 50’ from public roads. There are no shoreland

zone areas on this property.

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

Maine's Natural Resources Protection Act (NRPA) regulates work in and adjacent (within 75') to lakes, streams, freshwater wetlands and tidal wetlands (as well as 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 Department of Environmental Protection (DEP) for work such 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, wetlands or fragile mountain areas, and
- Harvesting operations above 2,700' in elevation

Exempt activities include:

- Temporary structures, such as a road crossing using a temporary bridge, if fill is not 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 any road crossing of a stream, or for soil disturbance adjacent to great pond, river or stream and DEP is notified prior to starting the activity;
  3) the area is not a forested wetland mapped as a significant wildlife habitat; and
  4) road construction is not used to access development, but is primarily used for forest management activities.

COMMERCIAL HARVESTS OF WOOD PRODUCTS

Properly done, commercial harvests can be one part of an environmentally sound, multiple-use forest management system. Through cutting, a forester manipulates the vegetative structure within a forest stand to attain the landowner's objectives. Sawtimber can

still be grown and harvested while managing wildlife habitat and improving recreational opportunities. Typically, low quality and unhealthy trees and/or mature individuals are chosen for removal. This allows for faster growth to occur in the more valuable, vigorous, immature trees. It also favors the release or establishment of natural regeneration of desired species. The regeneration is part of 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 and overall value of the timber and wildlife resources of the property.

Commercial harvesting should be conducted on a marked tree or species designation basis (for example, harvest all merchantable fir in a given stand), and under the supervision of a professional forester. This will ensure that the selection of trees for cutting is in the town's best short- and long-term interest, 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.

Recreational and aesthetic concerns and wildlife needs are given appropriate emphasis during timber marking and while supervising harvesting activities. Yards and skid roads are located to minimize soil erosion and visual impact, as well as to improve interior access. Cutting along existing roads, trails, streams and vistas needs to be especially carefully done to maintain an aesthetically pleasing appearance. Appropriate numbers of wildlife trees and other critical areas should be left to provide both cover and food. Some areas can be left uncut to provide habitat values with minimal human impact.

ESTIMATES OF TIMBER VOLUMES AND VALUE BY SPECIES

Town of Georgetown–Ipcar Preserve

July 18, 2013

Products, Species		Volume[1,2]	Stumpage[3] Rate	Value
Sawtimber:		MBF	$ per MBF	
	White pine - grade	70	150	10500
	White pine - pallet	24	50	1200
	Red spruce	113	90	10170
	Totals:	207 MBF		$21,870
Pulpwood:		Cords	$ per cord	
	White pine	372	8	$2,976
	Hemlock	47	10	470
	Red spruce	531	15	7965
	Aspen	26	15	
	*Hardwood pulp & firewc	212	15	3180
	Totals:	1,188 cords		$14,591

Total Estimated Stumpage Value = $36,461

MBF = thousand board feet of lumber

These numbers are estimates of the total standing volume, **not** the recommended harvest volumes.

[1] Total timber volume estimate is ±14% nine times in ten. Error is greater for individual species or products

[2] Pulpwood volumes include topwood from sawtimber trees.

[3] Stumpage price estimates based on recent local averages, summer 2013.

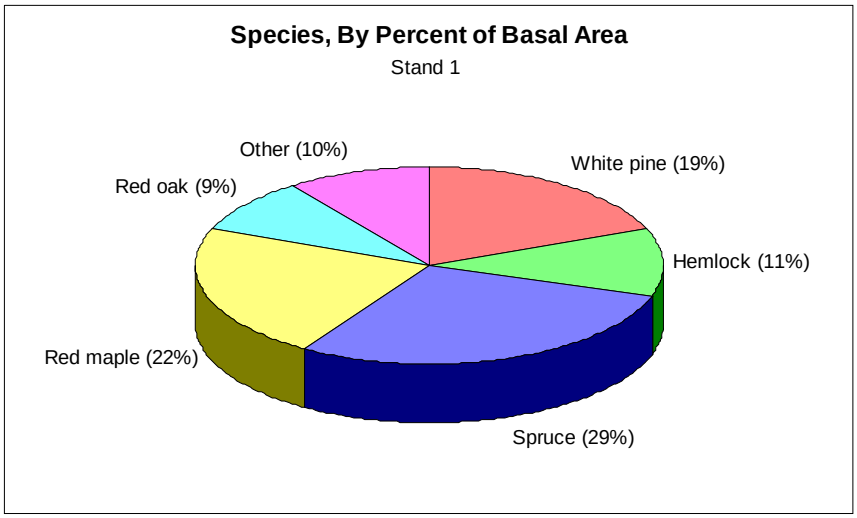
*Species include red maple, white birch, and red oak

Barbara Brusila, LPF # 590

STAND DESCRIPTIONS AND RECOMMENDATIONS

STAND 1 –MIXEDWOOD POLETIMBER 13 acres

This stand includes all of the west lot. It appears to have been harvested about 40 years ago. Unlike the other town lots, there are no marked trails. Establishing recreational trails here is a relatively low priority, since other parts of the town forest have longer trails than are possible here, and they provide more striking scenery. Use by townspeople is primarily for hunting. Soils are generally well-drained, except along the intermittent stream. This stream would need to be crossed if any timber harvesting is conducted in the west part of the stand. The simplest solution would be to cross when the ground is frozen. Alternately, wooden bridge mats could be used to allow equipment to cross without rutting up the ground. Site quality is good to excellent.



As seen in the above chart, a mixture of species grows here. Red spruce is the most common with 29% of the total basal area, followed by red maple (22%), white pine (19%), hemlock (11%), red oak (9%), and lesser amounts of balsam fir, aspen, and white birch. The stand is mostly even-aged, about 40 years old. Average merchantable tree diameter is 9" and ranges from 1-26" for all measured trees. Basal area is 171 ft^2/acre. Most trees are 40-60' tall. The forest canopy is closed. Quality of most trees is good to excellent. Potential growth, under management, is 0.8 cord per acre per year. Standing volume is 35 cords plus 1.8 MBF per acre. A relatively low 9% of the total volume is sawtimber quality. This percentage could be increased over the long term through careful selection harvests. Regeneration includes seedling and sapling size trees of all of the above species. Deer browsing is evident on shrubs and ground plants.

RECOMMENDATIONS

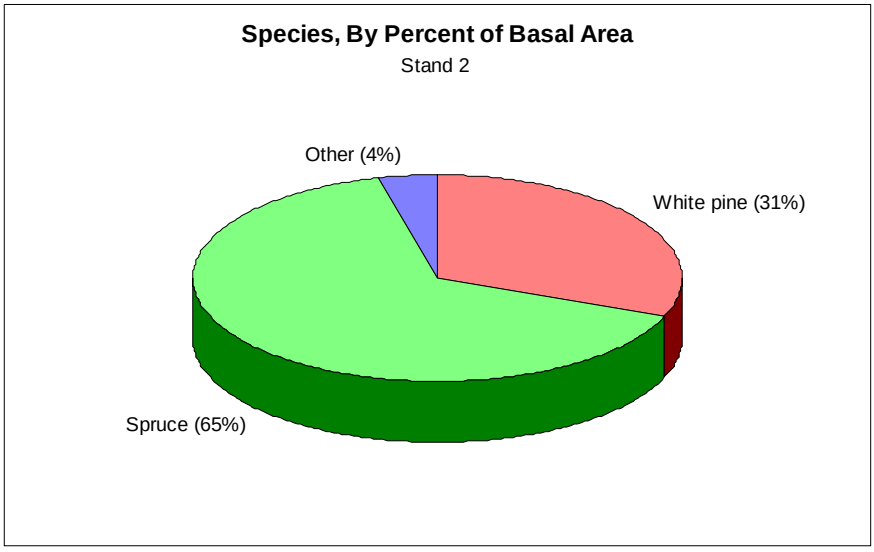
The long-term goal is to improve the quality, growth, health, and density of the forest while maintaining the recreational and aesthetic values. The desired future stand condition is a forest with a mixture of tree species, ages, and sizes with adequate growing room for individual trees. In the short term, a selection harvest could be conducted here. Conducting

this harvest in conjunction with a harvest in the east lot makes logistical and economic sense. Approximately 30% of the standing volume could be cut, favoring white pine, red spruce, and red oak. Another option is to simply allow this stand to grow, although this would result in lower growth rates of the trees and increased mortality (due to overcrowding.)

STAND 2 –SOFTWOOD SAWTIMBER 16.5 acres

This stand includes most of the east lot. Of all the stands on the two Town Forests, this one has so far drawn the most attention and debate regarding management options. The options for this stand are discussed in detail under "Timber Resources" on page 4. The forest is even-aged, about 100 years old, regrew from pastureland, and has not been managed or thinned.

With the exception of ledgy areas in the east part of the stand, accessibility for both recreation and any timber harvesting is very good. Shallow soils and ledge limit tree rooting depth in some areas. Site quality is good to excellent for pine and spruce on the deeper soils.



As seen in the above chart, red spruce is the most abundant tree with 65% of the total basal area, followed by white pine (31%) and a few red maple and pitch pine trees. Average merchantable tree diameter is 12" and ranges from 1-30" for all measured trees. Basal area is a high 190 ft^2/acre. Most spruce trees are 60-70' tall, and the pine are generally even taller. The forest canopy is closed, except in the small blowdown patches. Quality of the spruce is generally excellent; quality of the pine is good to excellent, depending on the size of limbs and straightness of the trunks. Current growth rates are quite slow due to overcrowding. Standing volume is a high 37 cords plus 10.5 MBF per acre. A high 36% of the standing volume is sawtimber quality. Regeneration is practically non-existent, except in the small blowdown areas where seedling and sapling red spruce grow, along with a few balsam fir.

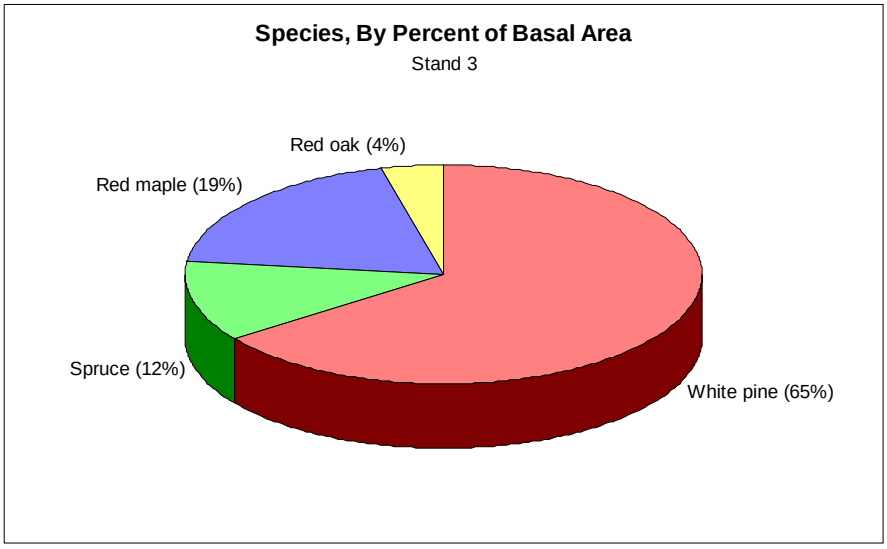
RECOMMENDATIONS

The very long-term goal is to regenerate this mature forest and to encourage the growth of a new forest that could be thinned beginning at a younger age. The desired future stand condition is a forest with a mixture of tree species, ages, and sizes with adequate growing room for individual trees. It will take a good while to achieve this condition. In the meantime, the recommended harvest of the mature spruce would change this mid/late successional habitat into an early successional habitat for wildlife. These are noticeably different habitats, in appearance as well as ecological values. Neither is "better" than the other; they are just different stages in the cyclical process of forest succession.

A harvest of the larger spruce is recommended. Hardwoods should be retained, along with clumps of shorter spruce trees (less than 40' in height.) White pine tends to be more firmly rooted than red spruce, and most are taller as well (and thus more "used to" the wind.) Some (or many) of these pine could be left for aesthetic enjoyment and as a seed source. They can also provide wildlife habitat (nest and perch sites.)

STAND 3 –SOFTWOOD POLETIMBER 3 acres

This relatively small stand is located in the northwest part of the east lot. It was likely burned about 40 years ago. The forest is younger here, and pine is more abundant than in the rest of the lot. It is easily accessed from the Old School House Road, and the land slopes towards it. Soils are well drained. Site quality is good to excellent, depending on soil depth.



As seen in the above chart, white pine is the most common tree with 65% of the total basal area, followed by red maple (19%), red spruce (12%), and red oak (4%.) The stand is even-aged, about 40 years old. There are a few scattered larger, older trees. Average merchantable tree diameter is 10" and ranges from 1-20" for all measured trees. Basal area is 195 ft^2/acre. Most trees are 40-60' tall. A few small gaps exist in the forest canopy. Quality of the pine is good to excellent except some of the larger trees that were weeviled in the past.

Potential growth, under management, is 0.8 cord per acre per year. Standing volume is 41 cods plus 3.0 MBF per acre. The sawtimber percentage of total volume is still rather low, but many trees are just not quite big enough yet to be sawtimber. Regeneration includes a few seedling and sapling red spruce, red oak, and white pine.

RECOMMENDATIONS

The long-term goal is to improve the quality, growth, health, and density of the forest while maintaining the recreational and aesthetic values. The desired future stand condition is a forest with a mixture of tree species, ages, and sizes with adequate growing room for individual trees. In the short term, a selection harvest could be conducted here. Conducting this harvest in conjunction with a harvest in the rest of the lot makes logistical and economic sense. Approximately 30% of the standing volume could be cut, favoring better formed white pine. Another option is to simply allow this stand to grow, although this would result in lower growth rates of the trees and increased mortality (due to overcrowding.)

CONCLUSIONS

This property has excellent short and long-term potential for continuing to provide recreation opportunities while producing forest products for sale and maintaining a healthy, aesthetically pleasing forest ecosystem. This author recommends that the town establish a dedicated Town Forest Account to keep track of income, expenses and grants related to the town forest, if this has not already been done. Income from timber harvests could be used to help pay for stewardship activities such as a boundary survey.

In the text of this plan, this author has attempted to describe different management options for this property, especially the mature spruce stand. Having considered the options, this author recommends the following plan of action. It is the privilege and responsibility of townspeople to discuss their options and these recommendations, so they can proceed with stewardship of this special place.

SUMMARY OF MANAGEMENT PRIORITIES
2013-23

Year	Stand	Activity	Estimated Income/(cost)
2014	All	Locate, blaze and paint boundaries	-($??)
2014-9	1	Conduct marked wood selection harvest in conjunction with harvest on east lot, if desired (estimate 130 cords)	$1,800
2014-16	2	Harvest mature spruce, leaving hardwoods and some pine to grow (estimate 350 cords & 70 MBF)	$12,000
2014-16	3	Conduct marked wood selection harvest in conjunction with harvest in stand 2 (estimate 30 cords & 3 MBF)	$400
2013-23	All	Clear walking trails as desired	-($ negligible)
2023	All	Update management plan	($??)

GLOSSARY

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

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

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

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

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

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

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

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

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

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

Maturity, biological - the age range in which abundant seed is produced, typically starting at about 40 years of age

Maturity, financial - condition of optimal tree value

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

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

Overmaturity - the age range in which significant physical decline occurs

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

Poles - trees between 6 and 9 inches DBH

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

Regeneration - seedlings or sprouts of commercial tree species

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

Saplings - trees between 1 and 5 inches DBH

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

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

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

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

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

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

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

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

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

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

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

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

ADDITIONAL SOURCES OF ASSISTANCE

1) Mid-Maine Forestry: We can assist with all phases of implementation of this forest management plan, including establishing low-impact forestry demonstrations, 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. Please contact us for further assistance.

2) Maine Forest Service: A good source of educational material and information, including taxation and utilization expertise. Information and applications for Federal forestry cost-share programs for practices such as tree planting, weeding, pruning, erosion control, and forest management plans.
   State House Station #22, Augusta, ME 04330. 1-800-367-0223 (in Maine) or 1-207-287-2791 web site: www.maineforestservice.org

3) University of Maine Cooperative Extension (UMCE): A good source of educational materials and information.
   web site: www.umext.maine.edu/topics/forestry

4) Natural Resources Conservation Service (NRCS), and the Androscoggin-Sagadahoc Co. Soil and Water Conservation District (SWCD): Information on, and technical assistance with, conservation and erosion control practices.
   Androscoggin-Sagadahoc Co.NRCS, or SWCD, 254 Goddard Road, Lewiston, Maine 04241. Tel. 207-753-9400 web site: www.androscogginswcd.net

5) Small Woodland Owners Association of Maine (SWOAM): A statewide non-profit organization which promotes long-term management of private woodland. It publishes a monthly newsletter, and sponsors educational programs on a variety of issues relating to forest management and ownership.
   SWOAM, P.O. Box 836, Augusta, ME 04332-0836. 1-207-626-0005.
   web site: www.swoam.org

Woodland Management Services
Green Certified Resource Managers

MID-MAINE FORESTRY

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

1320 Western Road • Warren, Maine 04864
(207) 273-4046
email: mid-maine_forestry@juno.com

FOREST MANAGEMENT PLAN

Ipcar Preserve
Town of Georgetown
Map U13 Lots 3 & 7
Sagadahoc County

Town of Georgetown
P.O. Box 436
Georgetown, Maine 04548

Prepared by:

Barbara Brusila

Barbara Brusila
LPF #590

September 26, 2013

This plan meets standards for the Maine Forest Service's Project Canopy cost-share program.

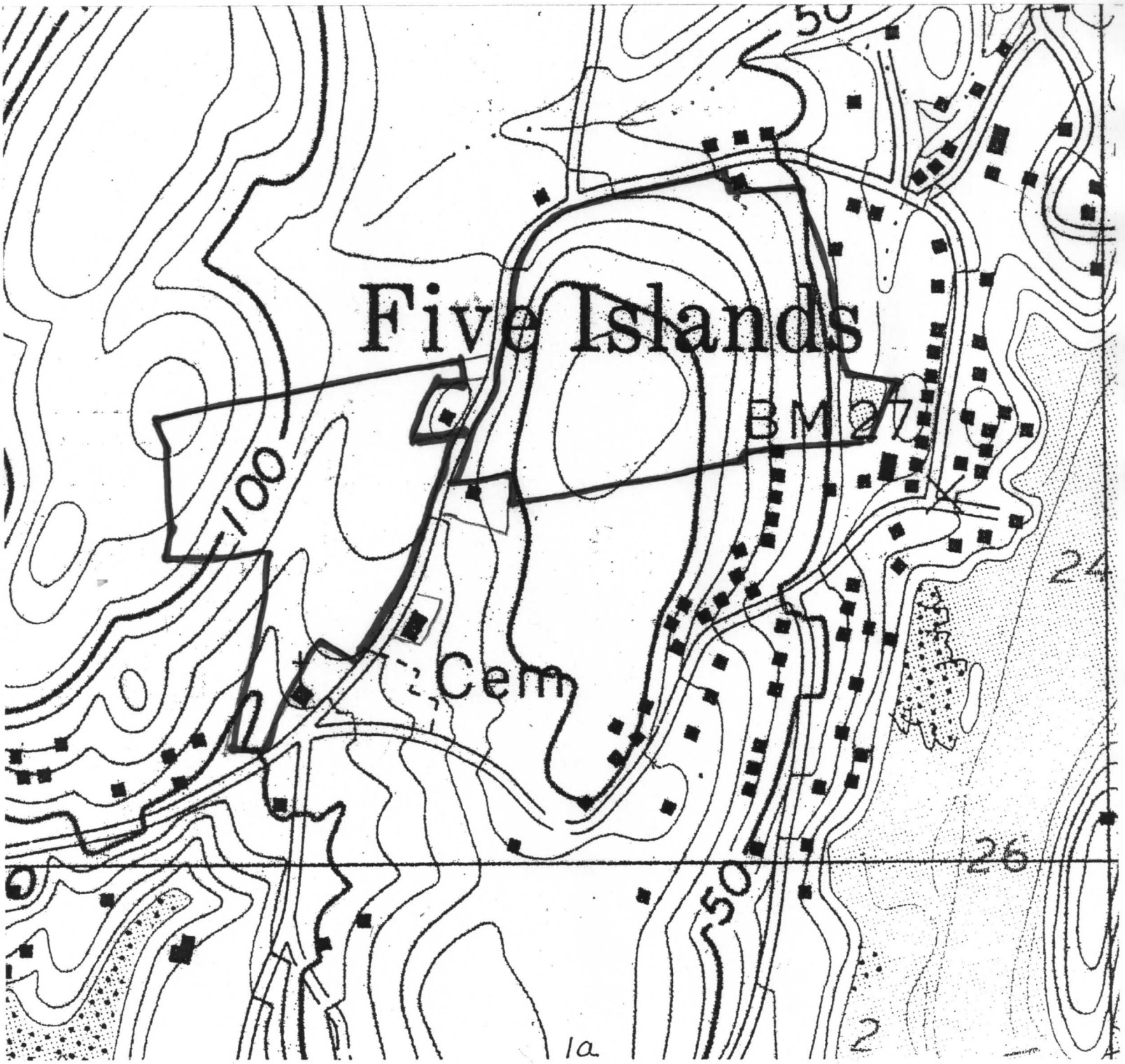
Recycled Paper

LOCATION / TOPOGRAPHIC MAP

Town of Georgetown
Ipcar Preserve
Map U13 Lots 3 & 7
Georgetown, Maine

N

1"=400'

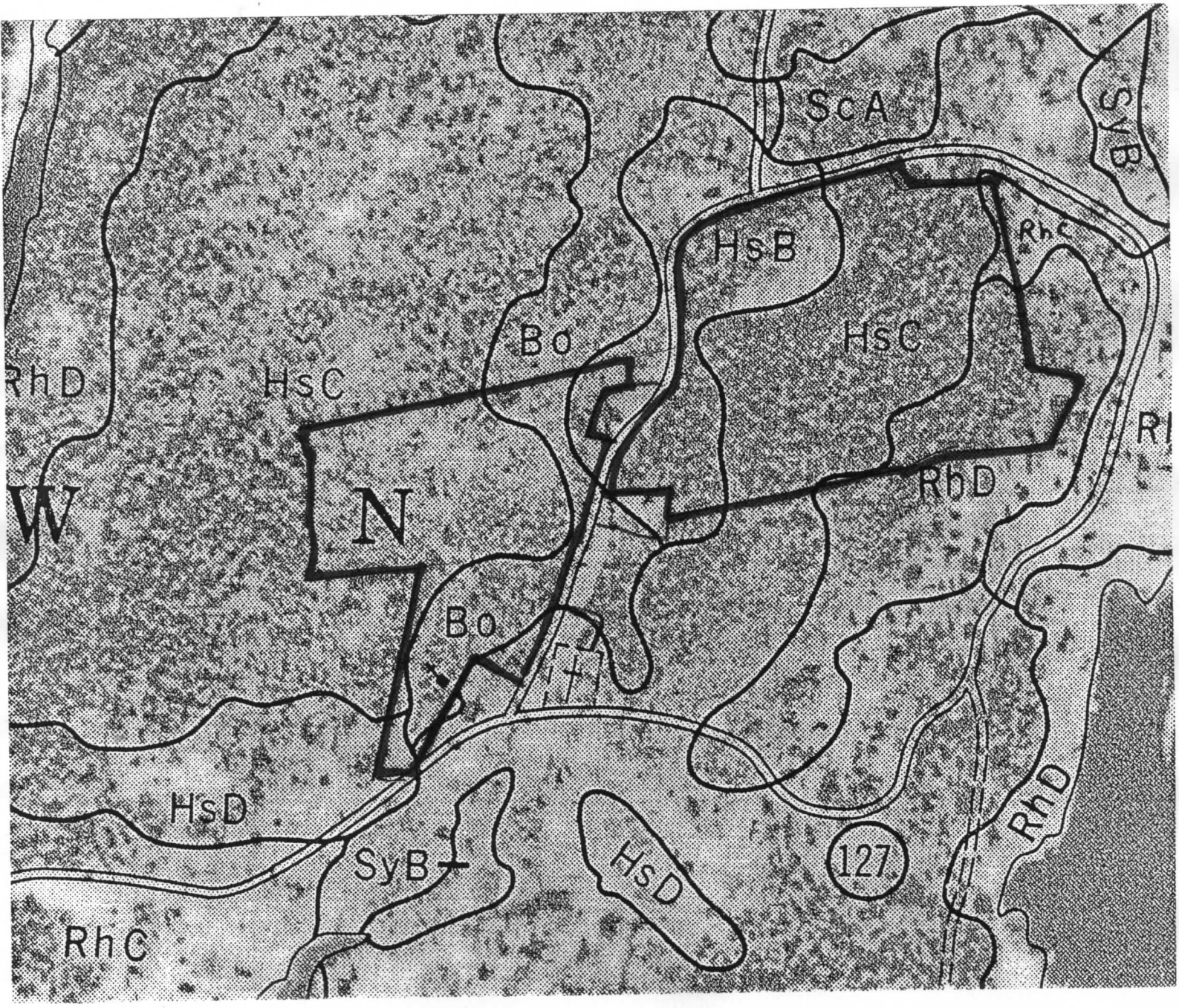


SOILS MAP

Town of Georgetown
Ipcar Preserve
Map U13 Lots 3 & 7
Georgetown, Maine

N

1" = 400'

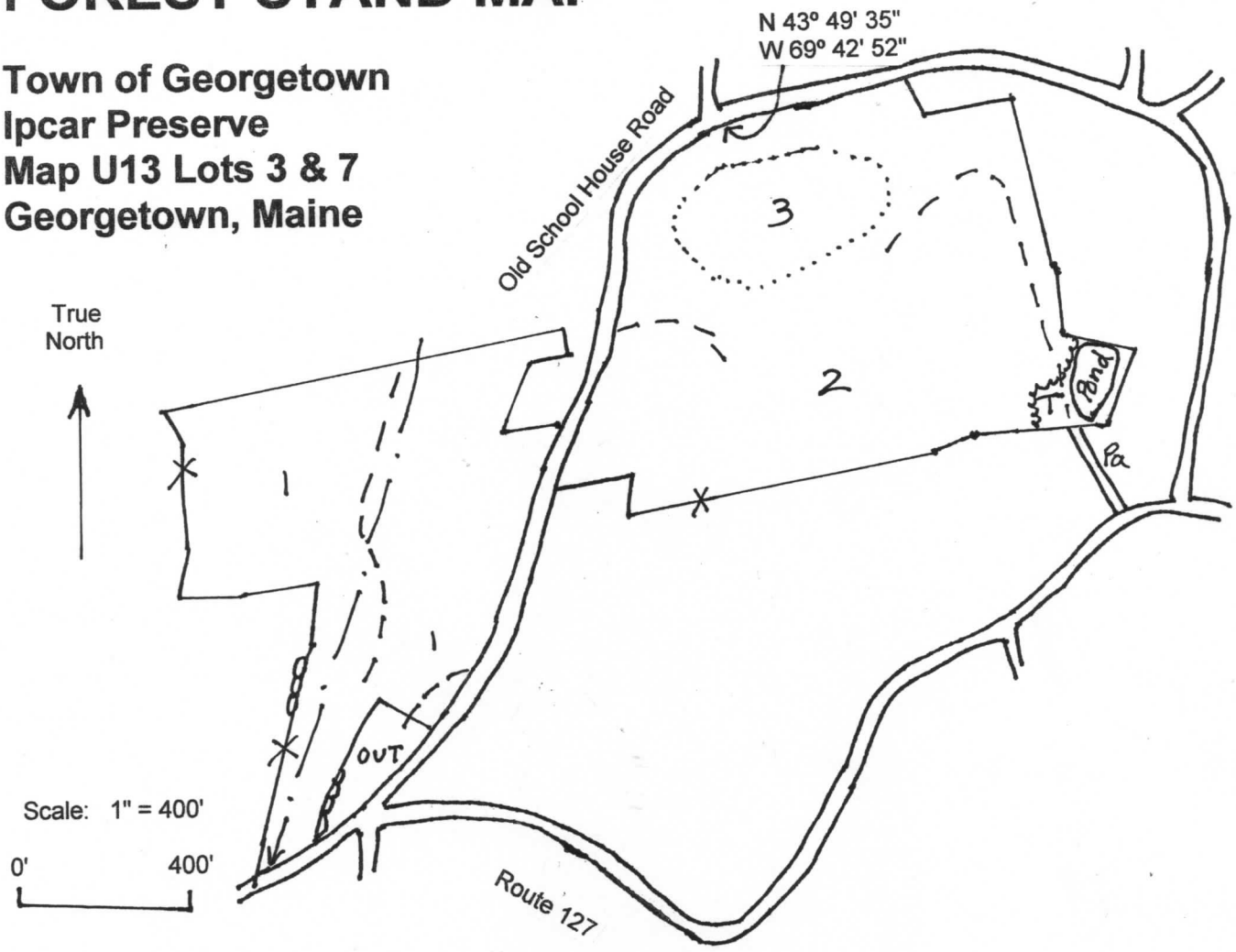


SOILS LEGEND

Bo - Biddeford silt loam, 0-3% slopes; very poorly drained; level; strongly acid.
HsB - Hollis very rocky fine sandy loam, 0-8% slopes; shallow to bedrock; somewhat excessively drained; acid.
HsC - Hollis very rocky fine sandy loam, 8-15% slopes; shallow to bedrock; well drained; acid.
RhC - Rock land – Hollis soil material; 0-15% slopes; shallow; bedrock on more than 50% of surface
RhD - Rock land – Hollis soil material; 15-45% slopes; shallow; bedrock on more than 50% of surface

FOREST STAND MAP

Town of Georgetown
Ipcar Preserve
Map U13 Lots 3 & 7
Georgetown, Maine



LEGEND

Stand number	2
Stand boundary	.....
Forest edge	mmm
Tennis court	T
Pond	Pond
Wire fence	-X-
Stone wall	oooo
Parking	Pa
Intermittent stream	~
Walking trail	— — —

FOREST STANDS

			Acres
1	M2A*	Mixedwood poletimber	13
2	S3A/B	Softwood sawtimber	16.5
3	S2B	Softwood pole/sawtimber	3
		Total woodland	32.5
		Pond, tennis court area	0.5
		Total property	33 ac.

*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=15-40%

Map detail from town tax map
and field reconnaissance July 2013
For forest management purposes - **Not a boundary survey**.

Barbara Brusila
Barbara Brusila
LPF #590
July 25, 2013

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

September 17, 2013

Barrie Brusila
Mid-Maine Forestry
Via email: midmaineforestry@gmail.com

Re: Forest Management Plan Review

Dear Ms. Brusila:

In response to your request received on September 17, 2013, I have searched our data system for information on rare or unique botanical features, rare animal populations, and essential or significant wildlife habitats in the vicinity of the Ipcar Preserve property in Georgetown.

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

A Deer Wintering Area is associated with the parcel, near Charles Pond. Good management of this habitat is consistent with good forestry, and your regional wildlife and/or fisheries biologist (see the checklist for contact info) is available to assist you in maintaining its integrity while allowing for forest management and timber procurement.

According to the information currently in our files, there are no rare species or important habitats documented within the property, though the area is mapped as Atlantic salmon critical habitat. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare features.

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

Sincerely,

Lisa St. Hilaire

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

cc: Keel Kemper, Wes Ashe, MDIFW

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

Forest Management Plan Review

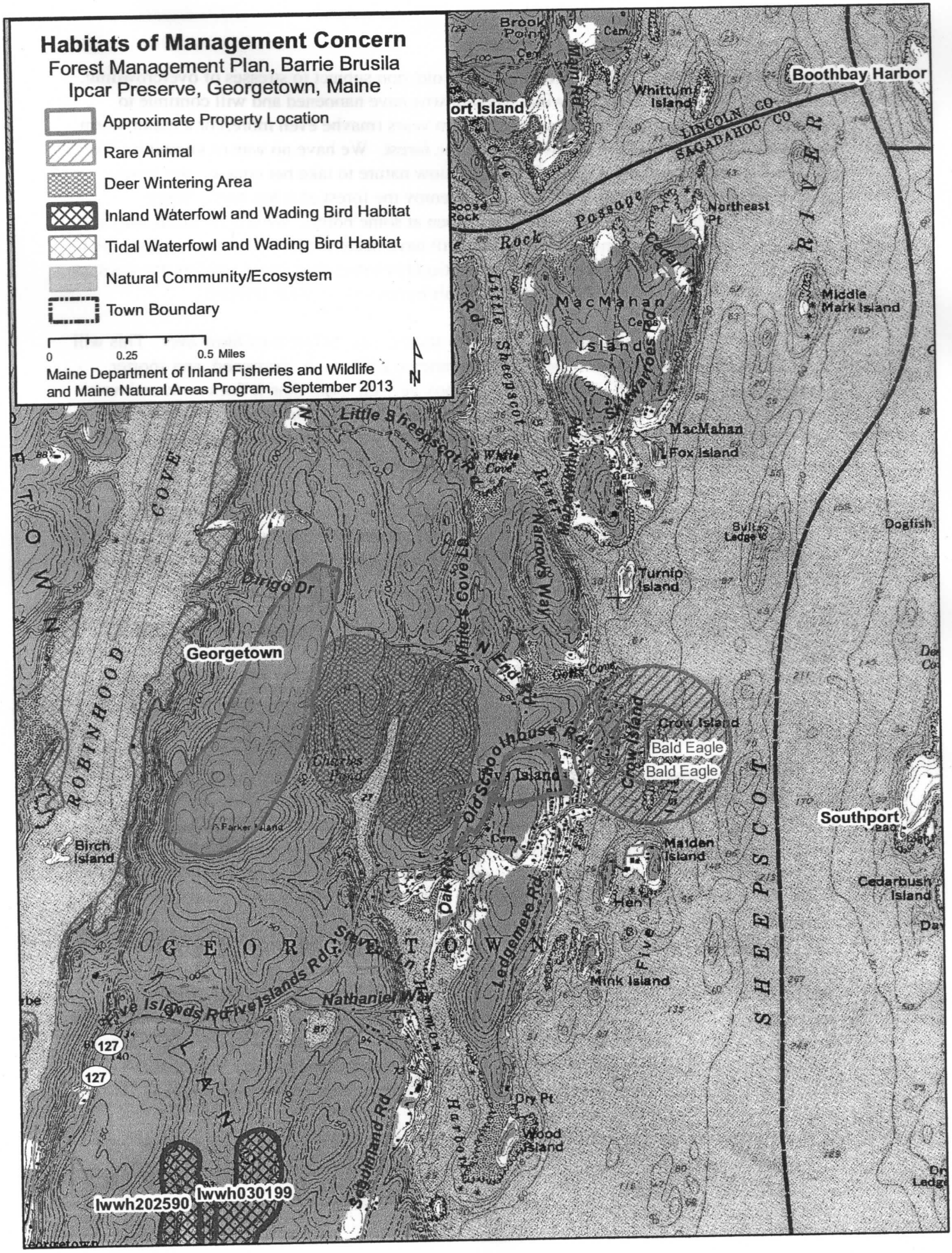
Forester: *Barrie Brusila* Landowner: *Ipcar Preserve* Lot Name: *Ipcar Preserve*

Date Received: *9/17/2013* Town: *Georgetown* County: *Sagadahoc* MDIFW Region: *B*

PLANT, ANIMAL, AND HABITATS	Documented to occur at the site? YES	NO	Contact the following biologist to discuss conservation considerations
Plants: rare, threatened and/or endangered *If yes, see attached summary table.*	☐	☒	
Natural Communities: rare and/or exemplary *If yes, see attached summary table.*	☐	☒	
Animals: rare, threatened, or endangered *If yes, see attached summary table.*	☐	☒	
Mapped Essential Wildlife Habitats: Roseate tern Piping plover and Least tern	 ☐ ☐	 ☒ ☒	
Mapped Significant Wildlife Habitats: Deer wintering area Inland waterfowl and wading bird habitat Tidal waterfowl and wading bird habitat Significant vernal pool Shorebird roosting area	 ☒ ☐ ☐ ☐ ☐	 ☐ ☒ ☒ ☒ ☒	MDIFW Regional Wildlife Biologist Keel Kemper, 547-5319
Wild brook trout habitat	Yes ☐	Unknown ☒	
Atlantic Salmon: Salmon critical habitat Salmon stream habitat	Yes ☒ Yes ☐	No ☐ Unknown ☒	USFWS Biologist, Wende Mahaney, 866-3344 Ext 118 For more information: http://www.fws.gov/mainefieldoffice/Atlantic_salmon.html
Canada lynx: The town & parcel may provide habitat for lynx, please contact the regional biologist	☐	☒	

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

Review completed by: LRS
Date: 9/17/2013
MNAP #: 2013-09-17-LS-04


Habitats of Management Concern
Forest Management Plan, Barrie Brusila
Ipcar Preserve, Georgetown, Maine
Approximate Property Location
Rare Animal
Deer Wintering Area
Inland Waterfowl and Wading Bird Habitat
Tidal Waterfowl and Wading Bird Habitat
Natural Community/Ecosystem
Town Boundary
0
0.25
0.5 Miles
Maine Department of Inland Fisheries and Wildlife
and Maine Natural Areas Program, September 2013
N
Boothbay Harbor
LINCOLN CO
SAGADAHOC CO
SHEEPSCOT RIVER
Whittum Island
Northeast Pt
Middle Mark Island
MacMahan Island
MacMahan
Fox Island
Turnip Island
Dogfish
Georgetown
Crow Island
Bald Eagle
Bald Eagle
Southport
Malden Island
Cedarbush Island
Mink Island
Five
Dry Pt
Wood Island
Birch Island
Parker Island
Cherries Pond
Dirigo Dr
Little Sheepscot Rd
Old Boothouse Rd
Ledgemere Rd
Nathaniel Way
Five Islands Rd
Seguinland Rd
127
lwwh202590
lwwh030199