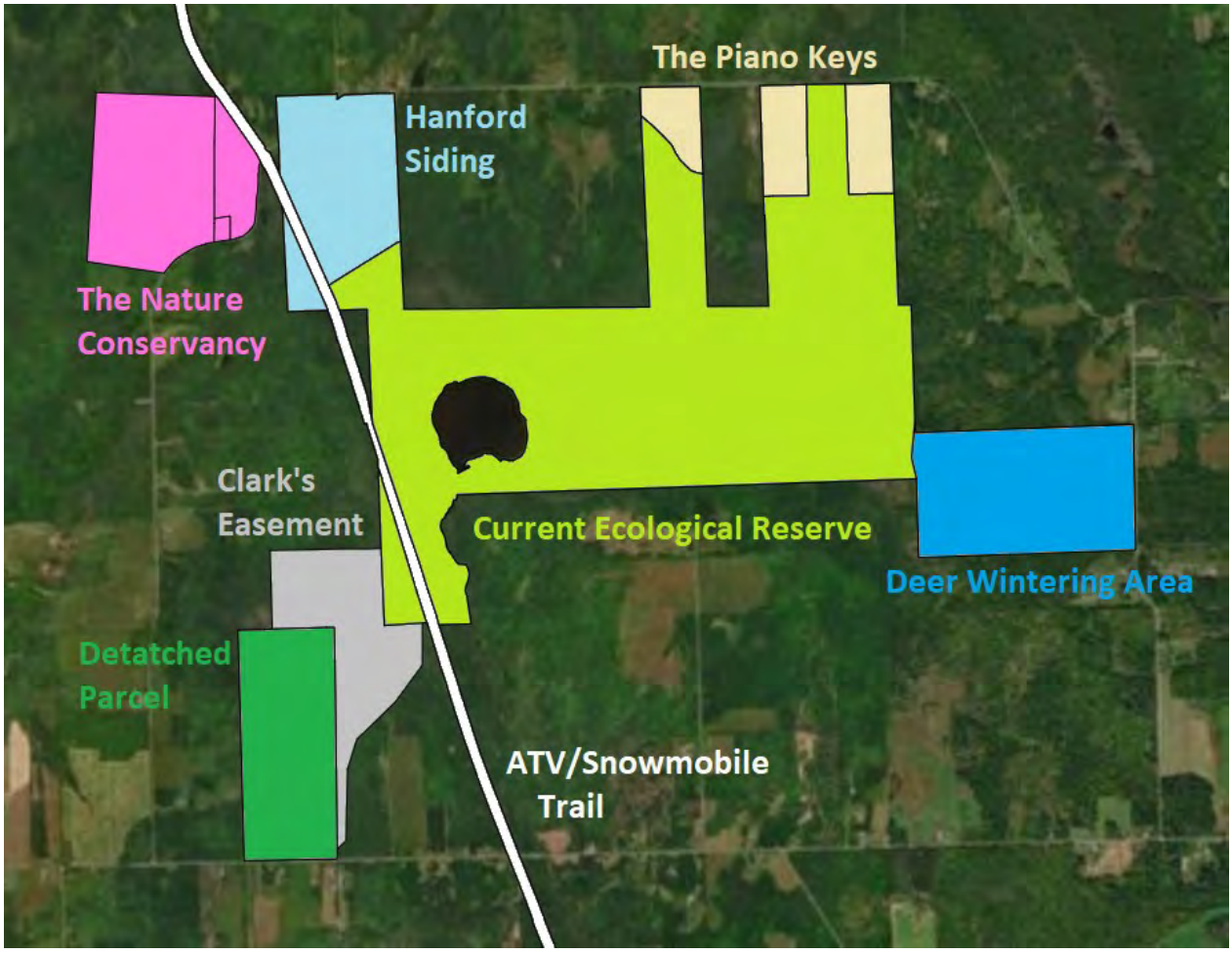
Nomination for Addition to Bureau of Parks and Lands Ecological Reserves

Project: Addition of Public Lands Adjacent to Salmon Brook Lake Ecological Reserve
Location: Town of Perham
Biophysical Section: Aroostook Hills and Lowlands
Approximate Size: 1053 Currently with the addition of 804 Acres
Applicant: Richard Clark, John Rasmussen, Jere Leary & Rita Rogers
Date: April 10th, 2023



"The Salmon Brook Lake and Perham Wetlands Focus Area is located in northeastern Aroostook County in an area where limestone bedrock has created relatively high pH soils. These conditions support a number of significant natural features including circumneutral fens, rich northern white cedar swamps, and a variety of rare plant and animal species." - Beginning With Habitat Program: Salmon Brook Lake And Perham Wetlands

I. Project Area Description

“As it’s name suggests, Salmon Brook Lake Bog has many faces.

The brook is a meandering muck bottomed stream, dotted with the very rare pygmy white waterlily and sided with sphagnum moss, alder, sweetgale, chokeberry and leatherleaf. The lake is surrounded by ferns, sedges and grasses, and hemmed by rushes. The bog, which is technically a fen, supports a surprising variety of plant species rare to Maine – northern v alerian, swamp-fly honeysuckle and rush aster.

The cedar swamp and surrounding glacial knolls are orchid heaven, with at least 20 species identified to date, including the rare showy lady’s slipper and the even rarer small round-leaf orchid. The entire system is underlain by calcereous siltstone and slate. The nutrients these leach into the groundwater help make this unusual assemblage of plants possible. Moose, deer, bear and beaver leave muddy prints as do hunters, fishermen and botanists. Waterfowl and canoes send ripples across the lake in summer; snowshoe hare and cross country skiers mark the snow in winter.” – Maine Legacy, Fall 1993, The Nature Conservancy

The Salmon Brook Lake Public Reserve Lands center around Salmon Brook Lake, with approximately 1055 acres at its core already designated as a Maine Ecoreserve. The project area consists of adding the remaining Reserve lands of forested blocks that were part of the original purchase by Land for Maines Future, extending out from this sensitive ecological core area into wetlands and up the slopes of the surrounding basin. It contains numerous rare plant stations and other natural communities of special interest to the Maine Natural Areas program. Including some areas yet to be studied. There are many recreational features including an ATV and Snowmobile Trail created on former railroad line that historically passed through Perham, as well as hiking trails used by visitors leading to an observation deck.

The surrounding BPL forest blocks along with adjacent private lands serve as important watersheds and buffer for that sensitive core as well as having their own value as mixed mature forest communities, wildlife corridors, and habitat for a wide array of wildlife. This area, as noted in the Maine focus area description, lies between two other sensitive areas; the Perham Bog to the Northwest and the Woodland Bog to the Southeast, both owned by Nature Conservancy. Unbroken mixed forests and grown in former farms extend many miles in all directions beyond project.

Areas within the proposed forested additions to Ecological Reserve contain a rich matrix of tree types, depending on soil types, drainage, and elevation. Including yellow and white birch, maple, fir, native black spruce, hemlock, red cedar, larch, beech, and northern white cedar, as well as patches of much older poplar trees. In upland portions, the poplar trees serve as pioneer species that provide cover for other trees to re-establish. Some dead standing trees mixed in the blocks were hollowed by pileated woodpeckers years ago and now provide dens or nesting sites for wildlife including several types of owls and small mammals.

Much of the ground cover in wetter areas has a thick layer of roots, fungi and mosses with water visibly flowing underneath, toward the Lake. Aside from the eastern block bordering Tupper Road, which was last cut in 1993 by Irving just before the sale, the rest of these public wood lots have been untouched in recent memory, at least two generations.

While that parcel to the east has the youngest trees, it has since grown up into an assortment of bushes or dense fir/spruce thickets that provide winter browse for snowshoe hares among others. It's a woodland now self-regenerating.

The entire wooded basin surrounding Salmon Brook Lake is historically significant to the town of Perham. In its early settlement years, late 1800's, the whole area was heavily harvested, in particular by the Goddard company, and a log drive took place down Salmon Brook to the town center, where there was a sawmill and starch factory. The remains of the last crude dam still exist at the exit to the lake. It's located at a rest spot and picnic area off off the trail. That this basin has grown back into its rich state is a testament to the resiliency of the larger matrix ecosystem.

There is at present no road access into the Ecological Reserve or it's surrounding proposed additions, except for a short logging road part way into that eastern block left from 1993. Public access is by foot from surrounding roads or off ATV trail. One concern is the increased access to sensitive plants that new hauling roads might create if logging were allowed in the blocks proposed here as additions to Ecological Reserve.

Photo: The Deer Wintering Area; Taken by John Rasmussen 2022

II. By which ecological criteria does this area qualify as an Ecological Reserve? (see Evaluation Criteria for Potential Ecological Reserves)

What is an ecological matrix?

Matrix is the "background ecological system" of a landscape with a high degree of connectivity. Connectivity is the measure of how connected or spatially continuous a corridor, network, or matrix is. For example, a forested landscape (matrix) with fewer gaps in forest cover (open patches) will have higher connectivity.

It is worth considering the meaning of "conserving an ecosystem's associated species, structural components and ecosystem functions." "Associated species" include everything from breeding habitat for birds and mammals to complex vegetation layers to soil invertebrates. "Structural components" refer to vegetation structure and, more broadly, to all the accumulating organic materials that link a system historically to a place and stabilize the ecosystem. These features, collectively termed biological legacies, include coarse woody debris, seed banks, soil nutrient reservoirs and extensive fungal networks — essentially the by-products of previous or current residents. The third term, "important ecosystem functions," refers to processes such as water filtering and storage, nutrient transformations, solar energy capture and carbon sequestration that an ecosystem performs. Keeping these three dimensions of an ecosystem in mind can help clarify the criteria for defining ecosystem types, assessing the viability of examples and selecting places for conservation action.

Because they occur across a landscape in relatively distinct patches we referred to these as patch-forming ecosystems. A few ecosystem types dominate much of the natural land area in and around the patch systems. Because these ecosystems form the background matrix we referred to them as matrix- forming ecosystems (adopting the terms from Forman 1995). In the Northeast, all the matrix-forming ecosystems are forest types, but in other regions they may be open shrublands or herbaceous grassland. When examining a landscape, it becomes immediately clear that patch-forming ecosystems nest within matrix-forming ecosystems. By definition, this way of grouping systems recognizes a spatial hierarchy. For example, a large area dominated by lowland conifer forest (a matrix-forming system) may, on close examination, reveal a network of bogs, fens, marshes and rolling hills (large patch systems)" - The Nature Conservancy Conservationgateway.org

The totality of the core Ecological Reserve including its surrounding forested wooded blocks, were all part of the initial proposal supported by the Nature Conservancy, voted for as one unit by our town, and purchased together by Land for Maine's Future. This as a total unit most certainly does meet the evaluation criteria of an A ranked Matrix-forming ecosystem at over 1000 acres with all the surrounding landscape in compatible land use. Surrounding public forest blocks do not exist in isolation and should not be evaluated as such.

Further, as clearly stated in the Memorandum of understanding with BPL and The Nature Conservancy dated Nov. 19, 1993, "The upland acres outside the Ecological Reserve will be allocated as a Wildlife Dominant Area" and in that same Memorandum, "No Timber Dominant areas will be allocated on the unit." In short, cutting on these wooded uplands for the purpose of generating revenue

from timber was specifically prohibited. Thus any cutting of trees to “help enhance wildlife habitat” would need to be left on the ground, not taken for revenue.

As surrounding parts of this rare, healthy matrix-forming ecosystem, these wooded lots already serve their highest purpose, for the wildlife which has come to depend on these trees for cover, food, and nesting sites, as well as watershed and buffers for the bog. These blocks add resiliency to the overall health of the matrix, and contribute greatly to the hydrology and water quality on which rare plants depend.

Thus, it is our proposal to include all of the original land purchased in 1993 at Salmon Brook Lake as Ecological Reserve. Much has been written by the state about the rarity and high ecological value of the core Ecological Reserve, so we will not repeat all those details here. We refer you to the Salmon Brook Lake page from Maine Focus Areas. Many species of S1 or S2 significance have been cataloged. For example:

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Clayton's Copper	*Lycaena dorcas claytoni*	E	S1	[illegible]
	Mystery Vertigo	*Vertigo paradoxa*	SC	SNR	G3G4Q
	Sedge Wren	*Cistothorus platensis*	E	S1B	[illegible]
	Six-whorl Vertigo	*Vertigo morsei*	SC	SNR	G3
Plants	Capillary Sedge	*Carex capillaris*	SC	S2	[illegible]
	Dioecious Sedge	*Carex sterilis*	SC	S3	G4
	Hoary Willow	*Salix candida*	E	S1	[illegible]
	Horned Beak-rush	*Rhynchospora capillacea*	T	S1	G4
	Lapland Buttercup	*Ranunculus lapponicus*	T	S2	[illegible]
	Livid Sedge	*Carex livida var. radicaulis*	SC	S2	[illegible]
	Marsh Valerian	*Valeriana uliginosa*	SC	S2	G4Q
	Northern Bog Sedge	*Carex gynocrates*	SC	S2	[illegible]
	Prairie Sedge	*Carex prairea*	T	S1	[illegible]
	Pygmy Water-lily	*Nymphaea leibergii*	T	S1	[illegible]
	Showy Lady's-slipper	*Cypripedium reginae*	T	S3	G4
	Small Round-leaved Orchis	*Amerorchis rotundifolia*	T	S2	[illegible]
	Sparse-flowered Sedge	*Carex tenuiflora*	SC	S3	[illegible]
	Swamp Fly-honeysuckle	*Lonicera oblongifolia*	SC	S3	G4
	White Adder's-mouth	*Malaxis monophyllos*	E	S1	[illegible]
Natural Communities	Black Spruce Bog	Spruce - larch wooded bog		S4	G3G5
	Circumneutral Fen	Shrubby cinquefoil - sedge circumneutral fen		S2	G2G3
	Northern White Cedar Swamp	Northern white cedar swamp		S4	GNR
	Sedge - Heath Fen	Sedge - leatherleaf fen lawn		S4	G4G5
	Unpatterned Fen Ecosystem	Unpatterned fen ecosystem		S4	GNR

However, of particular note are several statements from Maine Natural Areas Program itself that relate to the larger matrix of which Salmon Brook Lake Ecoreserve is a central part. To quote from Beginning with Habitat, Focus areas of Statewide Significance, concerning Salmon Brook and Perham bog, under the heading of Opportunities for Conservation…

> **CONSERVATION CONSIDERATIONS**
> **- The integrity of wetlands and the processes and life forms they support including rare plants and animals are dependent on the maintenance of the current hydrology and water quality of the site. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution that can degrade the high quality natural systems that occur here.**
> **- Preserving the natural communities and other sensitive features within the focus area will be best achieved by working to conserve the integrity of the larger natural systems in which these features occur. Conserving the larger systems will help ensure that both common and rare natural features will persist on the landscape in this part of the state.**
> **- Nearly all exemplary natural communities and rare plants mapped within the focus area are contained within existing conservation lands, but the focus area also includes many areas that have yet to be surveyed for these features."**

1. It is not accurate to say that the areas that we desire to add to Ecological Reserve were recently logged. The only section that statement applies to was a block bordering Tupper road to East, which Irving began cutting in 1993 despite ongoing negotiations for purchase by the State. That was stopped before fully harvested. While it's true younger trees are located there, there is now a dense regrowth of small fir and spruce, punctuated by a wide variety of bushes and open wet areas. All of this now offers small clearings or varied patches of wildlife food.

2. The so-called "piano keys" (due to visual appearance on map) that border Tangle Ridge Road to the north have in fact not been logged since well before the purchase. As evidenced by very large Hemlock, cedar, and Yellow birch trees we observed on walk we took last summer with a BPL forester. There is also considerable water drainage there from unnamed small streams that feed into bog from high ground. The inlet to Salmon Brook Lake is in fact fed from this area.

This is critical watershed to the lake not to be disturbed. In fact our town recently received a grant from the County specifically to improve that north section of road to help protect water quality going into Ecological Reserve. This is more critical now as climate change causes high rainfall events.

3. The southern block of woods which borders High Meadow Road becomes a very wet mature northern white Cedar forest with tall straight trees which at lowest levels turns into a swampy twisted cedar grove also full of older trees. Near the bottom, it borders present conservation land as well as a large private lot in planning stage to eventually also become conserved. There is at least one important plant station near lowest boundary, and evidence of pileated woodpecker activity with opportunities for nest cavities. Water flows here year round toward the bog. There is a former beaver pond at juncture where the three parcels meet with large dead poplar snags with cavities used by owls.

4. All of the private lands on roads surrounding these wood lots and the basin at center are in compatible use. Many were once cleared fields with active potato farms a couple generations ago, but

are now grown back into mostly wooded lots, with an abundance of wild apple trees. It's an undeveloped rural neighborhood with low population. Activity is limited to small firewood, maple syrup, grazing, or haying operations. What makes our town unique is this is not an island of nature surrounded by intense development as seen sometimes in southern Maine. Instead, the unspoiled surroundings extend miles further, toward Westmanland or Woodland. To our west is almost completely unbroken woodland to Rt. 11. It is used extensively as connecting wildlife corridors.

Large patch communities/ecosystem complex:

Meets description of A-B ranked large patch ecosystem complex and >50% of conservation target is within unit and surrounding landscape is compatible land use. That last sentence deserves special emphasis especially compared to other Ecological Reserves in the State which sometimes are natural patches surrounded by development. Not only has this area of Perham escaped development, but there is the potential and interest from private land owners to do more private conservation in years ahead. Neighbors here are very much aware of Ecological Reserve and care about it. In addition, as mentioned earlier, all sloping land surrounding the bog forms a vital watershed for the bog and lake.

Small patch communities:

A-B ranked small patch ecosystems present and >50% of conservation target is within unit: surrounding landscape is in a compatible land use. In fact, it fits word for word the very definition of a matrix ecosystem as listed above.

Enduring features (ecological land units):

Includes intact aquatic systems and sufficient portions of their watersheds. In fact, many of the rare plants depend on water quality.

In addition, there have been efforts underway for years to bring back the salmon and trout fishery in the Aroostook River into which Salmon Brook ultimately drains. The former dam downstream in Washburn is one example of this state conservation and restoration effort, as well as proposed upgrades to water quality ratings in Salmon Brook to grade A within Perham. While Salmon Brook Lake itself is too shallow to ever support a salmon fishery, the stream flowing from it is considered important for brook trout. Water quality is critical for this ongoing trout stream restoration project. The importance of this forested basin extends well beyond Perham.

III. What is the current condition of the land?

> **"The Salmon Brook Lake is located about 54 miles north of the 46th parallel and 15 miles west of the 68th meridian. The flora is very rich and a large number of plants can be collected here for the systematic botanist. This large open bog has not been changed practically any by the settlement, but some parts of the bushes and grass has been burned over probably several times. There is the remnants of a lumber dam they used to store water for log driving some years ago, but there is no longer any lumber to drive, nor has there been any, for the last thirty years." - Olof Nylander, *Castalia Teragonia in Salmon Brook Lake Bog, 1938***

At present, the lands surrounding Salmon Brook Lake including the public lots we are proposing as additions are in excellent condition, there are no clear cuts or sources of water pollution. Generally, this valley and its upland slopes are only in light traditional or residential use and the forests extend far out in all directions to act as connecting corridors for movement of animals and as a biological reservoir that adds resiliency to the whole if any damage may occur.

Photo: Stream by the Recreational Trail at Hanford Siding; Taken by John Rasmussen 2022

IV. Are these natural features and Ecological Land Units already represented on Ecological Reserves elsewhere in this biophysical section or in the state.

> **"Many wetland natural communities in settings valuable for climate change are under-represented on ecological reserve type lands. These include: Floodplain forests (2 types), Northern white cedar swamps and Cedar seepage forests." - Puryear, K. (2021, October 13). *Looking Ahead: Action on Maine's Climate Action Plan* [PowerPoint slides]. Maine Natural Areas Program, Maine Department of Agriculture, Conservation and Forestry. https://www.nawm.org/pdf_lib/NEBAWWG/puryear_101321.pdf**

Reserve type management in the Aroostook hills and lowlands is among the lowest of any of Maine's Ecoregions. In fact, the Salmon Brook Lake Ecological Reserve has been held up in a prior proposal elsewhere as one example where such lands were being protected. This left us a bit perplexed that these forest blocks were in fact left out of our local Ecological Reserve and potentially could be disturbed, logged. While some features may be captured by other Ecological Reserves the preservation of these lands to be added to the Salmon Brook Lake. We are protecting the core unit's watershed which the Fen needs to maintain a healthy population of rare plants.

Photo: Richard Clark in the Detached Parcel; Taken by John Rasmussen 2022

V. For which Ecological Reserve purposes is this area well suited? (benchmark, unique habitat, educational and scientific purposes). How natural are the features of this area?

1. "to maintain one or more natural community types or native ecosystem types in a natural condition and range of variation and contribute to the protection of Maine's biological diversity,"

> **"The integrity of wetlands and the processes and life forms they support including rare plants and animals are dependent on the maintenance of the current hydrology and water quality of the site. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution that can degrade the high quality natural systems that occur here." - Beginning With Habitat Program: Salmon Brook Lake And Perham Wetlands**

Each section nominated to be added to the Ecological Reserve has it's own forest system unique to the Reserve. Having such varied ecosystems in close proximity to each other allows for the protection of Maine's biological diversity within the unit.

2. "as a benchmark against which biological and environmental change may be measured, as a site for ongoing scientific research, long-term environmental monitoring and education,"

> **"Research and education are actively encouraged on all state Ecological Reserves. The state has developed a long term ecological monitoring program for Reserves and seeks opportunities to promote research efforts that complement its monitoring program." -Beginning With Habitat Program: Salmon Brook Lake And Perham Wetlands**

This area has a research history going back to early 1900's that precedes interest of the State by well known local naturalist Olaf Nylander for whom a museum was dedicated in Caribou. His extensive collections are still preserved and might offer a priceless baseline dating back almost 100 years. In fact, despite the list of important species listed under Maine Areas of special interest for the Ecological Reserve, there is much more research that needs to be undertaken here, and could provide endless opportunities for Maine's university students as well as potential field trip opportunities for local schools. We have frankly barely scratched the surface. This is one major reason we are concerned about logging disturbances. We could lose as yet unknown species or inter species connections before we know they exist. We do know of at least one lynx study that was done here and these endangered cats are still being sighted in the area. However, it is smaller species also at risk. For instance, Nylander also collected freshwater snail shells so tiny it takes a magnifying glass to see them. These are in test tubes in cabinets in the museum.

3. "to protect sufficient habitat for those species whose habitat needs are unlikely to be met on lands managed for other purposes".

> **"Beginning in the 1980s conservationists started to look beyond the habitat needs of some rare birds, mammals, and a few plants to think about conserving all species. This idea was conceptualized under the banner of biological diversity, soon truncated to "biodiversity." Now every species, even fungi and worms yet to be**

described by science, is recognized as having value and meriting action to assure that it does not become extinct. But how do you undertake conservation action for huge numbers of species ... actually millions of species on a global scale?
One efficient approach is to protect entire communities on the assumption that this process will capture most of the species that constitute the community. Conserve a wetland and you protect habitat for hundreds of species, the majority of which are insects and other small creatures that you know almost nothing about. This is often called “coarse filter” conservation," - Prof. Malcolm Hunters foreword to book "Natural Communities of Maine" by Susan Gawker and Andy Cutko :

We were thrilled that the Nature Conservancy worked with us many years ago to protect the rare plants in the central bog. We are suggesting that the parameters for conservation have changed, as Dr. Hunter explained in his foreword. We have learned much more about the interrelationships, "the web of nature" since then. The truth is, we do not know enough about how it all fits together; from water, to fungi, to insects; to make changes around edges of this Ecological Reserve. And climate change adds a wild card. We are lucky to have time here to proceed with caution and capture a natural system of woods, waterways, and so much more with a wider net, before we alter it, rather than find ourselves trying to undo damage after the fact.

Photo: Mushrooms in the Deer Wintering Area; Taken by John Rasmussen 2022

VI. Do any of the features of the reserve require active management for their perpetuation?

None of the features in our proposed additions to Salmon Brook Lake Ecological Reserve require active management. To the contrary, activities which would require any intrusions or machinery would be a threat to existing features and harm water quality. Perhaps the only activity that might be helpful are a few trees cut specifically to allow light near certain plant stations that might be getting too much shade. However, this is not meant to encourage any timber harvesting, merely felling one or two trees by hand, not machine, and leaving them to decompose into the soil.

Photo: Google Earth 2020. Taken by Steve Young, USJRO

VII. What recreational uses currently exist within the area?

"In 2008 a 0.25 mile multi-use trail was constructed by staff and local volunteers, including a 400' boardwalk, a 100' boardwalk, a picnic table and table shelter, and a hand carry boat launch. In 2009 MCC and staff built a 1.0 mile hiking trail. In 2011 MCC and staff constructed a boardwalk and observation platform on the west shore of the lake. Trailhead parking area on Tangle Ridge Road completed in 2012." -2007 Northern Aroostook Management Plan: 2017 5 -Year Review

Photo: MaineTrailFinder.com. Salmon Brook Lake Bog Public Reserved Lands

There is one well used ATV or Snowmobile trail through the area that was built on the former B&A railroad bed. There are two walking trails that are used in summer. One starts off the ATV trail at south end from the Perham town hall. This one leads to a picnic table near the remains of an old dam at lake outlet. The other, newer trail begins from a designated parking area off Tangle Ridge Road at north end and leads to an observation deck over the bog at the edge of the lake. Both are popular for visitors coming to Perham, and have been written up in the Bangor News and a family friendly trail guide by author Aislinn Saranacki. Locations of rare plants are neither near trails nor publicized.

The attention we are getting as a place of natural beauty and trail walks has brought summer visitors to our small town as well as new residents. https://www.bangordailynews.com/2016/08/02/act-out/1-minute-hike-salmon-brook-lake-trails-in-perham-2/

VIII. Are there any designated and maintained snowmobile or ATV trails on the property? If so are these part of a large organized trail network?

> **"The Bureau owned and managed Bangor and Aroostook Trail (BAT) corridor passes through the western end of the property. This trail is part of the Washburn to New Sweden segment of an extensive abandoned railroad system acquired by the bureau in 1994, which has been converted to a four season multi-use trail." - Northern Aroostook Region Management Plan, Maine Department of Conservation, Bureau of Parks and Lands.**

Yes, but this one main trail is not on Reserve land, does not cut across the Ecological Reserve or its wooded lots. This trail was purchased and built separately on former B&A railroad bed which passes near or between lands in question. The small picnic shelter on adjacent Reserve land is just a rest stop.

> **From the enabling legislation: "The director shall allow the continuing use of an existing snowmobile trail, an all-terrain vehicle trail or a road if the director determines the trail or road is well designed and built and situated in a safe location and its use has minimal adverse impact on the ecological value of an ecological reserve and it cannot be reasonably relocated outside the ecological reserve."**

IX. How many acres of operable timber are there within the area? What would be the impact on the region's timber supply of inclusion of these acres within Ecological Reserve status?

> **"The integrity of wetlands and the processes and life forms they support including rare plants and animals are dependent on the maintenance of the current hydrology and water quality of the site. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution that can degrade the high quality natural systems that occur here." - Beginning With Habitat Program: Salmon Brook Lake And Perham Wetlands**

Since they are already owned by the State, there is no cost for land acquisition. The three of us walked all of these lots with a forester from BPL last summer, and he admitted that given the required setbacks for flowing water, the need to create hauling roads, and required visual buffers from our road system, the Bureau would realize very little income from this operation. In addition, the Eastern most lot which was cut in 1993 is still young in regrowth with few marketable trees, and the lot off High Meadow road contains a good stand of Northern white cedar which must be spared. A flowing stream runs through part of the lot off Hanford siding which requires extra setbacks. There is a nice small patch of mature Hemlock and good examples of mature cedar in the remaining lot off Tangle Ridge Rd, which we were told has to be spared. In short, any real revenue for BPL would be minimal, and the impact to the regions timber supply would be negligible.

We did read in Memorandum of understanding from The Nature Conservancy that there was possibility of an "experimental cut" in future. We feel strongly that a sensitive area surrounding this Ecological Reserve is not the place to conduct a timber extraction experiment with machinery, with possible unknown effects on water. Instead, we suggest any experiments here be more aligned with biological research and education. There are enough examples of commercial logging on private lands in our area if education or forestry experimentation is really the goal.

X. What are the surrounding land uses? Are they compatible as landscape context for a Reserve in this area?

Our small town has avoided the development issues that plague some locations. From beginning it was a farming community, incorporated by some of the very first settlers to Aroostook County, often with ties to New Sweden, as that colony expanded. Most of the oldest pictures here show forests cut flat, and open fields to raise livestock or plant potatoes. Driving the loop from High Meadow around Salmon Brook Lake to Tupper Rd, it's hard to believe how busy and populated with large families it once was. For many reasons, especially economics, this has nearly all regrown into a wild state. Apple trees or large old maples stand out in most yards. But mostly we're wooded with dense forests, patch ecosystems that extend as far as one can see from one of our many high vantage points, especially those that encircle Salmon Lake. It's also a network of waterways, that flow toward the Bog, but in some cases also north toward the Little Madawaska River. Walking down toward the lake, you realize water is flowing under the top layer of moss and roots you might be walking on.

On an informal basis, residents report sightings of a rare bird, owls, a fisher, weasels, and salamanders and wood frogs up on our lawns, after breeding in the many vernal pools in woods below. It's a sparsely populated residential area now, with some haying, small livestock, firewood, and maple syrup tapping. A couple new plantings of organic grains at open field on top of the Ridge. No commercial use of pesticides. Frankly, it's an unspoiled place, so far.

This is a rare opportunity to conserve and protect pro-actively, and use it as a living laboratory for the Maine university system or local school science field trips. It is also an opportunity to set an example and shine attention on modern conservation, to protect even what you do not yet know. There is so much more to get to know here.

Photo: Richard Clark at Hanford Siding; Taken by John Rasmussen 2022

XI. Other considerations:

These lots, indeed most of the basin, are filled with large trees holding carbon. This could be quantified from aerial photos. Further, as the older trees die they first fulfill their function as sources of insects and nesting cavities, and when fallen, decay slowly to become part of that mossy, fungus, or fern covered layer mentioned earlier over flowing water. In addition, turning over logs reveals salamanders. Nothing is wasted in this energy cycle. Carbon left here could help meet the climate saving goals for Maine.

The subject of climate resilience is one of the reasons we are concerned enough to petition to include all the original public lots here in the Ecological Reserve. We are seeing climate change effects in our town in two ways - excessive rain events and excessive wind events. The rain deluges bring the threat of erosion and siltation, aggravated by any soil disturbance. The wind is buffered by trees, and we see examples where trees are harvested from one private lot which leaves an open corridor for wind to throw trees down on the neighbors lot. If logging happens in the public lots around the rim of the present Ecological Reserve, there will be a harmful ripple effect extending beyond that operation. Fortunately, this whole region has so far proven itself resilient biologically, reseeding and restocking naturally.

Another important aspect of climate resilience is ability of biological components to move in order to adapt . Clearly, local species will have to adapt, sometimes by moving uphill or downhill. The sunlight, wind, and temperatures are quite different here depending on height. All the plants, even trees, need seeds dispersed, by wind or sometimes with help from wildlife. It’s helpful therefore in our local area to include elevation as a consideration in long term conservation planning for climate change.

Names of Individuals Knowledgeable about the Area: Richard Clark. Jere Leary, John Rasmussen & Rita Rogers.